

Blueprint of Social Innovation Metrics

Contributions to an Understanding of the Opportunities and Challenges of Social Innovation Measurement

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TEPSIE

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1. Introduction

The concept of social innovation currently enjoys a high level of attention that can be understood in the context of the many challenges that European countries are going to face in the near future or are already facing. These include demographic change, migration, integration, increasing social inequality, and environmental threats. Most governments and welfare systems do not have the resources to tackle these problems. Social innovations seem to be a perfect means to meet these challenges, because social innovation involves formal as well as informal networks, draws from multi-sector contributions and pursues a normative orientation in the sense of being “good for society”¹ and thus mobilizes additional resources and opens up new opportunities.

Despite growing social needs and the increasing demand for social innovation, the landscape of research on social innovation remains fragmented and lacks consensus.² Even a commonly accepted definition is heavily contested.³ A central complaint in the debate is the missing empirical data, which is at least partly a result of a lack of approaches to measure social innovation. Therefore many authors have called for more empirical work to back up the theoretical framework.

In many societies a shift towards new values is identifiable. Interest in social innovation can be interpreted in the context of a societal shift toward promoting sustainability and valuing an overall quality of life that is not solely dependent on earned income. Ambitions to capture and quantify these developments in areas that are important for but not equal to social innovation can be seen in, for example, the OECD Better Life Index,⁴ and an expert commission working on “Growth, wealth, quality of life – ways to sustainable economic activity and societal progress in the social market economy”, that was set up by the German Government⁵. As will be shown in our review of existing measurement approaches there is a set of tools in related fields to social innovation capturing aspects like the progress in wellbeing, dominant norms and values in civil society, or levels of environmental sustainability. In the light of numerous established measurement approaches to technological and economic innovation and innovation in specific sectors like the public sector, a reliable macro-level measurement approach to social innovation is missing, especially one that focuses on the essential characteristics of social innovation without being bound to one specific sector.

Generally, social innovations could be analysed using a case-study design or they could be measured by going “into” the organisation, i.e., by utilising a meso-level approach. In this publication, a deliverable of work package 2 of the TEPsIE project, we have chosen to measure social innovation on the macro level.

¹ The Young Foundation, *Social Innovation Overview, A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe” (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012, 18

² G Mulgan, *Social Innovation Theory – Ideas for an Emerging Field*, in: A Nicholls, A Murdock, *Social Innovation – Blurring Boundaries to Reconfigure Markets*, 2012, 33-65; G Mulgan, S Tucker, R Ali, B Sanders, *Social Innovation. What it is, why it matters and how it can be accelerated*, Skoll Centre for Social Entrepreneurship, Working Paper, 36 f.

³ For detailed information see: The Young Foundation, *Social Innovation Overview, A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe” (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012

⁴ OECD, *How’s Life? Measuring Well-Being*, 2011

⁵ Deutscher Bundestag, *Wachstum, Wohlstand, Lebensqualität – Wege zu nachhaltigem Wirtschaften und gesellschaftlichem Fortschritt in der Sozialen Marktwirtschaft*, 2013

A macro-level measurement approach to capture the essential characteristics of social innovation is necessary for three reasons:

- *To inform and give recommendations to policy makers at the national and regional level.*
As social innovation becomes increasingly recognised by politicians, accurate research based on commonly agreed measurements is needed to inform policy. This kind of information can be collected, processed and assessed by incorporating a macro-level social innovation measurement system into the overall national (and EU-wide) statistical efforts. To make decisions regarding the national development of social innovations, politicians need to have an understanding of the status quo and of how to foster framework conditions in order to bring social innovations to scale and create social value. This has to be ensured in order to develop a fertile environment, fostering social innovation in response to unmet social challenges. At the European level the macro perspective could be used by politicians to identify countries that are performing well, to understand the patterns and framework conditions that have an impact on that performance and thereby to foster policies that increase European countries' social innovation capabilities.
- *To operationalize the term social innovation.*
A measurement tool will help to understand and develop the theoretical concept of social innovation further. We hope that our approach succeeds in linking theoretical assumptions to empirical indicators, also drawing from work contributed by the TEPsIE consortium. This makes it a valuable way of introducing a more empirical line of discussion into the discourse concerning social innovation.
- *To complement organisational and impact measurement approaches.* A macro-level approach is an important complement to organisational measurements in order to provide data that is not bound to specific organisations and therefore fits our understanding of social innovation as a cross-sector issue (including the informal sector).

This publication is our contribution to filling the empirical gap in the landscape of social innovation. Basically, our publication should be understood as a proposal for an indicator suite at the macro level, i.e. at the national level, tailored for implementation at the EU-level. The indicator suite should help to assess the status quo of social innovation and social innovation performance as well as make the existing innovation potential and performance comparable to findings in other countries. With 'innovation potential' we mean the capacity or the aggregated set of capabilities of a (local, regional or national) system (interpreted in a cross-sector fashion) to create social innovation. We believe that this work is a valuable step on the way to building a social innovation measurement system at the European level.

The proposed model does not distinguish between specific societal sectors and what each can or already does contribute to social innovation. Although this makes it harder to spot in society there is large or small amount of existing social innovation activity, we believe that it is the right approach at this stage. The first reason is that social innovation is supposed to happen preferably at the intersection of sectors⁶, these can neither be precisely delineated nor analysed. To a certain extent the broadness of the measurement approach is justified by the very nature of social innovation. At the same time, and this is the second reason, we aim at providing a Blueprint of social innovation metrics that tries to take into account of 'all' we know about how to capture social innovation, instead of focusing on specific issues. It is well possible that the proposed indicator system will undergo subsequent steps of refinement that illustrate roads to tailor it to the application in specific contexts and the requirements of sectors or organisational fields. This

⁶ The Young Foundation, *Social Innovation Overview, A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe"* (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012, 21

however is field for future research, which needs a broad basis to build upon, which the Blueprint attempts to present.

But how can we measure social innovation? What is the specific nature of social innovation that has to be considered in the development of a reliable measurement tool? And, which metrics used in existing measurement approaches might be appropriate in the measurement of social innovation? The clarification of these questions is the core issue of this deliverable of the TEPsie Project.

It goes without saying that a macro-level approach has its shortcomings, one of which is that aggregate data make it hard to decipher the exact processes that lead to innovation. We are very much aware of this and connected issues, but due to the reasoning provided above we believe that a macro-level approach can be of tremendous value, in particular from a policy viewpoint. Furthermore we acknowledge that the more detailed processes of innovation are covered by attempts to develop social impact or performance measurement on the organisational level both from an inner- and inter-organisational perspective.

It is also evident that social needs and new demands play a pivotal role and may serve as the breeding ground for social innovation. However, the one does not equal the other. For instance, there is a considerable amount of social needs that are never articulated as social demands, because the affected groups lack voice or organisation. At the same time there are demands that are being articulated, but lack a connection to a social need. This could be the case where actors are organised in a way that guarantees the political assertiveness of positions that are rather particularistic in nature. Finally, there are cases which are hard to be classified from the viewpoint of a connection between need and demand.

Take Wikipedia for instance. While there might have been a need for widely available, public information, this position might not have been advocated for by the people that perceptibly profit most from the establishment of the system, namely those who otherwise lack access to information. At the same time there has been no real demand that had manifested in huge the willingness of a diverse set of parties to dedicate amounts of money to building this public database. It has rather grown gradually, driven by the aspirations of a growing community of individuals to create value for others. Thus, needs and demand are central components of social innovation, but such that are sometimes hard to distinguish or to frame precisely. Also they affect different situations in different ways. In case the Blueprint contains conflation of 'need' and 'demand', these are due to the fact that the dimension of measurement occasionally necessitates that the one is approximated by the other.

Finally, we want to make a remark on the connection between (social) innovation and (social) change. Of course not all societal changes are to be attributed to (social) innovation. In the complex system of society there are many confounding variables that can trigger change. Nonetheless, (social) innovation is to be seen as a potential source of change and a powerful as such. Thus, metrics indicating social change can at times be interpreted as a proxy for social innovation, which however requires close examination of its most likely causes.

On the background of these comments our research approach in the development of the social innovation indicator suite at the macro level is as follows: we start with a review of the development and basic assumptions of existing innovation metrics. We then connect with the most recent understanding of innovation measurement and embed our approach into this context (Chapter 2). Building on these findings we describe adjustments that have to be made to create a

set of indicators that can be used to measure social innovation at the macro-level (Chapter 3). These guidelines and assumptions for the measurement of social innovation are translated into a “Blueprint of social innovation indicators”. We then present an integrated model for measuring social innovation (Chapter 4.1) that links insights from existing innovation measurement approaches to the essential characteristics of social innovation. The model provides a foundation for understanding why certain indicators were selected and the links between them (Chapter 4.2). We close with a critical assessment of our research approach (Chapter 5). Finally, a summary reflects on what extent this publication has contributed to an understanding of the opportunities and the challenges of social innovation measurement (Chapter 6).

2. Insights from existing innovation measurement for social innovation metrics

In the last few decades there has been a steady advancement in and refinement of the techniques used to measure innovation. In this chapter, we will assess a number of recent innovation measurement systems and other areas that are closely connected – like the measurement of competitiveness. First, we will give a brief overview of the different phases of innovation measurement (2.1). Then we present the main factors which are assumed to have a positive influence on innovation capability and that can be found across different publications (2.2). After that we reflect on critiques of established measurement approaches and specific indicators (2.3). Finally, we summarise the lessons that can be learnt from these measurement approaches for the measurement of social innovations (2.4).

2.1. The development of innovation metrics

The understanding of innovation has changed over time and so has the measurement of this phenomenon.

Basically, the change has occurred in two different dimensions. The first dimension is related to the innovation process. While former notions of innovation were guided by the assumption that innovation is driven by technology push or market pull, scholars now perceive innovation as influenced by a wide set of variables including the innovator itself, framework conditions such as market or legislative configurations and the interplay between these different dimensions.⁷ This means that the understanding has shifted from a linear to a non-linear and dynamic process. The second dimension deals with the object, i.e., the innovation itself. Influenced by the industrial era, early innovation measurement tended to concentrate on artefacts and products (as innovations) and therefore largely ignored (private economy) processes and intangible innovations (ideas).⁸

The development of these two dimensions is reflected by the variables that were used for metrics over time. The changing connotations of innovation measurement research are illustrated in the following table:

⁷ R Rothwell, 'Towards the Fifth-generation Innovation Process', *International Marketing Review* 11, 1994, 7-31

⁸ E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 2

Table 2-1 – The four generations of innovation metrics⁹

1st Generation Input Indicators (1950s-60s)	2nd Generation Output indicators (1970s-80s)	3rd Generation Innovation Indicators (1990s)	4th Generation Process Indicators (2000 + emerging focus)
<ul style="list-style-type: none"> • R&D expenditures • S&T Personnel • Capital • Tech intensity 	<ul style="list-style-type: none"> • Patents • Publications • Products • Quality Change 	<ul style="list-style-type: none"> • Innovation surveys • Indexing • Benchmarking innovation capacity 	<ul style="list-style-type: none"> • Knowledge • Intangibles • Networks • Demand • Clusters • Management techniques • Risk/Return • System Dynamics

The first two generations are strongly influenced by the aforementioned perception of innovation as a linear process. While first generation metrics were mostly focused on the input side, second generation metrics complemented them by including the output side of the process.^{10,11} The third generation was characterised “by a richer set of innovation indicators and indexes”¹² that were introduced to allow ranking and benchmarking in an international comparison. However, this generation lacks benchmark capabilities due to missing internationally comparable data and the ability to adequately measure service sector innovation where the product and process can be the same (e. g., fixing a damaged car is simultaneously a process and a product the customer pays for).¹³ Finally the fourth generation recognises the intangible character of knowledge, its flow and diffusion through different networks and the framework conditions that influence these aspects.¹⁴

Generally, there are two fundamentally different ways of measuring innovation. The Oslo Manual published by the OECD, which is probably the most important guide for innovation measurement, is differentiated between the object approach focussing on the innovation itself (“what?”) and the subject approach focusing on innovative firms (“who?”) when measuring innovation.¹⁵

The fourth generation of innovation measurement is accompanied by a shift in favour of the subject approach as that is the dimension where the innovation process can be captured. And that is why the Oslo Manual suggests using the subject approach to deepen the understanding of how innovation happens within organisations. The importance of this approach is eventually put in the

⁹ E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 4

¹⁰ E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 4

¹¹ T Tura, V Harmaakorpi, S Pekkola, 'Breaking inside the black box: towards a dynamic evaluation framework for regional innovative capability', *Science and Public Policy*, 35(10), 2008, 736

¹² E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 4

¹³ E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 4

¹⁴ E Milbergs, N Vonortas, *Innovation Metrics: Measurement to Insight*, National Innovation Initiative, 21st Century Innovation Working Group, 2004, 4

¹⁵ OECD, *The Measurement of Scientific and Technological Activities Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD Publishing, 2005, 20 f.

following way: “(...) it is the differential success of firms that shapes economic outcomes and is of policy significance”¹⁶.

The following chapter investigates further the theoretical assumptions of these fourth generation measurement approaches.

2.2. Understanding the scope of innovations in systems of measurement

Former innovation measurement approaches do not only list different indicators. The selection and also the arrangement of indicators only reveal their meaning when underlying theoretical assumptions the measurement tool is based on are understood. Thus, we have to ask which theoretical assumptions can be identified when analysing publications from areas like economic innovation or competition. Besides, can the approaches identified be used to measure social innovation?

After analysing roughly 35 publications and measurement systems (see deliverable 2.3), some patterns can be identified. Publications that are dealing primarily with the measurement of innovation (regardless of whether they focus on a specific type of innovation) do not understand innovation as a linear process in the sense that a specific input A will produce a specific output B. However, it is true for some publications that they picture the process as composed of the three phases, (1) input, (2) process or throughput and (3) output or outcome, which might imply linearity.

But, there are always conditions that are outside of the innovation system or the innovating organisation, i.e., factors that influence the innovation process that cannot be controlled directly by the innovating organisation. This might be expressed by different terms like “framework conditions”, “institutional factors” or “innovation system” (which simultaneously influence and are influenced by other systems). Therefore, this development corresponds to the fourth generation and process oriented stage of innovation measurement introduced in the last chapter.

However, if a measurement system has another focus, like the measurement of competitiveness or entrepreneurship, the phenomenon of innovations necessarily needs to be reduced in its complexity. Eventually this means that if innovations are incorporated as a measurement dimension within these systems, they are mostly treated as a single dimension that is represented in a single variable.

Starting from the finding that different measurement systems use similar variables we investigated whether the incorporation of these variables into the according measurement system was eventually guided by similar theoretical assumptions. The following chapter presents the categories that resulted from this process. They present a selection of variables that are used to express similar theoretical assumptions (with regard to the innovation process) as well as the assumptions themselves.

2.3. Extraction of basic assumptions from existing innovation metrics

By analysing 35 publications in the field of innovation measurement or closely related topics, we were able to extract some variables that were repeated in many measurement approaches and categorise them in clusters. The following table shows the thematic headlines that can be associated with separate clusters. In addition to the headlines the table gives some exemplary

¹⁶ OECD, *The Measurement of Scientific and Technological Activities Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD Publishing, 2005, 20

variables that belong to the cluster and a selection of measurement systems, where these variables can be found. In what follows, each category is described in more detail.

Table 2-2 – Basic assumptions of innovation measurement¹⁷

Category	Variables	Systems
Financial Resources	<ul style="list-style-type: none"> - Business enterprise expenditure on R&D, 2008 <i>As a percentage of GDP¹⁸</i> - Direct and indirect government funding of business R&D and tax incentives for R&D, 2007 <i>As a percentage of GDP¹⁹</i> - Non-R&D innovation expenditures. <i>As % of turnover²⁰</i> 	<ul style="list-style-type: none"> - Measuring Innovation. A New Perspective²¹ - Innovation Union Scoreboard 2013²² - Global Entrepreneurship Monitor: 2011 Global Report²³
Knowledge	<ul style="list-style-type: none"> - Graduation rates at doctorate level, 2000 and 2009 <i>As a percentage of population in reference age cohort²⁴</i> - Science and engineering graduates at doctorate level, 2009 <i>As a percentage of all new degrees awarded at doctorate level²⁵</i> - The proportion of externally sourced ideas (%)²⁶ 	<ul style="list-style-type: none"> - OECD Science, Technology and Industry Scoreboard 2011²⁷ - Measuring sectoral innovation capability in nine areas of the UK economy. Report for NESTA Innovation Index project²⁸ - How's Life? Measuring Well-Being²⁹
Intellectual Property Rights and Patents	<ul style="list-style-type: none"> - University and PRO patents³⁰ - Co-patenting activities³¹ - Triadic patents per million population³² 	<ul style="list-style-type: none"> - The Global Competitiveness Report 2011-2012³³ - The Global Innovation Index 2012. Stronger Innovation Linkages for Global

¹⁷ The indication of percentages of the variables is given in italics.

¹⁸ OECD, *Measuring Innovation, A New Perspective*, 2010, 76

¹⁹ OECD, *Measuring Innovation. A New Perspective*, 2010, 77

²⁰ European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013, 9

²¹ OECD, *Measuring Innovation. A New Perspective*, 2010

²² European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013

²³ D J Kelley, S Singer, M Herrington, *Global Entrepreneurship Monitor: 2011 Global Report*, 2012

²⁴ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 68

²⁵ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 69

²⁶ S Roper, C Hales, J R Bryson, J Love, *Measuring sectoral innovation capability in nine areas if the UK economy. Report for NESTA Innovation Index project*, 2009, 18

²⁷ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011

²⁸ S Roper, C Hales, J R Bryson, J Love, *Measuring sectoral innovation capability in nine areas if the UK economy. Report for NESTA Innovation Index project*, 2009

²⁹ OECD, *How's Life? Measuring Well-Being*, 2011

³⁰ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012, 100

³¹ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012, 100

³² Economist Intelligence Unit, *A new ranking of the world's most innovative countries: Notes on methodology. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009, 4

³³ K Schwab (Ed), *The Global Competitiveness Report 2011-2012*, World Economic Forum, 2011

		<p>Growth³⁴</p> <ul style="list-style-type: none"> - A new ranking of the world's most innovative countries. An Economist Intelligence Unit report³⁵
<p>Information and Communication Technology (ICT)</p>	<ul style="list-style-type: none"> - Business and household access to broadband. Percentage of businesses with one or more employees and percentage of all households³⁶ - Range of broadband prices for a monthly subscription. USD PPP³⁷ - Internet users³⁸ 	<ul style="list-style-type: none"> - Technology and Industry Scoreboard 2011³⁹ - The Global Innovation Index 2012⁴⁰ - Regional Innovation Scoreboard 2012⁴¹
<p>Collaboration & Networks</p>	<ul style="list-style-type: none"> - Firms with national/international collaboration on innovation, 2004-06 <i>As a percentage of innovative firms</i>⁴² - Trends in co-operation on scientific articles, 1985-2007⁴³ - Innovative SMEs collaborating with others as % of SMEs⁴⁴ 	<ul style="list-style-type: none"> - Measuring Innovation. A New Perspective⁴⁵ - The Measurement of Scientific and Technological Activities Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data⁴⁶ - Innovation Union Scoreboard 2013⁴⁷
<p>Entrepreneurial activity</p>	<ul style="list-style-type: none"> - Entrepreneurial Perceptions, Intentions and Societal Attitudes in 54 Economies, 2011⁴⁸ - Self-employed, by place of birth, 15-to-64-year-olds, 2008⁴⁹ - Employer enterprise birth rate (2006) and death rate (2005) in the manufacturing sector <i>As a percentage of the population of active enterprises with at least one employee</i>⁵⁰ 	<ul style="list-style-type: none"> - Global Entrepreneurship Monitor: 2011 Global Report⁵¹ - Maine Innovation Index. January 2012. A Report for the Maine Department of Economic and Community Development⁵² - Nordic Innovation Monitor 2009⁵³

³⁴ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012

³⁵ Economist Intelligence Unit, *A new ranking of the world's most innovative countries. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009

³⁶ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 130

³⁷ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 127

³⁸ K Schwab (Ed), *The Global Competitiveness Report 2011-2012*, World Economic Forum, 2011, 48

³⁹ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011

⁴⁰ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012

⁴¹ European Commission, *Regional Innovation Scoreboard 2012*, 2012

⁴² OECD, *Measuring Innovation. A New Perspective*, 2010, 27

⁴³ OECD, *Measuring Innovation. A New Perspective*, 2010, 31

⁴⁴ European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013, 9

⁴⁵ OECD, *Measuring Innovation. A New Perspective*, 2010

⁴⁶ OECD/ Statistical Office of the European Communities, *The Measurement of Scientific and Technological Activities Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD Publishing, 2005

⁴⁷ European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013

⁴⁸ D J Kelley, S Singer, M Herrington, *Global Entrepreneurship Monitor: 2011 Global Report*, 2012, 7

⁴⁹ OECD, *Measuring Innovation. A New Perspective*, 2010, 54

⁵⁰ OECD, *Measuring Innovation. A New Perspective*, 2010, 65

⁵¹ D J Kelley, S Singer, M Herrington, *Global Entrepreneurship Monitor: 2011 Global Report*, 2012

⁵² Camoin Associates, Inc., *Maine Innovation Index. January 2012. A Report for the Maine Department of Economic and Community Development*, Maine Department of Economic and Community Development, 2012

Innovation Culture	<ul style="list-style-type: none"> - Popular attitudes towards scientific advancements⁵⁴ - Citizens' interest and attitude to research and technology⁵⁵ - Percentage of respondents who are in favour of continuing the development of a new technology even if it poses a risk that is not fully understood⁵⁶ 	<ul style="list-style-type: none"> - Measuring Public Innovation in the Nordic Countries⁵⁷ - Measuring Wider Framework Conditions for successful innovation. A system's review of UK and international innovation data⁵⁸ - A new ranking of the world's most innovative countries. An Economist Intelligence Unit report⁵⁹
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Financial Resources

Most of the systems we analysed contain variables like "Business enterprise expenditure on R&D"⁶⁰, "Direct and indirect government funding of business R&D and tax incentives for R&D"⁶¹ or "Non-R&D innovation expenditures"⁶². All these variables describe transfers of financial resources – be it within an organisation or between different actors. We define financial resources as direct monetary payments (e.g., R&D spending) as well as indirect incentives that have a direct impact on the availability of monetary resources (e.g., tax incentives). The basic assumption that can be identified within the respective measurement systems regarding the transfer of financial resources is: the more financial resources are put into the innovation process, the more innovation "output" can or will be produced.

Knowledge

Independent from the measurement focus, be it well-being or innovation potential, most measurement systems we analysed contain variables like "Graduation rates at doctorate level"⁶³, "Science and engineering graduates at doctorate level"⁶⁴ or "the proportion of externally sourced ideas"^{65,66}. This category contains variables that describe (primary, secondary, tertiary or on the job)

⁵³ Norden, Nordic Council of Ministers, *Nordic Innovation Monitor 2009*, FORA, 2009

⁵⁴ Economist Intelligence Unit, *A new ranking of the world's most innovative countries: Notes on methodology. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009, 7

⁵⁵ Deutsches Institut für Wirtschaftsforschung (DIW Berlin), *Politikberatung kompakt. Innovationsindikator Deutschland 2009*, 2009, 21

⁵⁶ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby (NESTA), *Measuring Wider Framework Conditions for successful innovation. A system's review of UK and international innovation data*, 2011, 28

⁵⁷ C Bloch, *Measuring Public Innovation in the Nordic Countries*, 2010

⁵⁸ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby (NESTA), *Measuring Wider Framework Conditions for successful innovation. A system's review of UK and international innovation data*, London, 2011

⁵⁹ Economist Intelligence Unit, *A new ranking of the world's most innovative countries. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009

⁶⁰ OECD, *Measuring Innovation. A New Perspective*, 2010, 76

⁶¹ OECD, *Measuring Innovation. A New Perspective*, 2010, 77

⁶² European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013, 9

⁶³ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 68

⁶⁴ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 69

⁶⁵ S Roper, C Hales, J R. Bryson, J Love, *Measuring sectoral innovation capability in nine areas if the UK economy. Report for NESTA Innovation Index project*, 2009, 18

⁶⁶ It has to be noted that the variables also indicate which kind of knowledge is culturally considered important. For the analysed measurement systems this is mostly formalised knowledge obtained via the education system with a focus on technical or scientific knowledge.

education or specific skills, i.e., intangible knowledge that is bound to an actor or number of actors with intangible knowledge.

According to the measurement systems containing these variables, knowledge is considered to be a resource. Eventually this leads to the same connection that was described above: the more accessible the knowledge, the more innovation that will or can be produced.

Intellectual Property Rights and Patents

The vast majority of measurement systems that focus on innovation, competitiveness or entrepreneurship contain variables like “University and PRO patents”⁶⁷ (public research organisations)⁶⁸, “Co-patenting activities”⁶⁹ or “Triadic patents per million population”⁷⁰ (triadic patents are patents that are granted for the same invention by the European, Japanese and US patent office)⁷¹. These variables on the one hand cover institutional arrangements that allow the protection of inventions or ideas in a wider sense (like trademarks as the institutionally guaranteed protection of a name) and on the other hand they describe a measurable output of the innovation process.

While knowledge and money are considered to be resources that can be put *into* the innovation process, patents and other forms of intellectual property are seen as outputs of the innovation process. However, this category can also be a part of the wider framework conditions, when the question is stressed, whether national law allows the protection of inventions, ideas and intellectual property. This shift from resource to framework condition lapses the logic of “the more the better” in favour of a rather binary differentiation between “knowledge can be protected” / “knowledge can’t be protected”. The importance of intellectual property rights lies in the guarantee that the innovator can have a monopoly on the earnings that derive from the innovation.

Information and Communication Technology (ICT)

Numerous measurement systems contain variables like “Business and household access to broadband. Percentage of businesses with one or more employees and percentage of all households”⁷², “Range of broadband prices for a monthly subscription. USD PPP”⁷³, “Internet users”⁷⁴. The use of these variables within measurement systems implies that easy access to the internet, especially via broadband connections, and the ability to use a computer or smartphone are factors that increase the local, regional or national innovation potential. Therefore this category contains variables that are focused on the digitalisation and processing of ideas (information technology) and their distribution (communication technology).

⁶⁷ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012, 100

⁶⁸ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012, 97

⁶⁹ S Dutta (Insead) (eds.), *The Global Innovation Index 2012. Stronger Innovation Linkages for Global Growth*, 2012, 100

⁷⁰ Economist Intelligence Unit, *A new ranking of the world’s most innovative countries: Notes on methodology. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009, 4

⁷¹ Economist Intelligence Unit, *A new ranking of the world’s most innovative countries: Notes on methodology. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009, 3

⁷² OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 130

⁷³ OECD, *OECD Science, Technology and Industry Scoreboard 2011*, 2011, 127

⁷⁴ K Schwab (Ed), *The Global Competitiveness Report 2011-2012*, World Economic Forum, 2011, 48

Information technology (IT) can be interpreted as a branch of technology that allows access to existing data and facilitates the creation of new knowledge, e.g., by using data processing power to work with large amounts of data. The latter aspect, the communication technology (CT), is a crucial factor for another category that has an influence on the innovation process: linkages and thus networks and collaborations between different actors (be it natural or legal persons). The importance of online networks for social innovations is discussed in detail in work package 8 of the TEPSIE-project.⁷⁵ It is widely understood that ICT enables easy circulation of ideas and resources between different actors without delay and without the requirement of geographical proximity.

Collaboration and Networks

Many measurement systems take into account the systemic and collaborative character of innovation, as emphasised in the fourth generation of innovation measurement, by including variables like “Firms with national/international collaboration on innovation, 2004-06, as a percentage of innovative firms”⁷⁶, “Trends in co-operation on scientific articles, 1985-2007”⁷⁷, “Innovative SMEs collaborating with others as % of SMEs”⁷⁸.

The theoretical assumption within these systems is that collaborations, networks and linkages are a way of increasing access to potential resources. The OECD formulates this assumption the following way: “The innovative activities of a firm partly depend on the variety and structure of its links to sources of information, knowledge, technologies, practices and human and financial resources. Each linkage connects the innovating firm to other actors in the innovation system: government laboratories, universities, policy departments, regulators, competitors, suppliers and customers.”⁷⁹

We expect this category to correlate with the ICT category. The availability of communication technology is a requirement for remote collaboration and the circulation of ideas.

Entrepreneurial activity

Another cluster contains variables like “Entrepreneurial Perceptions, Intentions and Societal Attitudes in 54 Economies, 2011”⁸⁰, “Self-employed, by place of birth, 15-to-64-year-olds, 2008”⁸¹, “Employer enterprise birth rate (2006) and death rate (2005) in the manufacturing sector as a percentage of the population of active enterprises with at least one employee”⁸².

All these variables suggest a kind of entrepreneurial activity. Entrepreneurs are considered to be “[...] those that see opportunities in their area and believe they have the capabilities to start businesses. Other beliefs include the extent to which individuals would not be deterred by fear of failure in pursuing opportunities.”⁸³

Generally, the incorporation of this category into measurement systems reflects the assumption that the diffusion of inventions requires entrepreneurs. It is likely that this assumption is influenced by the idea that entrepreneurs are motivated talents who dare to break with established

⁷⁵ <http://tepsie.eu/index.php/wp-8>

⁷⁶ OECD, *Measuring Innovation. A New Perspective*, 2010, 27

⁷⁷ OECD, *Measuring Innovation. A New Perspective*, 2010, 31

⁷⁸ European Commission, *Innovation Union Scoreboard 2013*, H Hollanders, N Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), 2013, 9

⁷⁹ OECD/ Statistical Office of the European Communities, *The Measurement of Scientific and Technological Activities Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data*, 3rd Edition, OECD Publishing, 2005, 20

⁸⁰ D J Kelley, S Singer, M Herrington, *Global Entrepreneurship Monitor: 2011 Global Report*, 2012, 7

⁸¹ OECD, *Measuring Innovation. A New Perspective*, 2010, 54

⁸² OECD, *Measuring Innovation. A New Perspective*, 2010, 65

⁸³ D J Kelley, S Singer, M Herrington, *Global Entrepreneurship Monitor: 2011 Global Report*, 2012, 5

conventions eventually fostering innovation processes. This can be illustrated by a survey in which Italian and Argentinian students attributed skills to entrepreneurs: “[...] they are dynamic, able to tolerate risks, have good entrepreneurial vision [...]”⁸⁴. For the USA, Forlani and Mullins summarise the image the following way: “The image of entrepreneurs as bold, forward-thinking risk takers is a part of American business folklore”⁸⁵.

Innovation Culture

Many measurement systems contained variables like “Popular attitudes towards scientific advancements”⁸⁶, “Citizens’ interest and attitude to research and technology”⁸⁷ or “Percentage of respondents who are in favour of continuing the development of a new technology even if it poses a risk that is not fully understood”⁸⁸. We grouped these variables that express people’s attitude towards (scientific or technological) advancements under the category “Innovation Culture”. The theoretical assumption behind these variables is self-evident: The innovation potential is higher if the people within an organisation and/or a society accept or even welcome innovations and advancements in general.

2.4. Critique of existing innovation metrics

After having screened what can be adapted from existing measurement approaches, we need to know how they have been critiqued. This will help us avoid mistakes when looking for possible social innovation indicators. Our discussion focuses on the two best established indicators for innovation output and input measurement – patents and R&D data.

Griliches explains the popularity of using patents as a measure of innovation activity: “They are available; they are by definition related to inventiveness, and they are based on what appears to be an objective and only slowly changing standard.”⁸⁹ But, there are numerous challenges when working with patent data:

1. The most obvious limitation is that patents are not capable of covering innovations that are simply not patentable.^{90,91}
2. Reliability of international comparisons is weakened by the fact that patent granting offices have different quality standards.⁹²

⁸⁴ S Postigio, D Iacobucci, M F Tamborini, *Undergraduate students as a source of potential entrepreneurs: a comparative study between Italia and Argentina*, 241-262, in: A Fayolle, H Klandt (ed.), *International Entrepreneurship Education, Issues and Newness*, 2006, 230

⁸⁵ D Forlani, J W Mullins, ‘PERCEIVED RISKS AND CHOICES IN ENTREPRENEURS’ NEW VENTURE DECISIONS’, *Journal of Business Venturing* 15, Elsevier Science, 2000, 306

⁸⁶ Economist Intelligence Unit, *A new ranking of the world’s most innovative countries: Notes on methodology. An Economist Intelligence Unit report*, Sponsored by Cisco, 2009, 7

⁸⁷ Deutsches Institut für Wirtschaftsforschung (DIW Berlin), *Politikberatung kompakt, Innovationsindikator Deutschland 2009*, 2009, 21

⁸⁸ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby (NESTA), *Measuring Wider Framework Conditions for successful innovation. A system’s review of UK and international innovation data*, 2011, 28

⁸⁹ Z Griliches, ‘Patent Statistics as Economic Indicators: A Survey’, *Journal of Economic Literature Vol. XXVIII*, 1990, 1661

⁹⁰ A Kleinknecht, K van Montfort, E Brouwer, ‘The non-trivial choice between innovation indicators’, *Econ. Innov. New Techn.* 11(2), 2002, 112

⁹¹ D Archibugi, G Sirilli, *The Direct Measurement of Technological Innovation in Business*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 39

⁹² Z Griliches, ‘Patent Statistics as Economic Indicators: A Survey’, *Journal of Economic Literature Vol. XXVIII*, 1990, 1663

3. Numerous patents are registered yet never translated into a process or product that is offered on the market. This can be the result of efforts to prevent a competitor later making money out of a specific idea.⁹³ It is questionable whether the output or value of patents that have huge success on the market can be compared to patents that have only been submitted in the context of a “war of patents”.
4. But even those patents that have been translated into products are of differing quality. Most of the patents represent minor (technological) changes and are therefore of minor economic or technical importance, only few patents prove to be extremely valuable.^{94,95,96}
5. The propensity to apply for patents can be influenced by the costs of imitation that differ across the industrial sectors. Therefore the lower the imitation costs, for example in the pharmaceutical industry, the higher the incentive to patent innovations.⁹⁷

The last aspect provides an excellent link to Mazzucato’s discussion on flaws in the connection between the number of patents and innovation with a particular emphasis on the adverse effects on policy and vice versa. For example, if policy makers think that more patents equal more innovation and represent an incentive to invest in R&D. The logical consequence would be that anything to support more patents is a good thing. But actually patents in themselves do not incentivise innovation, nor are they reliable evidence that innovation has occurred, because many patents have little value. In her discussion of the ‘entrepreneurial state’ Mazzucato argues that a rise in the number of patents can have different causes: “This rise in patents does not however reflect a rise in innovation, but a change in patent laws and a rise in the strategic reasons why patents are being used. This has caused their importance to be greatly hyped up—mythologised.”⁹⁸

While patents are widely used as a measure of innovation outputs, R&D data is widely used to measure the input side of innovation. A reason for the popularity of R&D data is that it has been collected since the 1950s which allows for longitudinal as well as for cross-sector analyses. The ability to conduct international analysis was significantly increased through the efforts of the OECD’s secretariat that, jointly with Eurostat, collects and compiles the according data.^{99,100}

However, there are also risks associated with using R&D data as a measure of innovation inputs:

1. If the indicator is R&D focused, it tends to underestimate innovation activities in less R&D intensive sectors like services.^{101,102,103,104}

⁹³ A Kleinknecht, K van Montfort, E Brouwer, ‘The non-trivial choice between innovation indicators’, *Econ. Innov. New Techn.* 11(2), 2002, 112

⁹⁴ Z Griliches, ‘Patent Statistics as Economic Indicators: A Survey’, *Journal of Economic Literature* Vol. XXVIII, 1990, 1666

⁹⁵ T Tura, V Harmaakorpi, S Pekkola, ‘Breaking inside the black box: towards a dynamic evaluation framework for regional innovative capability’, *Science and Public Policy*, 35(10), 2008, 737

⁹⁶ D Archibugi, G Sirilli, *The Direct Measurement of Technological Innovation in Business*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 39

⁹⁷ A Kleinknecht, K van Montfort, E Brouwer, ‘The non-trivial choice between innovation indicators’, *Econ. Innov. New Techn.* 11(2), 2002, 112

⁹⁸ M Mazzucato, *The Entrepreneurial State*, 2013, DEMOS, 43.

⁹⁹ A Kleinknecht, K van Montfort, E Brouwer, ‘The non-trivial choice between innovation indicators’, *Econ. Innov. New Techn.* 11(2), 2002, 110

¹⁰⁰ OECD, *Research and Development Statistics*, retrieved 27-05-2013, <<http://www.oecd.org/innovation/inno/researchanddevelopmentstatisticsrds.htm>>

¹⁰¹ T Tura, V Harmaakorpi, S Pekkola, ‘Breaking inside the black box: towards a dynamic evaluation framework for regional innovative capability’, *Science and Public Policy*, 35(10), 2008, 737

¹⁰² A Kleinknecht, K van Montfort, E Brouwer, ‘The non-trivial choice between innovation indicators’, *Econ. Innov. New Techn.* 11(2), 2002, 111

2. When such an indicator is used in a measurement system it has to be made clear that the R&D input and the outcome of the innovation process are not necessarily positively correlated.¹⁰⁵ A reason is that a dollar spent on R&D varies in its level of efficiency depending on the specific organisation. Kleinknecht et al. even claim that “In principle, R&D says nothing about the output side of the innovation process [...]”.¹⁰⁶
3. Most standard R&D surveys are not suitable to cover informal and small scale R&D activities in firms, therefore underestimating their potential.^{107,108,109}
4. Small countries tend to publish their R&D at a highly aggregated level to avoid the attribution of the figures to specific firms. Yet, some meaningful research questions require less aggregated data, e. g., data that is only aggregated at the sector and not the national level.¹¹⁰
5. In contrast to patents, the organisation that is surveyed has to decide what is reported as R&D data. Therefore a shared understanding of the term R&D is needed to gain comparable data. However, a test of a draft version of the Community Innovation Survey showed that firms tend not to read the rather complicated definition of R&D that was drawn from the Frascati manual.¹¹¹
6. Regional comparison of R&D data is limited because a holding structure may report all R&D efforts at the head quarter while the actual efforts are conducted in branches that are scattered across the country or even across different countries.¹¹²

Given these critiques, what can we learn about the adaptability of these two well-established indicators for the measurement of social innovations? Both indicators focus on technological innovations, (1) as patents can only be granted to technical / technological inventions, and (2) firms that are not related to the technological / manufacturing sector, as service providers, normally do not have an R&D division. Given this fact and the assumption that social innovation happens across all sectors, including the informal sector - as well as the fact that many social innovations are simply not patentable - we have to summarise that R&D (inputs) and patent (outputs) cannot be the indicator of choice for a social innovation measurement system.

The necessity for measuring innovation beyond these established indicators can be illustrated by citing Archibugi and Sirilli:

“This lead to the paradox that our understanding of innovation is becoming deeper and deeper in the part of the economy - the manufacturing - which is becoming

¹⁰³ D Archibugi, G Sirilli, *The Direct Measurement of Technological Innovation in Business*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 39

¹⁰⁴ F Djellal and F Gallouj, *Innovation Surveys for Service Industries: a Review*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 70

¹⁰⁵ T Tura, V Harmaakorpi, S Pekkola, 'Breaking inside the black box: towards a dynamic evaluation framework for regional innovative capability', *Science and Public Policy*, 35(10), 2008, 737

¹⁰⁶ A Kleinknecht, K van Montfort, E Brouwer, 'The non-trivial choice between innovation indicators', *Econ. Innov. New Techn.* 11(2), 2002, 110

¹⁰⁷ A Kleinknecht, K van Montfort, E Brouwer, 'The non-trivial choice between innovation indicators', *Econ. Innov. New Techn.* 11(2), 2002, 111

¹⁰⁸ D Archibugi, G Sirilli, *The Direct Measurement of Technological Innovation in Business*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 39

¹⁰⁹ F Djellal and F Gallouj, *Innovation Surveys for Service Industries: a Review*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 70

¹¹⁰ A Kleinknecht, K van Montfort, E Brouwer, 'The non-trivial choice between innovation indicators', *Econ. Innov. New Techn.* 11(2), 2002, 111

¹¹¹ A Kleinknecht, K van Montfort, E Brouwer, 'The non-trivial choice between innovation indicators', *Econ. Innov. New Techn.* 11(2), 2002, 111

¹¹² A Kleinknecht, K van Montfort, E Brouwer, 'The non-trivial choice between innovation indicators', *Econ. Innov. New Techn.* 11(2), 2002, 112

smaller and smaller. And vice versa, it is rather superficial for the part of the economy which [is] becoming greater - the services.”¹¹³

However, besides these kinds of critique on specific innovation metrics there are also broader and more general statistical requirements that have to be taken into account when creating a measurement system.

Schibany and Streicher offer a short but clear discussion of statistical issues for the European Innovation Scoreboard (EIS). Although this discussion is focused on the EIS, the arguments can be applied to nearly every quantitative indicator system.¹¹⁴

1. Selection of Indicators: To avoid an arbitrary or eclectic selection of indicators, the basis for selection should not be a statistical correlation but a conceptual analysis.
2. Short-term versus long-term: When trying to identify trends one has to be aware of the fact that the temporal behaviour of different indicators can be very heterogeneous. Rather ‘structural’ indicators like education or the industrial infrastructure change very slowly. Therefore short-term changes are likely to be caused due to changed samples or redefinitions. Indicators like ICT can and are likely to reach a saturation level. Thus, interpretation of these indicators requires knowledge of the country-specific saturation level and diffusion-curve.
3. Multicollinearity: Some indicators might measure the same or a similar innovation determinant because they are highly correlated. This eventually leads to an increased weight of the specific determinant in turn creating a benefit for countries that are strong in the specific field when conducting a cross-country comparison.
4. The ‘more is better’ assumption: Not every indicator can be interpreted such that a higher figure represents a better state. For example, the EIS assumes that the higher the “share of enterprises receiving public funding for innovation” the better is a country’s ranking for the variable, implying that a share of 100% would be the ideal state. However, this can be doubted and would not be compatible with efficiency criteria.
5. Outliers: Especially small countries tend to have outliers with regard to structural variables. These Outliers can have severe impacts on a country’s overall ranking in a cross-country comparison.

These issues will be addressed with regard to our framework in the following chapters.

¹¹³ D Archibugi, G Sirilli, *The Direct Measurement of Technological Innovation in Business*, in: B Thuriaux, E Arnold, C Couchot, *Innovation and enterprise creation: Statistics and indicators*, 2000, 44

¹¹⁴ A Schibany, G Streicher, ‘The European Innovation Scoreboard: drowning by numbers?’, *Science and Public Policy*, 35(10), 2008, 720f.

3. Requirements and adjustment for social innovation metrics

3.1. Specifying TEPSIE's social innovation definition for a metrics approach

When trying to use these metrics in the context of social innovation, we have to make adaptations to existing indicators which are necessary with respect to our understanding of *social* innovation. There is a huge body of diverse definitions: social innovation is a highly contested concept. In their recent overview paper Dominik Rüede and Kathrin Lurtz distinguish between seven different concepts of social innovation.¹¹⁵ The main focus of these concepts are (1) human well-being, (2) social practices, (3) urban development, (4) human resource management (5) social success factors of technological innovations, (6) social work professionals and (7) digital connectedness and innovation potential. Each of these concepts is distinct.

This overview underlines the complexity of social innovation as a research field. The definition of social innovation by the TEPSIE project tries not to narrow down the concept. It is as follows: "Social innovations are new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and/or better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act."¹¹⁶

This definition stresses several points:

1. *Newness*: Social innovation is about something new. However, this characteristic suits every kind of innovation, independent from whether it is a social or a technological innovation or whether it is a combination of both.
2. *Social need*: An innovation has to meet a social need. However, this is a necessary and not a sufficient condition.
3. *Improvement of society*: Social innovations lead to improvements in society in terms of capabilities, relationships, assets or resources. Thus, social innovations are good for society. In other words they "enhance society's capacity to act".
4. *Sector neutrality*: The definition is not bound to a specific sector but assumes that social innovation can happen everywhere in society, be it the private or social economy, the public sector or the informal economy.
5. *Level of emergence*: The definition is not focused on a specific level. It implies that social innovations can be introduced by individuals, (informal) groups, single organisations or networks of organisations.

As this definition and its criteria are at least partially focussed on single innovation entities (organisations, products or services), we need to make some adaptations in our context of macro level assessment, where we do not measure the impact or spread of specific social innovations. Instead we develop a model that assesses the social innovation potential as well as the outputs and outcomes of regions, nation states or broader geographical networks. We are especially interested in understanding what is social in social innovation. A clear understanding of the 'social' in social

¹¹⁵ D Rueede, K Lurtz, *Mapping the Various Meanings of Social Innovation: Towards a Differentiated Understanding of an Emerging Concept*, EBS Business School Research Paper No. 12-03, July 19, 2012, retrieved 27-05-2013, <<http://ssrn.com/abstract=2091039>> or <<http://dx.doi.org/10.2139/ssrn.2091039>>

¹¹⁶ J, Caulier-Grice, A Davies, R Patrick, W Norman, *Defining Social Innovation. A deliverable of the project: The theoretical, empirical and policy foundations for building social innovation in Europe (TEPSIE)*, European Commission 7th Framework Programme, European Commission, DG Research, Brussels, 2012, 18

innovation is necessary in order to adopt and adapt the appropriate economic and technological innovation metrics. In short, we are interested in three main topics: (1) What is meant by the process of social innovation? (2) What kind of social changes qualify as improvements to society? (3) How can social needs be distinguished from ordinary needs?

The process of social innovation:

A common understanding is pointing out steps in the evolution of social innovation, starting with inputs such as ideas, followed by an implementation and experimentation phase that finally leads to scaling and potentially to systemic change. The most prominent process has been introduced by researchers of the Young Foundation. They distinguish between six phases: (1) prompts, (2) proposals, (3) prototypes, (4) sustaining, (5) scaling, and (6) systemic change.¹¹⁷ This understanding has been criticised in some ways. One major critique is that not every innovation leads to systemic change or goes to scale at all, as there are a lot of innovations that are addressing social needs which affect only a small group of people. An adapted version can be found in a more recent publication of Neil Reeder and Carmel O’Sullivan.¹¹⁸ They point out four different phases which are (1) ideas, (2) prototyping and piloting, (3) implementation, and (4) scaling. Not only is systemic change removed, it is also interesting that the social needs as prompts for social innovation have been somehow replaced by ideas. The problem with this change in terminology is, that the operationalization of the social has been hidden. As a result one can hardly differentiate between ideas that are social ideas and ideas that are not social. Essentially, both approaches are not too far at a distance from each other. In any case, the main contribution of such a process understanding is that it guides us through different stages of social innovation. This differentiation is useful for a refined view on different enablers that come into play in each phase. However, it has been remarked earlier that innovation in reality is rather complex and interrelated process – even chaotic at times. Therefore separating distinct phases is valuable from an analytic point of view, but should be dealt with cautiously in view of the just mentioned characteristics of innovation.

Qualifying improvements:

Our definition states that social innovations are about improving society, or enhancing societies’ capacity to act. But how can we determine what “better” means and how might we measure this? Interesting in this respect are four qualifiers for improvements that are sometimes mentioned. The new solution should be more efficient, more effective, more sustainable and/or more just than prevailing solutions.¹¹⁹ Such a judgement can only be made on a level of analysis of innovation objects or organisations. What is also important here is the specification of a solution that needs to be social in its means and its ends.¹²⁰ Thus, it is not only about the outputs and outcomes of a social innovation, but also about the process and the means it uses. In other words: When acting towards a social end, negative externalities themselves should be minimized. For a holistic assessment of a social innovation negative and positive effects need to be taken into consideration. For our purpose here, the qualification of improvements is important in at least two respects. First, on the level of outputs and outcomes we measure changes and thus positive or negative results (positive results indicate efficiency and effectiveness). The sustainability of a solution can be evaluated by observing

¹¹⁷ R Murray, J Caulier-Grice, G Mulgan, *The Open Book of Social Innovation*, 2010, retrieved 27-05-2013, <<http://ebookbrowse.com/murray-caulier-grice-mulgan-2010-the-book-of-social-innovation-pdf-d382057825>>

¹¹⁸ N Reeder, C O’Sullivan, S Tucker, P Ramsden, G Mulgan, *Strengthening Social Innovation in Europe – Journey to effective assessment and metrics*, 2012, retrieved 27-05-2013, <ec.europa.eu/enterprise/policies/innovation/files/social-innovation/strengthening-social-innovation_en.pdf>

¹¹⁹ JA Phills Jr., K Deiglmeier, DT Miller, ‘Rediscovering Social Innovation’, in: *Stanford Social Innovation Review (Fall)*, 2008, 34-43

¹²⁰ See for example, BEPA – Bureau of European Advisers, *Empowering people, driving change. Social Innovation in the European Union*, European Communities, 2011

this over a longer period of time. Second, when including networks and collaborations as enabling conditions, this means also a test of legitimacy and fairness, although it might still be a particularistic one. The inclusion of a larger number of parties means in any case that they will probably give feedback along the process and try to improve the solution.

Qualifying social needs:

The definition of social innovation centres on the idea that social needs are addressed. There are two reasons why this is a central requirement. First, the notion of social needs qualifies the specific innovations we want to analyse, which differ from, e. g., interpreting “social” as part of all human interactions. A too broad understanding of social innovation would for instance refer to an understanding of social innovation as an accompanying process of technical innovations; e. g., in the sense that communication technology is changing the way we interact or other cases of social change and conduct. But in many of these cases social innovation is something like a by-product and not an original and intentional process. Second, when it comes to distinguishing social innovation from other types of innovation that are addressing other needs which are not social or perhaps less social (in terms of good for society), we need to detect those needs which we can legitimately declare as social. What is more, it seems to be quite obvious that some social needs are more urgent than others. But how can we qualify social needs?

Three ways seem to be possible here. First, one could normatively refer to a hierarchy of social needs derived from natural law or religion. In modern societies such an approach would not be appropriate. Second, needs could be naturalised in a psychological way. For this argumentation, we could refer to a psychological hierarchy of common needs that have to be satisfied in a specific order; first of all, the needs for food, shelter and security.¹²¹ If these needs are satisfied then we long for more abstract needs like intellectual stimulation, love, belonging or esteem. Third, needs can be perceived as socially constructed and therefore historical. As different kinds of needs are arranged in a different order in each society and at different points in time, we need to consider their context at a certain place and time.

The qualifying of social needs remains a weakness of any approach to defining and measuring social innovation. We deal with this problem in the following way:

- *Need-based-approach:* The satisfaction of social needs is the decisive criterion for social innovation. This aspect is crucial for the indicator suite due to its composition: We argue that there is a set of needs that can be identified across all countries like health, housing and so on. But this shared set of needs would not be able to comprehensively capture the needs that are specific to a country. Therefore for each country in which the indicator suite should be incorporated, an assessment of national needs must be conducted.
- *Criterion for legitimacy:* A social need must have been recognized by society as a problem that should be tackled. The societal process in which a need is defined as a need is the same process in which the need becomes charged with legitimacy. Otherwise the need would disappear after a short period of time.
- *Criterion for urgency or priority:* Every social need has a measurable urgency (aspect of timeliness of required responses) and priority (aspect of weight of the problem as compared with others), and therefore its addressing and satisfaction has a different importance for the state of well-being of a society. The urgency and priority can be expressed by the amount and intensity of legitimate claims that are made with regard to a specific issue. With this criterion, both the necessity and importance of the identification of social needs and the selection of adequate solutions is addressed.

¹²¹ A candidate for this could be Maslow’s hierarchy of needs. This also shows that such hierarchies are highly contested and normatively charged constructs.

The following box summarizes the most important features of social innovation for the development of our measurement approach.

Table 3-1 – Social Innovation Criteria and Measurement

Social Innovation Criterion	Dealing with the criterion in a social innovation measurement approach
Newness	As we do not measure single cases of social innovation, we are not dealing with the criterion of newness in our approach. We are interested in innovation potential and the existence and nature of social needs at the national level (the ‘social need situation’) in a very generic way. Changes here are a sign of new products, services, processes etc.
Improvement	Changes in the fulfilment of social needs (resp. outputs and outcomes) are measured in our approach. Thus, we can detect improvements of societies’ social need situation as well as their capacity to act. We believe that the notion that social innovations enhance societies’ capacity to act means that the outcomes of social innovations themselves are enablers of subsequent social innovations.
Sector Neutrality	Our approach is not focussed on one single sector. Given that we focus on enabling conditions for social innovation and changes in the landscape of social needs, we are not interested per se in social innovation objects or their ,carriers’ or actors.
Level of Emergence	We measure innovation potential and enablers on different levels. We are interested in openness and trust of individuals, as well as innovation activities of organizations combined with networks and collaborations that foster social innovation.
Process of Social Innovation	Despite the accusation that the procedural understanding of social innovation is not adequate for the often very chaotic circumstances in which social innovations emerge, we adopted a process circle of social innovation that is central to our model. Arranging this with enabling conditions, entrepreneurial activity and the assumption of feedback loops we take into account that the emergence of social innovations rarely follow a linear process.
(Qualifying) Social Needs	We are directly dealing with societal needs and their potential embodiment in articulated demands and the outputs and outcomes that are changing within a society.
Qualifying improvements	Through monitoring changes in social needs as well as social innovation enablers in a longitudinal way, improvements of society’s capacity to act can be measured. Approaches that done define social innovation by means of ‘needs’ would have to assess an alternative variable. However in both cases, as mentioned above, this aspect is more vital to the evaluation of social innovations and less so to our macro level approach to measure social innovation potential.
Legitimacy of Social Needs	Analysing the collaborative dimension of the social innovation process (interactions in networks and broader “innovation systems”) combined with the availability of resource flows from various sources can provide measures of legitimacy or trust in the social innovation process, which eventually affect its sustainability. Resource flows in particular <i>diversified ones</i> , provide a relatively good indicator for legitimacy of social needs. Where a social need lacks legitimacy, we

	are unlikely to see <i>diversified</i> resource streams for a solution.
Urgency of Social Needs	The urgency is expressed by the amount and intensity of legitimate claims that are being made with regard to a specific issue. We are capturing this by analysing the intensity of discourses regarding specific issues.

3.2. Suitability and adjustability of the identified categories

With the above specifications of our definition of social innovation in mind we have to reconsider the assumptions and theoretical (hypothetical) links that have been distilled from the most common innovation systems we analysed. In this section we discuss the necessary adaptations for our measurement approach.

Financial Resources

Financial support is often seen as the most relevant resource to foster the potential for innovation. However, it must be discussed to which degree this is true for social innovations due to two reasons. First, often enough social innovations cannot be assessed as products or services. Also processes themselves or behavioural changes are social innovations in their own right and for these kinds of social innovations financial resources are often of lower relevance than other resources like knowledge. Second, it has been stated that social innovations are more effective and/or efficient than alternative solutions. Thus, they are more likely to have an advantage in terms of financial resources, although they may have required a significant amount of investment up front. This is true for selecting and scaling social innovations. What is more, in terms of inventing and developing solutions, we have to reconsider that the prompts for social innovations and quite often the first prototypes of solutions come from informal activities or self-help groups, which do not need many resources. This is quite contrary to the situation in technological areas and R&D intensive firms, where innovations require huge financial investments.

Nevertheless, financial resources remain important for developing and scaling social innovations. While internal resources (necessary for organisational operations), as part of the social innovators' *entrepreneurial activity*, tend to be spent on costs of operation rather than on an R&D division, external resources, as part of the *resources framework*, are still an important dimension, especially for the diffusion process. However, social innovations can utilize external intangible resources that are not covered by private and public sector focused innovation measurement systems. This includes voluntary work or the provision of office space free of charge. In our indicator system we have to take into account these intangible resources, too.

Knowledge

Knowledge is, independent from the specific type of innovation, a crucial factor for the actual innovation potential. But the type of knowledge that is necessary must be differentiated, depending on the type of innovation. In this context it is helpful to differentiate between explicit and tacit knowledge. Explicit knowledge refers to specialized and / or formalised knowledge that is based on facts and figures.¹²² In our context it describes the state of knowledge about a specific problem or need, for instance the high degree of youth unemployment in certain European countries or regions, its distribution and maybe some of its causes. Explicit knowledge helps to define and capture a problem and (in the optimal case) trace its causes. Tacit knowledge on the contrary is needed to put solutions into action that address the need and serve it successfully. Tacit

¹²² M Polanyi, *The Tacit Dimension*, University of Chicago Press, Chicago, 1966

knowledge is characterized by the fact that it cannot be merely explained. To quote Polanyi: “[...] we can know more than we can tell.”¹²³ In the provided example it is much more about having a feel for the situation, bringing the right people together and initiating the stimulation of regional development through events, the connection of key players, the attracting of investment and so on. It might also be about a viable work integration concept that responds to local needs or even the introduction of start-up assistance for unemployed young people that can yield higher positive external effects than work integration.

Given the fact that social innovations are often less dependent on technical and formalised skills, we argue that knowledge in the form of need awareness and creativity for providing new ideas to meet challenges is more important, which means that tacit knowledge is more important than explicit knowledge when it comes to social innovation. So far, the existing indicators that are used to measure the explicit dimension of knowledge, e.g., the amount of PhDs within a specific population, are not suitable to cover the tacit dimension. Due to this reason we analysed measurement systems that go beyond established innovation systems. The tacit dimension, that is relevant for social innovation, can benefit from variables that cover a normative dimension, like individual perception of happiness or health of the respondent. Such estimations - which can be found in measurement systems like the OECD Better Life Index or the Civil Society Index - in turn can be used to get an understanding of social needs.

This tacit perception of knowledge is related to the innovator and therefore to the *entrepreneurial activity* as well as to the *outcome side* of our framework, as a decrease in the intensity or amount of social needs can be traced back to social innovations. *Societal climate* in particular covers a fair amount of tacit knowledge in terms of social needs awareness. And this kind of external tacit knowledge can be relevant for the social innovator. Thus, tacit knowledge is vital to the emergence of ideas and the “birth” of a social innovation concept. Simultaneously we should be cautious in not underestimating the value of explicit knowledge, which comes into play in the scaling and diffusion phase in particular. This is especially true if pro bono attorneys or trained consultants offer their explicit knowledge, e. g., knowledge in accounting to render a grass-roots social innovation activity more professional. This kind of knowledge can be attributed to the *resource framework* dimension. The importance of networks to access these external resources will be analysed within work package 8. Here we can see that there are interdependencies between the different enabling conditions for social innovations.

Intellectual Property Rights and Patents

Knowledge protection seems to be less important for a social innovation indicator system for two reasons: 1) in most cases it is hardly possible to protect these kinds of innovations (e. g., carpooling or the abolition of slavery) 2) Most scholars of social innovations argue for an open source approach to social innovations, i.e., everyone can copy the idea in order to accelerate the scaling process. This is true as long as the inventor or initial innovator is not interested in profit making or keeping the idea to himself. This is why we assume that this category has not the high priority in the context of social innovation that it has in the traditional innovation measurement approaches. However, we should not preclude the possibility that in specific cases and areas (e. g., several social product innovations) the social innovation could be protected and that there are good reasons to do so. Even if a patent is not applicable, because only inventions from technological areas are patentable¹²⁴, knowledge of specific processes can be sold under a specific trademark. Both, patents and trademarks are part of the *output side* of our framework. The existence of Intellectual

¹²³ M Polanyi, *The Tacit Dimension*, University of Chicago Press, Chicago, 1966, 4.

¹²⁴ European Patent Office, *The European Patent Convention*, Article 52, 2000, retrieved 27-05-2013, <<http://www.epo.org/law-practice/legal-texts/html/epc/2010/e/ar52.html>>

Property Rights (IPR), which allow ideas to be patented and trademarks to be registered, are part of the *institutional framework*.

ICT

ICT has relevance and importance for social innovations too. While ICT, which is used for the innovation process, is part of the *entrepreneurial activity*, ICT provision on a national scale can also be an enabling factor and therefore be part of the *resources framework*. Laws that regulate whether ICT can be used freely and without limitation in turn are part of the *institutional framework*. Active political pressure that cuts the freedom of ICT access and usage is part of the *political framework*. Moreover, ICT has had an impact on deliberative processes and therefore is considerably important in terms of the detection of legitimacy and urgency of social needs. But these are problematic assumptions, and the negative influences of ICT are also heavily debated. However, we decided to integrate the current status of ICT availability and usage as an important indicator into our approach even if the interpretation of the collected data remains problematic.

Collaboration and Networks

The importance of collaborations and networks for social innovations are given qua definition as they “[...] lead to new [...] relationships [...]”.¹²⁵ Here collaborations and networks are perceived as results of social innovations. But in the emergence of social innovations collaborations and networks play an important role. In the idea generation process, social innovations are very likely to involve actors that are related to the social need or the social innovation. What is more, social change that aims at tackling these needs on a broad scale requires cross-sector alliances that must be backed by the broad public to reach a sufficient level of legitimacy. These processes of legitimacy and trust or shared norms therefore belong to the *societal climate* and the *institutional framework*.

Typical indicators for collaborations like scientific articles with co-authorship are less suitable in the field of social innovation. Our approach includes rather dimensions that highlight whether shared norms and a shared perception of needs can be identified within a society which in turn is a fertile ground for collaborations relevant to social innovations.

Entrepreneurial activity

The measurement of *entrepreneurial activity* is a valuable category for our approach because social innovation doesn't solely require the idea but also the engagement to transform it into reality. In general entrepreneurial activity is operationalized by opportunity seeking, innovativeness and risk-taking. And for these kinds of activities it is hard to find measures on the macro level. Thus, it is hard to identify appropriate indicators. Instead proxies are used that do not capture the entrepreneurial process with its particularities, but instead look at the mere creation or closure of firms and their appearance in market statistics. The application of this perspective is however problematic in view of social innovations. Since social innovations often happen in less organised, informal forms the value of knowing about market entries or exits to express entrepreneurial activity with a social innovation focus is limited.

And even if this was accepted as convention, existing market indicators are not suitable for the measurement of social innovation as organisations that tackle social needs cannot be detected in the anonymous mass of organisations detected by national statistics. A potential reformative approach would be to isolate national sets of mission driven organisations in a sector unspecific

¹²⁵ J Caulier-Grice, A Davies, R Patrick, W Norman, *Defining Social Innovation. A deliverable of the project: The theoretical, empirical and policy foundations for building social innovation in Europe (TEPSIE)*, European Commission 7th Framework Programme, European Commission, DG Research, Brussels, 2012, 18

way (i.e., organisations that form the “extended” social economy). In that case entry and exit rates would at least increase in validity in terms of expressing entrepreneurial activity in the context of social innovation. However, this process of isolation has to be conducted in close collaboration with national experts, because every country has its own reality with regard to the contribution of public, private or third sector organisations (and their respective legal forms) to the social economy.

Innovation Culture

It seems obvious that an innovation friendly climate within a society or an organisation will have an influence on innovation processes. In more general terms we are dealing with openness towards new things and changes and an interest in improvements. However, the usage of the term “need” and the measurement of the urgency of social needs imply a desire for solutions. And that does not come without the desire for change, which implies an innovation friendly climate.

Given the importance of an indicator set representing the social innovation culture for a social innovation indicator suite, it is obviously challenging to find a broad range of appropriate indicators representing every relevant category. Most of the established measurement systems we analysed cover this dimension by investigating people’s attitude towards technological development. For a social innovation measurement system, this category needs to be enriched by a normative dimension. A social innovation friendly climate could be covered by variables that express people’s perception of the level of justice or equality across society or whether people are ready to accept individual restrictions due to social innovations. While those variables are enabling factors that belong to the *societal climate* this readiness for change is also influenced by social innovations that took place in the past, making this category also part of the *outcome dimension*.

The following table gives an overview of the adapted categories and their correspondents within our own approach.

Table 3-2 – Adaption of categories for the measurement of social innovation

Category	Correspondents to the following SI process dimension
Financial Resources	<ul style="list-style-type: none"> - Resources Framework - Entrepreneurial Activity
Knowledge	<ul style="list-style-type: none"> - Societal Climate - Resources Framework - Outcome - Entrepreneurial Activity
Intellectual Property Rights and Patents	<ul style="list-style-type: none"> - Institutional Framework - Output
ICT	<ul style="list-style-type: none"> - Resources Framework - Institutional Framework - Entrepreneurial Activity - Political Framework
Collaboration& Networks	<ul style="list-style-type: none"> - Societal Climate - Institutional Framework - Outcome - Entrepreneurial Activity
Entrepreneurial activity	<ul style="list-style-type: none"> - Entrepreneurial Activity
Innovation Culture	<ul style="list-style-type: none"> - Societal Climate

	- Outcome
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Although every category can potentially contribute to our social innovation measurement framework we need to include new normative indicators into most of the categories that go beyond established innovation measurement. First and foremost indicators from areas like “values” and “social need measurement” are necessary. However, our analysis of measurement systems that focus on areas like well-being and civil society shows that many of the required indicators are already available. These indicators contribute to our understanding of demand and awareness patterns, which are relevant in the context of social innovation.

4. A Blueprint of Social Innovation Metrics

4.1. Developing an integrated model for measuring social innovation

The ground has been paved for developing our indicator system for social innovation. Deriving from existing and proven methodologies in innovation research and informed by theoretical reflections on the nature of social innovation, we are now ready to develop a framework of social innovation assessment on the macro level that allows us to analyse the social innovation potential of a national society. The resulting model serves as an overarching framework for a social innovation indicator suite to assess both the potential for social innovation (i.e. enabling conditions) and performance at the national macro level.

4.1.1 A conceptual framework for measuring social innovation

Research on innovation and in particular research on innovation metrics has seen significant progress in recent years. High standards and a variety of metrics have become evident while analysing the existing measurement approaches (see deliverable 2.3). We believe that this work is a very fruitful point of departure for a social innovation indicator suite. However – and this has been indicated – some adaptations for the context of social innovation are inevitable. Our analysis revealed two highly interesting approaches as a starting point for our conceptual framework which are (1) the model developed by NESTA¹²⁶ and (2) the model introduced by the Department of Innovation, Industry, Science and Research of the Australian Government (APSII)¹²⁷. These models are outstanding in our view because they integrate enabling factors, organisational activities and outcomes in the most sophisticated way.

We start with the first of these two, the model developed by Miles et al. (2009)¹²⁸ at NESTA¹²⁹. In their measurement approach NESTA aims to map the wider conditions building the environment for firms to innovate. They have isolated an indicator set of wider framework conditions (WFCs) which “(...) may be seen as providing the resources, incentives, capabilities and opportunities for firms to innovate”.¹³⁰ The WFCs include complementary as well as interactive components. The model of the interplay of the WFCs “(...) represents one way of interpreting the interplay of the indicators”.¹³¹ In the model NESTA has illustrated the functional components, i.e., the stages of the innovation process. Subsequently they have placed the indicator sets of the WFCs to the specific stages of innovation.

From the model of the interplay of wider framework conditions we have adopted the idea to assign framework conditions to the key functional stages of the innovation process to illustrate the

¹²⁶ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby, *Measuring Wider Framework Conditions for successful innovation. A system’s review of UK and international innovation data*, NESTA, 2011, 13

¹²⁷ Australian Government – Department of Innovation, Industry, Science and Research
Working towards a measurement framework for public sector innovation in Australia. A draft discussion paper for the Australian Public Sector Innovation Indicators Project, 2011, 24

¹²⁸ N Miles, C Wilkinson, J Edler, M Bleda, P Simmonds, J Clark, *The wider conditions for innovation in the UK. How the UK compares to leading innovation nations*, NESTA, 2009, 8 ff.

¹²⁹ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby, *Measuring Wider Framework Conditions for successful innovation. A system’s review of UK and international innovation data*, NESTA, 2011, 13

¹³⁰ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby, *Measuring Wider Framework Conditions for successful innovation. A system’s review of UK and international innovation data*, NESTA, 2011, 13

¹³¹ K Allman, J Edler, L Georghiou, B Jones, I Miles, O Omidvar, R Ramlogan, J Rigby, *Measuring Wider Framework Conditions for successful innovation. A system’s review of UK and international innovation data*, NESTA, 2011, 13

interplay of the indicators. At the same time we do not claim that we can conduct a detailed assignment of one part of the framework conditions (e. g., the political framework) to one specific part of the innovation process (e. g., the selection of ideas/prototyping), rather we assume that the different parts of the framework influence the social innovation process to different degrees at different stages of the process (depending on the specific social need).

A broader approach is followed by the *model for measuring innovation in public sector organisations by the Department of Innovation, Industry, Science and Research of the Australian Government (APSII)*¹³². The Australian Government differentiates between specific areas that are used in order to develop analytical indicators to measure innovation performance, capability and framework conditions for innovation in public sector organisations.

From APSII we have adopted the idea to explain the interplay of indicators representing the framework conditions and innovation performance (in terms of organisational output and societal outcome): APSII's organisations' framework conditions draw from indicators of the areas 'innovation barriers and drivers'. In a similar manner the social innovation process is shaped by the nature of the framework conditions depending on whether they promote or hinder social innovation. In APSII the organisations' innovation performance is captured by indicators of the innovation activities and the impact of innovation.¹³³

With these two models at hand, we can develop a contemporary approach for measuring social innovation that integrates enablers, organisational activities and outputs as well as societal outcomes in a refined way taking the complexity of the subject matter into account. These three different ingredients (enablers, organisational activities and outcomes) can be revealed in many of the indicator systems we analysed. To explain the interplay and the interactivities arising from the complexity and multitude of influential factors and interdependencies within the social innovation process, we developed the model for measuring social innovation presented in figure 4-1. The conceptual model should give an overview of the social innovation process with its surrounding activities and environment in a way that is understandable but also reflects the complexity of the task at hand. For the purpose of developing an indicator suite it can be understood as the illustration of both the origin and selection of the indicator sets.

Before explaining the model in more detail, let us take a look at figure 4-1 to get an idea of how we rearranged the ingredients in a new way so they fit the context of social innovation. One can see that we differentiate between three different levels and these three levels are arranged around the inner cycle that represents the most important decisions to be taken – or 'decision steps' - within the social innovation process. The three different levels around this cycle are:

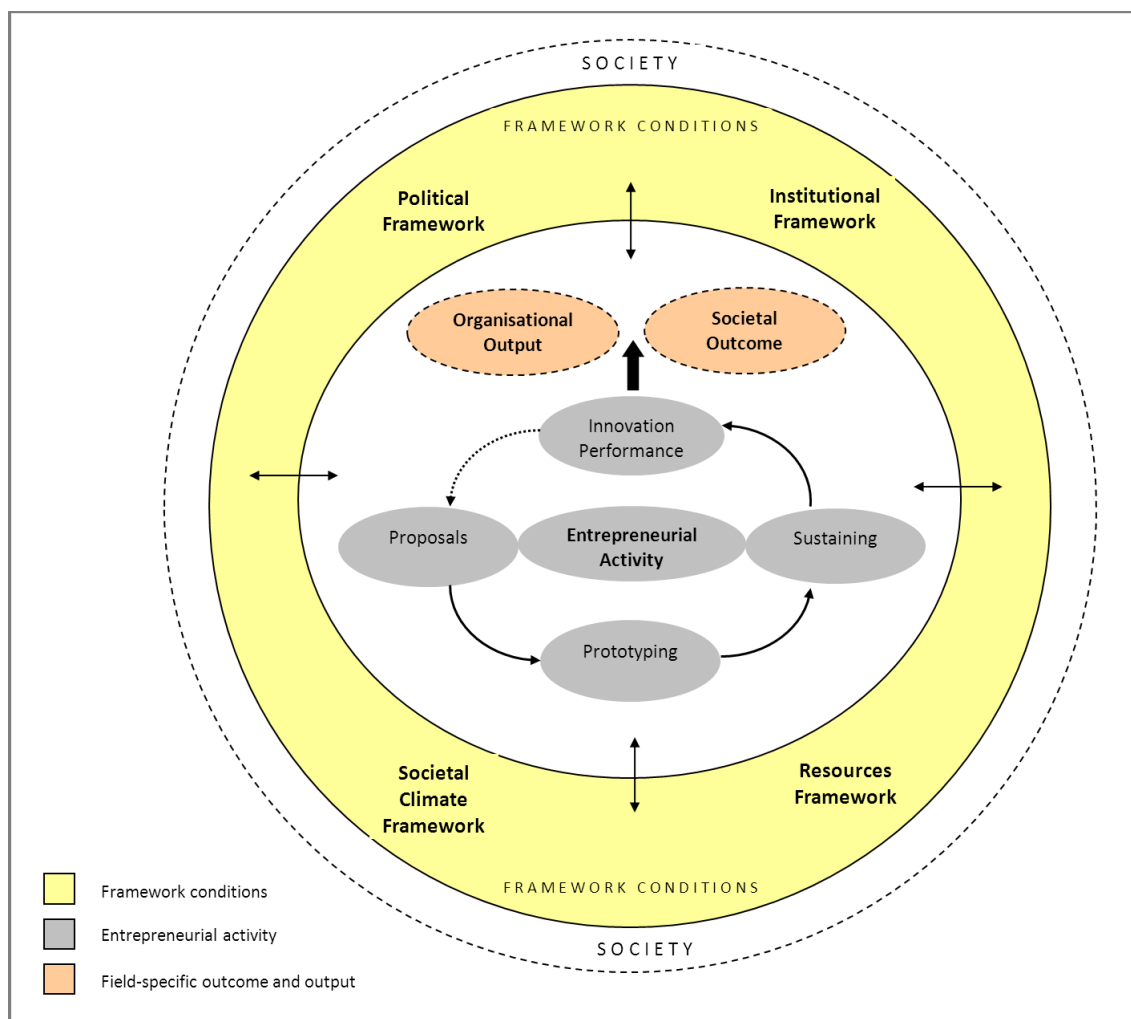
- (1) Enabling framework conditions: these represent the most important enablers that work towards the innovation process in the form of pull-factors. Deriving from theoretically and empirically proven concepts which we analysed and enriched with our own conceptual thoughts, these conditions are stimuli for the innovation process. In the logic of rational choice theory one would say these are context conditions for the actor(s).

¹³² Australian Government – Department of Innovation, Industry, Science and Research *Working towards a measurement framework for public sector innovation in Australia. A draft discussion paper for the Australian Public Sector Innovation Indicators Project*, 2011, 24

¹³³ Australian Government – Department of Innovation, Industry, Science and Research *Working towards a measurement framework for public sector innovation in Australia. A draft discussion paper for the Australian Public Sector Innovation Indicators Project*, 2011, 24 f.

- (2) Entrepreneurial activities: in contrast to the enabling conditions, entrepreneurial activities can be best understood as types of actions taken, which are motivated by entrepreneurial preferences or motivations. These represent active forces working towards innovation (push factors). Both individuals and organisations are meant here and these activities refer to the elements mentioned in entrepreneurship research, i.e., that entrepreneurs are pro-active and willing to take risks in developing solutions for current challenges, in mobilising the necessary resources and in finally putting ideas into practice by the realization of interventions and projects or the establishment of organisations.
- (3) Field specific outputs and outcomes: this level represents the results of the innovation activities. Outputs refer to measurable outputs that can be easily ascribed to an organisation or individual. Outcomes on the other hand are much harder to measure and are rarely tracked back to an organisational activity directly. The closeness of the outputs and outcomes to the framework conditions indicates that these outcomes themselves might serve as enabling conditions. Remember the ingredient of our definition “enhance society’s capacity to act”. At this level we speak of field specific outputs and outcomes because we believe it is worth differentiating between different fields of social needs. What we have in mind here will be elaborated in more detail later.

Figure 4-1 – Integrated model for measuring social innovation



4.1.2 The three analytical levels for measuring social innovation

As becomes evident in the graph our model consists of three analytical levels:

- the *entrepreneurial activities* (grey area),
- the *framework conditions* influencing on the innovation process (yellow area),
- the innovation *output and outcome* (orange area).

Each of these is going to be addressed in turn with regard to its inherent logic, but also with regard to the interplay with the other analytical levels.

Entrepreneurial activities

In the centre of the innovation process in our model are the *entrepreneurial activities*. Entrepreneurial activities have been distilled as an integral ingredient of most existing indicator systems. Entrepreneurial activities are also labelled organisational activities, processes or innovation activities in the existing systems. Innovation activity as used by NESTA “(...) describes the pipelines of ideas flowing through an organisation (...)”.¹³⁴ But what are the innovation activities in the field of social innovation?

We suggest that (similar to the traditional concept of innovation) activities by entrepreneurs as well as by actors outside of the economic sphere such as civil society, informal groups or individuals shall be taken into account. The result is a cross-sector activity category, which we label as entrepreneurial activity (or entrepreneurial spirit). Unlike framework conditions, entrepreneurial activities represent *push factors*, i.e., the activity influences the different stages of the innovation to different degrees. In the scientific debate entrepreneurship is characterized by three elements: innovation capability, pro-activeness and risk-taking.¹³⁵ Also inner-organisational activities are of importance, such as leadership capacities. Therefore entrepreneurial activity is the seed from which innovations emerge. In most cases the seed needs an enabling environment as a complement to grow.

Entrepreneurial Activity

Entrepreneurial Activity is a set of actions, characteristics, attitudes and behaviours that can directly be traced back to the innovator (organisation or individual) during the innovation process. It involves the motivation to be proactive, to do something to change the current status. Classically, entrepreneurship is linked to innovativeness, pro-activeness and risk-taking which can serve as guidelines for operationalisation. This is also reflected in the understanding of social entrepreneurship posited by the TEPSIE project: “[W]e define social entrepreneurship as the set of behaviours and attitudes of individuals involved in creating new social ventures, such as a willingness to take risks and finding creative ways of using underused assets.”

Since the entrepreneur is often characterized as an innovator and we attempt to make use of metrics that are not explicitly connected described with the term ‘innovation’, but nonetheless characterised by conceptual proximity, we decided to apply this terminology instead of one that narrows the subject matter down to explicit ‘innovation activities’.

¹³⁴ A Hughes, K Moore, N Kataria, *Innovation in Public Sector Organisations. A pilot survey for measuring innovation across the public sector*, 2012, 6

¹³⁵ B Schmitz, T Scheuerle, ‘Founding or Transforming? Social Intrapreneurship in three German Christian-based NPOs’, *ACRN Journal of Entrepreneurship Perspectives*, Vol. 1, Issue 1, 2012

The inner cycle of our model serves to differentiate these entrepreneurial activities further. It relates strongly to previous work performed in the TEPsIE project, but introduces some essential adaptations as well as refinements with regard to the requirement of framing the entrepreneurial process for measurement purposes and its inherent relation to surrounding frameworks. It consists of four stages (1) proposals, (2) prototyping, (3) sustaining, and (4) innovation performance. This cycle represents the main stages of the innovation process in a slightly modified way.¹³⁶ In the first stage ideas are collected and articulated as proposals. Then follows a phase of 'idea selection' that leads to the generation, discussion and refinement of prototypes. The latter in turn is fostered to a stage of sustaining by the mobilisation of resources. Since actually all stages are in need of 'mobilizing resources' the aspect of sustaining is however linked to all phases. As we are less interested in scaling innovations directly but rather in measuring the innovation potential of a society, we do not refer to scaling activities explicitly. The last stage is thus the one of 'innovation performance', which is connected to the outcomes of the entrepreneurial process. In terms of measuring the change in the status of a social need at the broader societal level we can say something about the scaling and the impact of a social innovation, but we cannot directly link it to a specific innovation. Thus, the stage of scaling is not represented within our model. The following table gives a more elaborated explanation of the four stages.

Proposals

This stage corresponds to inventions in innovation process models. A new idea, concept, process or technology is invented but not yet distributed. Idea creation sounds like an intentional process – and in some cases it is – but in others, ideas are created as by-products of other processes or created in a more unintentional or accidental way. The necessary condition is that the idea gets linked to social needs and thus can be perceived as a solution to a societal issue. This sketch of a solution should be articulated as a (more or less) concrete proposal.

Prototyping

Ideas (Inventions) call for the necessity of further selection processes. In the context of social innovation, there often exist many different ideas and solutions and not all of them can be realized in the same way. Mostly there are specific barriers for certain solutions. Thus, there are selection processes in place. This is described by this stage of the process. Here we need to consider the role of practical assessments, legitimacy issues (normative, effective, efficient etc.) and power relations, which are connected or preceded by the development of prototypes based on the ideas articulated in stage one. On their basis the entrepreneur/entrepreneurial organisation together with society (legitimacy test) select an invention (idea/proposal) which...

- is most likely to be able to collect the capital to be realised.
- has the highest potential to solve the problem / address the need. Only ideas/proposals that meet a social need and are adopted by society proceed to the stage of implementation and scaling.
- is proven to be realistic and pragmatic enough to be implemented in a serious way.

Sustaining

The phase of sustaining really refers to the process of gathering resources. This category describes the phase in which the innovator starts to actively gather resources that are potentially available within the resources framework. Resources need to be mobilised in order to implement the idea / proposal in real life. Resources are also needed for prototyping, but implementing the idea and bringing it to the market needs other types of resources. Networks are important here in terms of building coalitions that help put an idea into practice through a process of feedback and continuous refinement. This precedes the building of broad societal legitimacy, which is especially vital in the phase of scaling, which we do not focus on here.

¹³⁶ For further information see: The Young Foundation, *Social Innovation Overview: A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012

Innovation Performance

This category expresses changes in the structure of needs that can be traced back to social innovations. It contains the sub-categories: SI outputs and SI outcomes. Innovations often show features that could not have been anticipated, thus adaptations need to take place here. The innovation itself needs to be evaluated and its performance needs to be measured. Does the innovation perform as well as planned? What contribution does it make to positive social change? What unexpected externalities could be detected? What adaptations are necessary? Here one can see that the innovation performance has an influence on further innovations either incremental or radical. Here there is a connection to idea creation and the iterative process might start again.

The inner cycle might lead to the assumption that social innovation creation is a linear process. Although there is a consensus that social innovation is not a linear process in the sense that input A leads to output B, the innovation evolves through proceeding stages. This inner cycle is more of a structure for developing our model. We believe that different entrepreneurial activities as well as enabling conditions are important in the course of this procedural understanding of social innovation. From a more systemic perspective the entrepreneurial activities and the enabling conditions are highly important for how an innovation emerges and develops. In other words: in the centre of the process the *entrepreneurial activities* function as push factors in order to actively promote the innovation process towards the stage of performance.

The process in turn is not a closed system; rather, it is shaped by its environment which influences the innovation process. These enabling *framework conditions* are included in the outer circle of the model to take account of innovation as a dynamic process and one which is influenced by a wide set of variables. In contrast to the entrepreneurial activities, the framework conditions function as pull factors for the innovation process, i.e., the framework conditions are outside of the innovation system and cannot be controlled directly by the innovating organisation or individual.

Enabling Framework conditions

In the outer circle of the model, we differentiate between four sub-dimensions that constitute the overall *framework dimension*: the institutional, political, and resources framework as well as the societal climate framework. The framework conditions can be understood as *pull-factors* for the innovation process, i.e. the frameworks have a regulating role and provide the environment for the innovation processes in the inner circle of our model. The framework conditions indirectly affect the functional components of the innovation process: in the ideal case the framework is structured to enable social innovation and function as pull-factors. But depending on their nature, the framework factors can also hinder the innovation process.

Framework conditions can have an enabling effect or a more inhibiting effect on social innovation, and sometimes they are enabling for one organisation and inhibiting for another at the same time. If the framework functions as a driver for social innovation we label it 'enabling framework' and if it functions as a barrier (structural and agency barriers¹³⁷) to social innovation we label it 'disabling framework'. The assessment of the framework conditions is especially suited for policy recommendations. Political interventions should be addressed in compliance with these framework categories to create an enabling environment for social innovation. But it is important to

¹³⁷ A Mendes, A Batista, L Fernandes, P Macedo, F Pinto, L Rebelo, M Ribeiro, R Ribeiro, M Sottomayor, M Tavares, V Verdelho, *Barriers to Social Innovation. A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012, 60 f.

emphasise that not all inhibiting factors are barriers of social innovation that need to be torn down. Rather, we need to analyse carefully what the function of the specific “barrier” or inhibiting factor is, and if it has an enabling function in another way or not.

The four different enabling framework conditions are explained in more detail in the box below.

Political Framework:

The political framework represents the set of incentives and interventions that derive from the political system and that are intended to foster social innovations. These are not monetary-based incentives that are offered or conducted by or under the auspices of the national government. Tax breaks as a case at hand would be classified to belong to the resources framework, due to their monetary nature. This category in contrast includes social innovation prizes initiated by the government for instance.

Institutional Framework:

The institutional framework represents the set of values, rules, norms and laws that regulates the human and organisational actions on the societal level. It is important to keep the following aspect in mind: the creation, discussion and passing of laws is part of the political framework. Once the law has been passed and incorporated into the existing set of laws, it becomes part of the institutional framework.

Based on Scott we can differentiate three types of institutions:

- **Regulative Institutions:** Regulative rules that are coercive and legally sanctioned are the basis of order.. Example: laws.
- **Normative Institutions:** This type of institution can be understood as binding expectations that are morally governed, based on normative appropriateness. Example: environmental protection.
- **Cultural-Cognitive Institutions:** The basis for social order is a constitutive schema in the form of shared logics of action or common beliefs within a shared culture. This type of institution is taken for granted in the sense that it cannot be altered. Example: human rights.

Societal Climate Framework:

The societal climate framework covers the attitude towards change, development and (social) innovation. It also covers the existence of shared needs and their awareness and legitimacy within society and is linked to general trust within society (as an element of social capital) which is perceived as an important resource for societal activities and prosperity.

Resources Framework:

The resources framework incorporates the existence and availability of resources which are potentially relevant for the innovation process, especially for the scaling of social innovation. This can include but is not limited to: monetary resources, knowledge and creativity, volunteers, ICT, innovation relevant networks, etc.

Taking the example of renewable energy cooperatives as a type of entrepreneurial activity: the political framework can support the innovation-activity by providing subsidies or creating an enabling legal framework (e. g., the establishment of a renewable energy law in the German case). On the institutional side, sustainability as an idea must be accepted by citizens. Finally some resources must be available (as part of the resources framework), so citizens can afford higher prices and so that there are enough skilled workers with the required knowledge to support the renewable energy industry. Moreover, citizens (as part of the societal climate framework) must be willing to pay for and promote the innovation in regional contexts. At the same time the societal climate framework can be a disabling one when conflicts arise between citizens that invested into the cooperative and thus do not only profit in environmental but also in monetary terms and those who do not. This might lead to a negative framing of renewable energy cooperatives. There are also high regional disparities and clusters in Germany regarding the share of renewable energy of the total energy provision. However, the renewable energy law applies to Germany as a whole. The

societal climate framework of specific regions or even the regional energy policy (a blend of political and institutional framework) might explain these regional disparities.

Organisational output and societal outcome

The third level of our model is *the organisational innovation output and the societal outcome*; this represents the performance of social innovations. This category evolves from the interplay of the framework conditions and the entrepreneurial activity, i.e., it is the result of interaction between pull and push factors of the social innovation process. Staying with the example of renewable energy, the interplay between the structure of the framework on the one hand and the extent of regional entrepreneurs on the other determines the degree of renewable energy production in a specific region. The societal outcome can be classified as systemic, since the impact of social innovation on society as a whole is measured. Indicators in this category show what kind of societal changes with regard to a specific social need are achieved through the innovation. In the following box, both organisational output and societal outcome are explained in more detail.

Organisational Output:

Organisational output refers to measurable results of an intervention of an organisation that can be directly traced back to social innovations (i.e., organisational or individual activities). The SI output is therefore relatively closely connected to activities on the organisational level.

Societal Outcome:

Societal outcomes refer to changes in the structure of needs within a given society in broader terms. In contrast to organisational output, societal outcomes describe those changes on societal level that can be traced back to the measurable as well as immeasurable results of the SI intervention. Examples for the latter would be changes in happiness or wellbeing. Societal outcomes are the aim and ultimate goal of the social innovation itself. Thus the societal outcomes may seem to be the end point of the whole process, but quite often – if not always – the societal outcomes also serve as an enabler for further innovations. And this kind of enabling is different: the innovation performance stage is an enabler for improvements and new ideas in a specific field like education. The societal outcome in contrast might be an enabler for other fields, e. g., if the problem of malnutrition is tackled, this can enable other developments such as the opportunity to attend school as a result of improved health. Finally, it has to be repeated that the link between innovation and change and vice versa is often a weak or delicate one and has to be handled cautiously. Nonetheless, it might at times be useful as a means of approximation.

4.1.3 Interdependencies of the social innovation process

Interdependencies and multi-contextuality are inherent characteristics of the social innovation process. In the previous chapters we mentioned some interdependencies. We should keep these in mind to better understand the dynamic process of innovation in terms of the interplay between the different dimensions.¹³⁸ For the purpose of measuring social innovation, this applies to the relation between the analytical levels of the measurement approach and to the fact that some indicators are not clearly restricted to one analytical level.

One can distinguish the following types of interdependencies:

(1) Interdependencies between factors influencing the innovation process

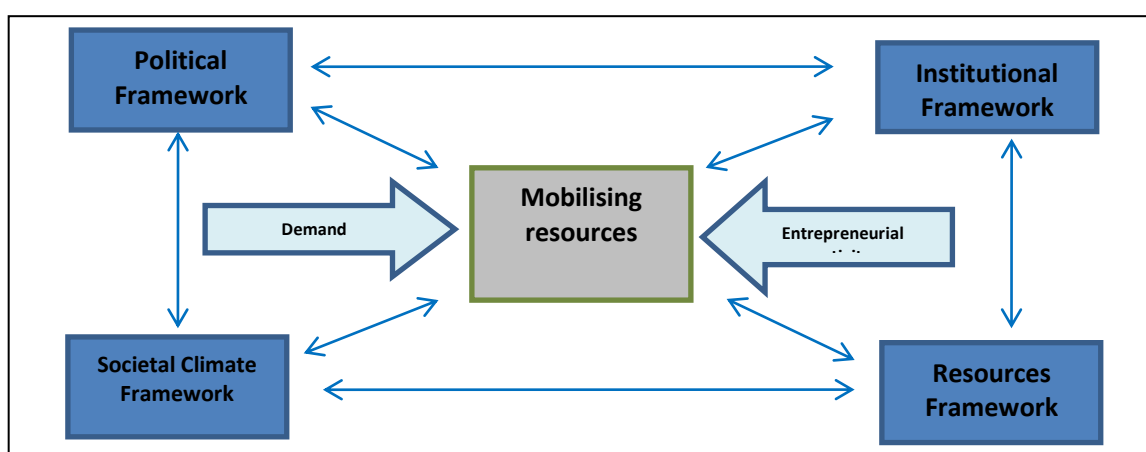
The innovation process is influenced by a multitude of factors. We will illustrate this using the example of mobilising resources (see figure 4-2) for realising renewable energy supplies. There are a number of factors that can influence this part of the social innovation process:

¹³⁸ R Rothwell, 'Towards the Fifth-generation Innovation Process', *International Marketing Review* 11, 1994, 7-31

Demand for renewable energy from society needs to be large enough. This demand grows in times of climate change and in response to fears about the risks of nuclear power. Thus the institutional framework provides a societal consensus that there is a need for alternative types of energy provision, which in turn promotes and supports the scaling process. To meet the demand, entrepreneurial activity is necessary to trigger the mobilisation of resources to realise the first inventions. Therefore the economic actors such as individual entrepreneurs need to take action. The process of mobilising resources is further influenced by the structure of pull-factors, the framework conditions. At the stage of mobilising resources, the resources framework plays an important role: financial as well as skills, capabilities and other intangible assets are necessary to equip the innovation process. The political framework sets the stage by policy actions such as policy campaigns for renewable energies and legal changes (e. g., legal provision of financial resources, access to networks for all providers of energy). The societal climate framework comes into play as citizens should be ready to take risks and be open to something new (as it is a new type of energy provision that is slightly more expensive). The whole process is strongly influenced by a change of values.

It is only through the fruitful interplay of these factors that resources can be mobilised in order to enable renewable energy projects.

Figure 4-2 – Interdependencies of the mobilising resources stage



(2) Feedback loops in the innovation process

With regard to the social innovation process we have to be aware that it is an **iterative process** where feedback loops between each stage are possible.¹³⁹ To give an example: we already mentioned that the societal outcomes of innovation processes may serve as an enabler for further innovations. Therefore, innovation performance can be an enabler for improvements and new ideas: the innovation performance might lead to a modified starting point in the social structure, i.e., the framework conditions, and re-determine the need-balance in society. This means that the innovation outcome can alter the framework conditions that in turn alter the starting requirements for the next social innovation kick-off phase: a social innovation that meets a prominent need (e. g. car sharing) can attract much publicity, making the concept more visible for different actors. This in turn can stimulate the political system to support social innovators. Eventually this makes it easier for further social innovations to take off.

¹³⁹ The Young Foundation, *Social Innovation Overview: A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe"* (TEPSIE), European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012, 34

4.2. Social innovation indicators

4.2.1 The structure of the Blueprint of social innovation metrics

Our model for measuring social innovation has been designed with respect to existing innovation measurement approaches. Following its conceptual foundations we have developed a basic design / structure of a social innovation indicator suite. Finally we looked for usable indicators at the macro level. In other words, the model we have developed tells us where to look for indicators to provide information about social innovation. The model also shows how the indicators interact and mutually influence each other.

We have examined a wide range of indicators and selected those which we feel are best suited to the task of measuring social innovation. We have focused on existing indicators rather than developing or suggesting new ones. However, this does mean that there are some gaps and that some of the indicators are not completely suited to or appropriate to the measurement of social innovation.

The decision to focus on existing indicators has obviously been directed by the fact that these are already available and accounted for in data gathering systems. More important, however, is that they are already practically applied in the context of *measuring* technological innovation or a set of social aspects (values, cultural attitudes etc.) and therefore to a certain degree have passed a validity test. Finally the selection has been driven by the goal to make use of existing knowledge instead of 'inventing' entirely something new. Last but not least we deem this not only a more effective way of dealing with the subject matter, but also one that ensures connectivity of research on social and technological innovation.

At the same time this provokes certain challenges, which mainly lie in necessary adaptations when it comes to merging technological and social aspects. The same applies when completely new indicators and metrics have to be included with respect to capturing social needs and public discourse around these for instance. The latter are not adequately covered in existing data systems. That is why we propose to introduce new tools like the 'Google Trends' application, which might serve as a proxy for citizen interest in certain issues and thus an indicator for shared social needs as part of the societal climate framework.

We are aware that this kind of approximation contains a lot of potential flaws and shortcuts. However, there is an intensifying discussion about seemingly objective indicators like the GDP and about the limitations it contains. Nonetheless it has become the most widely applied indicator for the wealth of a nation. That is why we think it is legitimate to introduce new items, which lack refinement and sophistication but might prove valuable for capturing social innovation.

In the following chapters we propose indicators that make up our Blueprint. In several cases there is a choice between a number of single indicators. With regard to future implementation of the measurement tool, the suitability of the single indicators needs to be assessed. Even the use of the arithmetic mean¹⁴⁰ of a sum of single indicators or weighting procedures could be considered. But the methodological implementation still has to be developed.

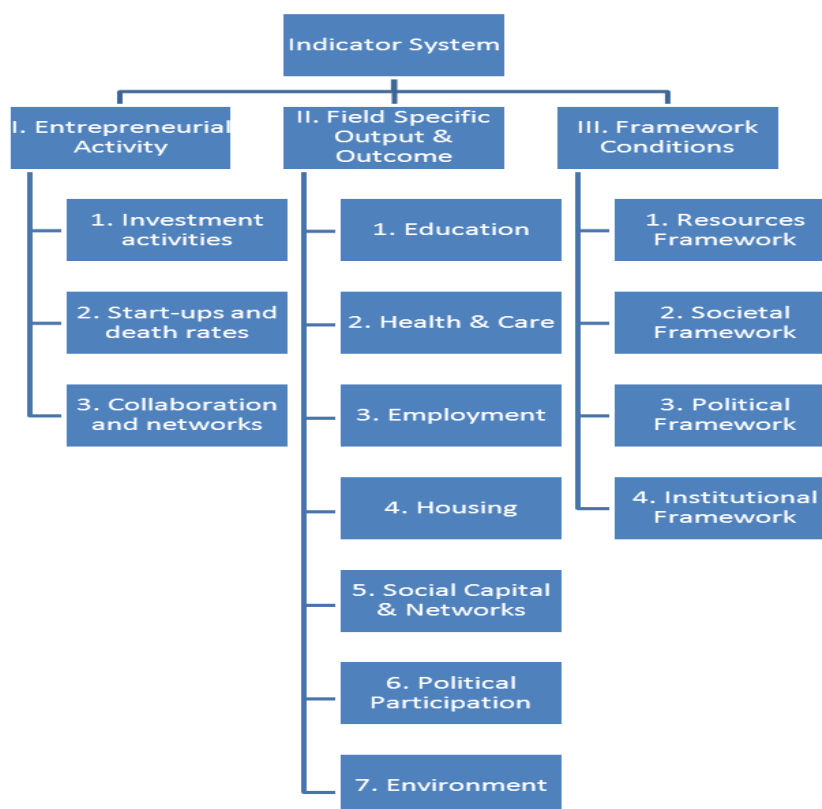
Our strategy to build on the highly sophisticated innovation measurement eases the selection process of possible sources of data. For this we have extracted the basic dimensions used in the

¹⁴⁰ To guarantee calculability we propose conducting z-standardizations in these cases

existing innovation metrics (see 2.3): financial resources, knowledge, knowledge protection and patents, collaboration and networks, entrepreneurial activities, and innovation culture. We have incorporated these dimensions into the Blueprint wherever possible and meaningful (see chapter 3.2). In a second step, we have incorporated social indicators in selected social fields (e. g., well-being, sustainability) to consider the social component of social innovation. The sum of the social innovation indicators of our Blueprint therefore stems from bringing together innovation dimensions used in existing innovation metrics and indicators from non-innovation based measurement systems to cover the social dimension adequately.

Reflecting the three analytical levels of our model, the Blueprint of social innovation indicators consists of *three indicator sets*: framework conditions, entrepreneurial activities, and the field-specific organisational output and societal outcome. The indicator sets consist of sub indicators – thematic blocks which contain single indicators – that are presented for each of the analytical levels in the following chapters. The figure below summarises the structure of our Blueprint. The Blueprint should be understood as a scoreboard. We do not aggregate the three indicator sets, rather we assess the structure of the sub indicators separately to consider strengths and weaknesses within the national social innovation system.

Figure 4-3 – Structure of the Blueprint of social innovation indicator



4.2.2 First dimension: *framework conditions*

Framework conditions consist of four sub indicators: the institutional, political, and resources framework and the societal climate framework. The sub-indicators are further subdivided into

single indicators. In table 4-1 the indicators are presented. For each indicator possible data sources are provided.

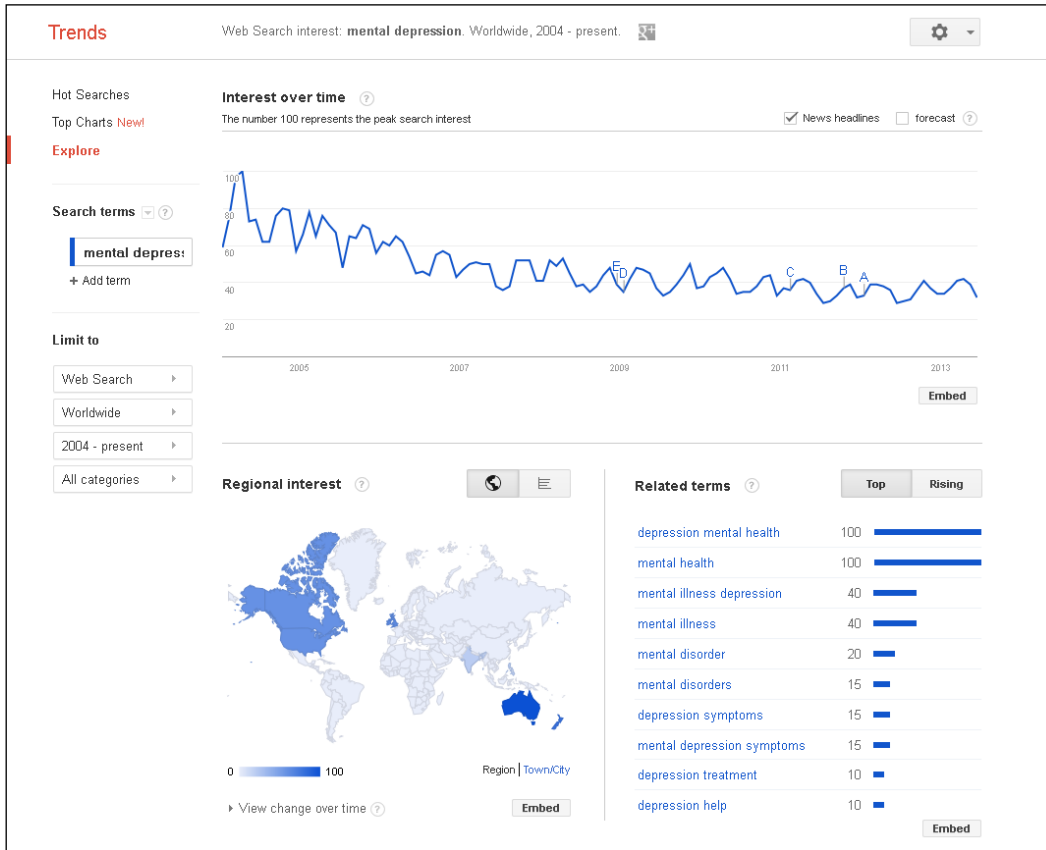
A set of well-established aggregated databases was a source of inspiration when selecting the indicators that we used to fill the dimensions. However, for a few single indicators, no aggregated data is available at the EU-level. In these cases we rely on national data sources (e. g., for the dimension ‘monetary variables of the social economy’), which partially leads to lack of comparability between countries.

We selected a number of indicators from existing innovation metrics and complemented these with a range of social indicators. Despite the broad range of indicators available in the measurement approaches analysed in the report 2.3, we also decided to outline alternative data sources beyond these approaches to fill the indicator dimensions of the Blueprint not yet covered. However, these are exceptions.

To give an example: for the indicator ‘existence of shared needs in the society’ as part of the societal climate framework we propose to conduct web analytics. One possibility is to use the Google Trends tool (illustrated below in figure 4-4) to get an idea of new, emerging and urgent needs.

We think that Google Trends is good for specific questions – at the very granular level – e. g., to specify how many people are searching for information about particular issues such as depression (as illustrated in the graph). A comparison over time might provide a sense of whether these issues are becoming more or less relevant and thus the identification of ‘need patterns’. At the same time it might not be a good gauge of general or higher level needs like the rather abstract category of ‘health’. To derive what this category is constituted by and how priorities are distributed to specific aspects, it would be useful to execute ‘needs mappings’ for instance (for which the pre-identification of certain patterns can be helpful) through including questions into social surveys that give people the opportunity to articulate by which social issues they are affected most. In the context of developing countries this could be assisted by, e. g., mobile health interventions that establish contacts to people on the ground and can gather for instance health related needs in a detailed fashion ‘by the way’.

Figure 4-4 – Google trends analysis¹⁴¹



¹⁴¹ Google trends, retrieved 29-05-2013, <<https://www.google.com/trends/>>

Table 4-1 – Indicator set framework conditions

Indicator dimension	Proposed indicators
a) Social Innovation Resources Framework	
<i>Financial resources (dedicated to social purpose)</i>	
- Monetary variables of the social economy	- Share of expenditure of social economy organisations as percentage of GDP ¹⁴² (national sources, including expenditures of foundations)
- Public social expenditure	- Total public social expenditure as percentage of GDP (OCED Social Expenditure Statistics database) - Total public social expenditure per head, at current prices and PPPs (OCED Social Expenditure Statistics database)
- Private spending	- Voluntary private social expenditure as percentage of GDP (including households, individuals, NGOs) (OCED Social Expenditure Statistics database)
<i>Human resources</i>	
- Voluntary working	- Number of volunteers (Volunteering in the European Union, GHK) ¹⁴³
- Professionalization/ creative workforce in social fields	- ISCED 5- facilities offering educational programs for staff in social economy organisations (National analysis) - Percentage of ‘creative occupations’ (Eurostat) (<i>used in ordinary innovation metrics → No equivalent for social innovation currently available</i>) - Workforce who report wanting to act ‘socially entrepreneurially’ (no data yet)
<i>Infrastructural resources</i>	
- Academic resources deployed on social innovation	- Number of articles with the keyword “social innovation” per country (<i>not data per country currently available</i>)
- Social innovation relevant networks	- Number of Ashoka Fellows per country - Number of Schwab Foundation Fellows per country - Number of Social Innovation Exchange (SIX) members - Number and size of other social innovation networks, called ‘hubs’ or ‘labs’
- ICT and overall infrastructure (as basis for social innovation activities)	- Quality of overall infrastructure (World Economic Forum, The Global Competitiveness Report) - Broadband subscribers (OCED Broadband statistics) - E-Readiness Index (Economist Intelligence Unit) - ICT use index (International Telecommunication Union, Measuring the Information Society)

¹⁴² For definitions see: D K Hubrich, E Bund, B Schmitz, G Mildenerger (2012), *Comparative Case Study Report on the State of the Social Economy. A deliverable of the project: “The theoretical, empirical and policy foundations for building social innovation in Europe” (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research

¹⁴³ C Mathou, *Study of Volunteering in the European Union*, Final Report submitted by GHK, 2010, 60-63, retrieved 29-05-2013, <http://ec.europa.eu/citizenship/pdf/doc1018_en.pdf>

	<ul style="list-style-type: none"> - Government's online service index (United Nations Public Administration Network, e-Government Survey) - Relation between broadband penetration and citizens uptake of e-government services (OECD, government at a glance)
b) Social Innovation Institutional Framework	
<i>Normative institutions</i>	
- Tolerance	<ul style="list-style-type: none"> - Proportion of votes of extremist parties (national sources) - Proportion of foreigners in total population (national sources) - Proportion of agreement to xenophobic statements in total population (national sources) - "Acceptance of outsider groups" (World Value Survey) - "Tolerance and respect are important educational objectives" (World Value Survey)
- Gender equality	<ul style="list-style-type: none"> - "Men have more of a right to get a job in times of job shortages than women – I agree" (World Value Survey) - Women entrepreneurs (Global Entrepreneurship Monitor)
- Solidarity	<ul style="list-style-type: none"> - Solidarity with elderly, sick, unemployed and immigrants (European Value Study)¹⁴⁴
- Environmental sustainability	<ul style="list-style-type: none"> - "Nature protection is more important than economic growth" (World Value Survey) - Interest in environmental pollution (Eurobarometer) - Percentage of households having invested in environmentally friendly products in the last ten years (OCED Environment Policy and Household Behaviour)
<i>Regulative institutions</i>	
- Legislative background for social organisations	<ul style="list-style-type: none"> - Legislative background for starting a social organisation (national analysis)
- Legislative background for social security benefits	<ul style="list-style-type: none"> - Committed rights of social security benefits (national analysis)
- Legislative reforms in favour of social innovation	<ul style="list-style-type: none"> - Number of new laws and regulations enhancing social innovation or social economy (e. g., Social Value Act in the UK, national analysis)
- Commissioning and procurement	<ul style="list-style-type: none"> - Decommissioning rates to capture the 'creative destruction' of innovation (old services being replaced, national analysis)
<i>Cultural-cognitive institutions</i>	
- Human rights	<ul style="list-style-type: none"> - Universal human right index (United Nations)
c) Social Innovation Political Framework	
<i>Policy awareness</i>	

¹⁴⁴ For more information see: European Values Study, retrieved 29-05-2013, <<http://www.europeanvaluesstudy.eu/evs/research/themes/society/>>

- Policy awareness about social innovation	- National innovation strategies / social innovation projects funded by government (national sources and analysis)
- Policy awareness about social needs	- Emphasis of party programs (national sources and analytics)
<i>Political environment</i>	
- Political stability and democracy	- Political stability and absence of violence/terrorism Index (World Bank, World Governance Indicators) - Freedom-House Index – democratic governance (Freedom House)
- Government effectiveness	- Government effectiveness (World Bank, World Governance Indicators)
- Transparency	- Corruption Perception Index (Transparency International)
- Legislation	- Rule of law index (World Bank, World Governance Indicators) - Judicial Independence (World Economic Forum, Global Competitiveness Index)
- Press freedom	- Press freedom index (Reporters Without Borders, Press Freedom Index)
d) Social Innovation societal climate framework	
<i>Needs or demands as reference points for social innovation</i>	
- Interest in shared social needs	- Google Trends tool (Google)
- Request for change	- Questions and requests to the EU Parliament (EU Parliament, national parliaments)
<i>Social engagement and attitudes</i>	
- Political participation	- Depth and breadth of citizens' participation (CSI) - Participation in signature campaigns (World Value Survey) - Participation in boycotts (World Value Survey) - Participation in authorized demonstrations (World Value Survey)
- Memberships in civil society organisations	- Membership in humanitarian or charitable organisations (World Value Survey) - Membership in religious organisations (World Value Survey) - Membership in organisations of arts, music or education (World Value Survey) - Membership in nature protection (World Value Survey) - Membership in associations in sports and recreations (World Value Survey)
- Citizens' attitudes towards entrepreneurship	- Attitudes towards starting a company (moving average over 2 years) (Flash Eurobarometer)

- Citizens' openness for something new, risk taking	- Positive attitude towards taking risks (moving average over 2 years) (Flash Eurobarometer) - Interest in inventions and new technologies (Eurobarometer)
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4.2.3 Second dimension: *entrepreneurial activities*

Entrepreneurial activities consist of three sub indicators: entrepreneurial investment activities, entrepreneurial start-up activities and death rates, and collaboration and networks. The sub-indicators are further subdivided into single indicators. In table 4-2 the indicators are presented including proposed sources of data.

The fundamental challenge identified for this analytical level is the comparatively insufficient data on entrepreneurial activities in social fields. The *Global Entrepreneurship Monitor Report on Social Entrepreneurship*¹⁴⁵ provides relevant indicators but the information is not innovation-specific. Furthermore, the nationally conducted community innovation surveys (CIS) contain helpful information. However, this information is not separately accessible for entrepreneurship in the field of social innovation. EU-wide innovation surveys considering these organisations separately would be necessary to fill the gap. To this purpose we must clarify and define the set of potentially relevant organisations (e. g., social economy organisations¹⁴⁶, public sector organisations).

In summary, as compared to the indicator sets *framework conditions* as well as *output and outcome of social innovations* where we can build excessively on existing databases, the data collection in the indicator set *entrepreneurial activities* needs improvement at the EU-level. Considering the great importance of the entrepreneurial activities as push factors for social innovation described in our model this is an urgent task.

Table 4-2 – Indicator set entrepreneurial activities

Indicator dimension	Proposed indicators
Entrepreneurial investment activities	
- Investment in innovation by social economy organisations	- Expenditure in innovation by firm size (Community Innovation Survey) (<i>used in ordinary innovation metrics → No equivalent for social innovation currently available</i>)
- Investment in innovation by public sector	- <i>No data currently available</i>
Entrepreneurial start-up activities and death rates	
- Number of start-ups	- Start-up activities (moving average over 4 years),

¹⁴⁵ S Terjesen, J Lepoutre, R Justo, N Bosma *Global Entrepreneurship Monitor Report on Social Entrepreneurship, 2011*, retrieved 11-06-2013, <<http://www.gemconsortium.org/docs/download/376>>

¹⁴⁶ For reasons of data availability and delineation the 'social economy' has been defined narrowly in DK Hubrich, E Bund, B Schmitz, G Mildenerger, *Comparative Case Study Report on the State of the Social Economy. A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012, 67 ff. In the wake of developing social innovation measurement further, we do however propose to include 'social mission driven' organisations that are registered under a for-profit form (e. g., fairtrade companies).

	<p>share of the participation as owner of start-ups in population aged 18-64 (Global Entrepreneurship Monitor) (<i>used in ordinary innovation metrics → No equivalent for social innovation currently available</i>)</p> <ul style="list-style-type: none"> - Early-stage social entrepreneurial activity (Global Entrepreneurship Monitor)
- Number of death rates	<ul style="list-style-type: none"> - Enterprise death rate (OECD Business demography database) (<i>used in ordinary innovation metrics → No equivalent for social innovation currently available</i>)
- Business environment for starting a business	<ul style="list-style-type: none"> - Barriers to entrepreneurship (OCED Product Market Regulation Database) - Starting a business: procedures (number); time (days); cost (% of income per capita); minimum capital (% of income per capita) (World Bank, Doing Business) - Ease of starting a business (World Bank, Ease of Doing Business Index)
Collaboration and networks	
- Citizens' involvement in entrepreneurial activities	<ul style="list-style-type: none"> - Time spent volunteering (OECD Time Use Surveys database), best to be specified in which kind of organisation
- Clusters	<ul style="list-style-type: none"> - State of cluster development (World Economic Forum, Executive Opinion Survey) (<i>used in ordinary innovation metrics → No equivalent for social innovation currently available</i>)

4.2.4 Third dimension: *output and outcome* of social innovations

In principle social innovations may occur anywhere in society. But it is nearly impossible to observe all aspects of society by an indicator system scanning for changes. Therefore we start at the analytical level *output and outcome of social innovations* by proposing a system of classification of fields of social innovation. This can be used to break down the huge area where social innovations may occur and concentrate on smaller fields where social innovations are to be expected with a high probability that are easier to analyse.

We utilised the following existing classification systems and theories:

The *International Classification of Non-profit Organizations* (ICNPO) starts by classifying non-profit organisations into twelve activity groups: culture and recreation, education and research, health, social services, environment, development and housing, law, advocacy and politics, philanthropic intermediaries and voluntarism promotion, international activities, religion, business and professional associations and unions and finally a residual category for organisations that do not fit into the foregoing categories.¹⁴⁷ The rationale is that NPOs satisfy social needs so the types of NPOs correspond to the main types of social needs.

¹⁴⁷ L M Salamon, HK Anheier, 'In search of the non-profit sector II: The problem of classification', *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, Volume 3, Issue 3, December 1992, 267, 283 ff.

Another line of relevant research directly uses the differentiation of categories / levels of human needs / desires: the *Munich school of social geography* focuses on a normative thesis regarding the satisfaction of human needs. The basic functions of existence are housing, working, education, recreation, belonging to a community, and having access to public goods.¹⁴⁸ In comparison to the Munich school that primarily uses its categorisation for pragmatic measures of spatial planning and regional development, there are other lines of research that are explicitly based on philosophical and psychological theories. The wide-spread *Capability Approach* is a normative framework for the evaluation of individual well-being and social arrangements as well as for the design of policies and proposals about social change in society. The *Capability Approach* “(...) prioritizes certain of people’s beings and doings and their opportunities to realize those beings and doings”.¹⁴⁹ Among others, these are the opportunity to be educated, the ability to move around or to enjoy supportive social relationships.¹⁵⁰ An older attempt is *Maslow’s theory of human motivation*.¹⁵¹ Maslow outlined a hierarchy of basic needs: the satisfaction of physiological needs (this might be housing or health), safety needs (e. g., personal security, employment, the environment, etc.), and love and esteem needs (e. g., education, political participation, social capital and networks). The need of self-realisation does not seem to meet the requirement of urgency and is left out at the moment (see chapter 3.1). Building on these levels of human needs we could assume a tendency of what are the most urgent needs. But Maslow’s theory is relatively controversial, e. g., with regard to the direction of needs (are they felt in that order?), their potential cultural relativity, or empirical evidence to underline the theoretical model.

The whole debate about an a priori definition of basic human needs is still open. But a review of different approaches gives a kind of overlapping typology. Therefore we use the following categories of social innovation fields:

- Education
- Health & Care
- Employment
- Housing
- Social capital & Networks
- Political participation
- Environment

The analytical level *output and outcome of social innovations* consists of a set of sub indicators for the single social innovation fields. These are further divided into single indicators. In table 4-3 the proposed indicators are presented including suggested availability of data. The table contains a choice of different indicators for the social innovation fields. It is still work in progress. The variables must be tested on multi-collinearity to ensure that single dimensions are not overestimated. The indicators from existing measurement approaches are primarily outcome-related. There is a lack of indicators in the field of organisational output (as measurable results of social innovation activities) as we do not have the possibility to capture the performance of social innovation by patent-related metrics.

¹⁴⁸ B Werlen, *Sozialgeographie*, 2008, 157 ff.

¹⁴⁹ I Robeyns, *The Capability Approach*, Zalta EN (ed.), *The Stanford Encyclopedia of Philosophy*, Summer 2011 Edition, retrieved 29-05-2013, <<http://plato.stanford.edu/archives/sum2011/entries/capability-approach/>>

¹⁵⁰ I Robeyns, *The Capability Approach*, Zalta EN (ed.), *The Stanford Encyclopedia of Philosophy*, Summer 2011 Edition, retrieved 29-05-2013, <<http://plato.stanford.edu/archives/sum2011/entries/capability-approach/>>

¹⁵¹ A H Maslow, ‘A theory of human motivation’, *Psychological Review*, 50(4), 1943, 370–96, 1943, retrieved 27-05-2013, <<http://psychclassics.yorku.ca/Maslow/motivation.htm>>

At the level of outcome we looked for indicators that identify the degree to which a society has tackled a societal problem. To give an example, the single indicators ‘Equality opportunities / inequalities’ in education have been selected to show whether equality in opportunities in education (as an outcome of social innovation) is achieved in a country. This enables us to select indicators which refer to the process character of social innovation, i. e., the movement from the actual to the ideal state of social needs’ balance. It is evident that only a time series allows for an assessment of change and by that of the occurrence of a social innovation. It is highly important – as has been done in the introduction of the category of ‘outcomes’ – that social change does not equal social innovation. This means that positive change cannot be attributed to social innovation directly, just as negative change can be attributed to a lack of social innovation. In the absence of such direct links due to the influence of many confounding variables, it is however useful to identify fields of social change to spot them as areas where social innovation might have occurred. Thus, although this procedure can only serve as a proxy, it provides direction in the quest of identifying social innovation.

Several indicators drawn from existing innovation metrics including the *European System of Social Indicators* (EUSI) and the *OECD Better Life Index* include relevant indicators for this analytical level. This is due to their underlying classification systems which overlap with social innovation: in the *OECD Better Life Index* well-being indicators are grouped into the categories ‘material living conditions’ (e. g., housing, jobs) and ‘quality of life’ (e. g., health status, education, environmental quality).¹⁵² In the *European System of Social Indicators* (EUSI) the life domains including e. g., housing, health, or social and political participation are partially in line with our categorization, too.¹⁵³ Additionally sustainability measurements (e. g., Environmental Performance Index, National Footprint Accounts) offer a range of indicators which are included into the social innovation field *environment*.

Table 4-3 – Indicator set output and outcome of social innovations

Indicators	Proposed indicators
1. Education	
<i>Equality opportunities / inequalities</i>	
- Disabilities	- Equal opportunities / inequalities regarding disabled people (EUSI)
- Gender	- Share of women in graduates in ISCED 5 A, 5 B and 6 (OECD) - Equal opportunities/inequalities regarding women / men (EUSI)
- Migration	- Share of foreign students in all students (OECD) - Equal opportunities/inequalities regarding citizenship groups (EUSI)
<i>Skill acquisition</i>	
- Social and personal competence	- Educational attainment (OECD Better Life Index)

¹⁵² OECD, *How's Life? Measuring Well-Being*, 2011, 25

¹⁵³ R Berger-Schmitt, H-H Noll, *Conceptual Framework and Structure of a European System of Social Indicators, EuReporting Working Paper No. 9, Towards a European System of Social Reporting and Welfare Measurement*, Centre for Survey Research and Methodology (ZUMA). Social Indicators Department, Mannheim, 2000, 46 f.

- Subject-specific and methodical competence	- PISA results in problem solving (OCED) - PISA results in reading (OECD) - PISA results in math (OECD)
2. Health & Care	
<i>Access and quality of health facilities</i>	
- Satisfaction with system of health care	- Trust in institutions: system of health care (EUSI)
- Access	- Regional disparities of the availability of health care facilities (EUSI)
<i>Health status and research</i>	
- Health status	- Adults reporting good or very good health (OECD Health data, European Union Statistics on Income and Living conditions) - Life-expectancy at birth (OECD Health Data)
- Health-related patent	- Health-related patents (OCED Patent Database)
3. Employment	
<i>Jobs and Earning</i>	
- Employment rate	- Long-term unemployment rate (OECD, Labour Force Statistics database)
- Equality opportunities / inequalities	- Female participation in labour force (International Labour Organization, Key Indicators of the Labour Markets Net) - Equal opportunities/inequalities regarding employment of women / man, disabled people, citizenship, generations (EUSI) - GINI Index (Word Bank)
- Income	- Average annual earnings of full-time employees (OCED estimates based on OECD National Accounts database and Economic outlook)
<i>Work and Life</i>	
- Working hours	- Employees working very long hours (OECD Labour Force Statistics database) - Time devoted to leisure per day (OCED Time Use Survey database)
- Satisfaction with work-life time balance	- European workers satisfied with their work-life time balance (Second European Quality of Life Survey)
- Work and family	- Employment rate of women with children of compulsory school age (OECD Family database, national sources, OECD Labour Force Survey database)
4. Housing	
<i>Housing situation</i>	
- Living space	- Rooms per Persons (European Union Statistics of Income and Living Conditions, national statistic)

	<ul style="list-style-type: none"> offices) - Living space per Person (EUSI)
- Living environment	<ul style="list-style-type: none"> - Accessibility of shops, public transport, family doctor (EUSI) - Noise / air / environmental pollution (EUSI) - Accessibility of green spaces (EUSI) - Crime in the residential area (EUSI)
<i>Access and quality</i>	
- Homelessness and poor housing	- Homelessness and poor housing (EUSI)
- Satisfaction	- Satisfaction with housing (Gallup World Poll)
5. Social Capital and Networks	
<i>Frequency and quality</i>	
- Frequency	- Frequency of social contact (European Union Statistics on Income and Living Conditions)
- Quality	<ul style="list-style-type: none"> - Trust in others (Gallup World Poll) - Quality of social relations at the work place (EUSI)
<i>Social cohesion</i>	
- Social cohesion between generations	- Care for old-aged household members (EUSI), has to be controlled for by comparing to levels of poverty, to separate economic necessity from social cohesion
- Social networks	- Social network support (Gallup World Poll)
6. Political Participation	
<i>Voting and being informed</i>	
- Voter turn-out	- Voter turn-out (International Institute for Democracy and Electoral Assistance)
- Being informed	- Daily newspapers' circulation (World Association of Newspapers and News Publishers, World Press Trends)
<i>Citizens' active involvement</i>	
- Participation in political activities	- Participation in political activities other than voting (European Social Survey)
- Involvement in rule-making	- Consultation on rule-making (OECD Regulatory Management Systems' Indicators Survey)
7. Environment	
<i>Patents and certificates</i>	
- Environment-related patents	<ul style="list-style-type: none"> - Renewable energy patents (OECD Patent Database) - Patent applications in pollution abatement and waste management technologies (EPO Worldwide Patent Statistical Database) - Patents for climate change mitigation technologies (OECD Patent Database)

- Environment-related certificates	- ISO 14001 Environmental management systems (International Organization for Standardization (ISO), The ISO Survey of Certification)
<i>Preservation of natural capital and resources</i>	
- Protected area	- Share of protected areas (EUSI)
- Renewable energy	- Share of renewable energy sources (EUSI)
- State of environment	<ul style="list-style-type: none"> - State of environment: Quality of air, water, forests, soil (EUSI) - Environmental Performance Index: Environment health (e. g., air – effects on human health) and ecosystem vitality (e. g., biodiversity) (Yale University and Columbia University) - Benefits of environmental innovations (OECD based on Eurostat CIS 2008 and national sources) - Stock of natural resources (e. g., minerals, oil, wood, flora, fauna) (EUSI) - Ecological Footprint (nations’ demands on global regenerative capacity) (National Footprint Accounts)

4.2.5 Illustrative data of the Blueprint of social innovation metrics

The following *excerpt* from the comprehensive list of metrics aims to bring the framework to life. The following table contains dimensions, sub-categories, individual items and the respective metrics to measure social innovation. It not only specifies individual items, but also qualifies existing data sources that could be tapped into. In a first attempt to test data availability, the selected items have been expressed in current figures. Cases where figures could not be retrieved, because they would have to be adapted to be used to measure social innovation or were simply missing, have been highlighted. This has been done in an illustrative way for the TEPSIE partner countries (Denmark, Germany, Greece, Poland, Portugal and UK).

When compared to the structure of the indicator system (figure 4-3), it becomes evident which parts of the Blueprint have been selected for illustrating its applicability and connected data availability. The first dimension of ‘Entrepreneurial activity’ is exemplified by the sub-categories ‘investment activities’ and ‘entrepreneurial start-ups and death-rates’, which each contain individual items. For the dimension of ‘Output & Outcome’ the field of education has been chosen and is divided into items grouped under the headline of ‘equal opportunities’ or ‘skill acquisition’ for instance. In the case of framework conditions, the ‘resources framework’ and the ‘societal framework’ are displayed and subdivided further. We have deliberately chosen to display figures in a neutral way, which contains no evaluative component of ‘better or worse’. The latter needs to result from a closer examination of the reliability of the proposed indicators for social innovation measurement and thus of an improved understanding of social innovation.

Table 4-4 – Illustrative data of the Blueprint of social innovation metrics

Indicator dimensions	Proposed metrics (data source)	Illustrative data					
		DK	DE	GR	PL	PT	UK

I. Entrepreneurial Activity							
1. Investment activities							
Investment in innovation by: ...social economy organisations	Expenditure on innovation activities by firm size (Community Innovation Survey)	Used in ordinary innovation metrics → <i>No equivalent for social innovation currently available</i>					
...public sector	<i>No data currently available</i>	<i>No data currently available</i>					
2. Entrepreneurial start-ups & deaths							
Number of start-ups	Early-stage Social Entrepreneurship as percentage of the working population in 2009 (Global Entrepreneurship Monitor)	-	0.7%	2.0%	-	-	2,2%
Number of death rates	Enterprise death rate (OECD Business demography database)	Used in ordinary innovation metrics → <i>No equivalent for social innovation currently available</i>					
Business environment for starting a business	Days needed to start a business (International Bank for Reconstruction and Development/World Bank (2009), <i>Doing Business 2010</i> , United States)	6	18	19	32	6	13
II. Output & Outcome							
1. Education							
1.1 Equal opportunities / inequalities							
Disabilities	Equal opportunities / inequalities regarding disabled people (EUSI)	<i>No data currently available</i>					
Gender	Equal opportunities/inequalities regarding women / men: Women in Tertiary Education (2009, SIMon) (EUSI)	58.2%	51.4%	50.1% (2008)	57.9%	53.4%	57%
Migration	Share of foreign students in all students: Foreign students as a percentage of total tertiary enrolment 2000, 2004, 2009 (OECD)	9.6%	10.5%	-	0.8%	4.8%	20.7%
1.2 Skill acquisition							
Social and personal competence	Educational attainment, Percentage of people, aged 25 to 64, having at least upper-secondary (high school) degree, 2010 or latest available year (OECD Better Life Index)	76%	86%	65%	89%	32%	75%
Subject-specific and methodical competence	PISA results in reading, Reading, Age 15, (2009, OECD) (ranges from 0-1.000)	495	497	483	500	489	494

III. Framework conditions							
1. Resources framework							
1.1 Financial resources							
Monetary variables of the social economy	Share of expenditure as percentage of GDP (national sources, GDP in 2010 at current prices and current PPPs), inflation-adjusted (Data refer to different organisational populations)	7.9%	3.7%	-	0.5%	3.5%	2.5%
Public social expenditure	Total public social expenditure as percentage of GDP (2009, OECD Social Expenditure Statistics)	30.2 %	27.8 %	23.9 %	21.5 %	25.6 %	24.1 %
Private spending	Private social expenditure as percentage of GDP (2009, OECD Social Expenditure Statistics)	2.7 %	2.0 %	1.8 %	un-clear	1.6 %	5.3 %
2. Societal framework							
2.1 Needs or demands as reference points for social innovation							
Interest in shared social needs	'Google Trends' tool (Google)	<i>Application to be developed</i>					
Request for change	Articulated requests to the EU Parliament (EU Parliament, national parliaments)	<i>Application to be developed</i>					
2.2 Social engagement and attitudes							
Political participation	Signing a petition (2008, European Value Survey) (have done / might do)	61.7% / 19.6%	57.7% / 30.0%	19.0% / 34.3%	21.2% / 50.4%	21.0% / 32.0%	66.3% / 20,5% (2009)
Memberships in civil society organisations	"Do you belong to an organisation / group in environment, ecology, animal rights" (2008, European Value survey)	15.6%	3.8%	2.4%	0.8%	2.1%	6.7% (2009)
Citizens' attitudes towards entrepreneurship	"One should not start a business if there is a risk it might fail" (Strongly disagree/disagree) (Flash Eurobaro.)	56% / 12%	33% / 10%	37% / 13%	27% / 5%	31% / 3%	35% / 27%

5. Critical assessment

Having presented our Blueprint of social innovation indicators, in this chapter we discuss some of our key findings and conclusions with regard to opportunities and challenges of measuring social innovation at the macro level. In the first part (5.1) we discuss the broad measurement approach we used, and in the second part (5.2) we dug a little deeper into the selection process of indicators.

5.1. Measurement approach

When we analysed well-established measurement approaches in deliverable 2.3 it became apparent that most – if not all – of these indicator systems are looking at innovation at a ‘subject’ level (this is the terminology used by the OECD Manual), i.e., they look at enabling conditions or outputs at the innovator level instead of the innovation itself (the object). Although we are interested in the innovation objects and their properties, i.e. the degree of newness and the degree of problem solving, this cannot be done at the macro level. Here we are aiming to assess the potential for innovation and the status of social needs on the national level in a very generic way.

Furthermore, most indicator systems make the assumption that innovations primarily stem from private sector organisations as the innovators. But as work package 1 highlighted, the social economy and the public sector as well as the informal sector are important areas for social innovation. And in these sectors social innovation is not necessarily bound to a specific organisation but also happens in communities, networks and even social movements. Therefore, our measurement approach concentrates on social innovation as an inter-sector issue.

Our approach is based on an understanding of the fact that enabling conditions – and the way they manifest themselves - will vary from country to country. Similarly, the roles of the private, public, third and informal sectors and the division of work between them will also vary. To give an example, national welfare-regimes are structured in different ways and thus the importance of the public sector or the role of the social economy varies between countries.¹⁵⁴ Taking this into account our approach includes the social economy as well as the public sector in the resources framework. Thus we take at least partial account of the different structures of welfare regimes in different countries.

At the analytical level we measure *output* and *outcome* as directly related to specific social innovation fields. This modular approach, i.e., the classification of social innovation with relation to specific fields still needs broader investigation: for the time being we developed a classification that builds on human needs such as housing, education, health or political participation. To do so we used insights from a broad set of theories on non-profit activity fields, capabilities or human motivation.

Our approach of using general statements for the framework conditions and the entrepreneurial activities and of applying a differentiated measurement for outcome-related parts could be criticised. For example, isn't it necessary to make field-specific statements for the framework conditions, too? The importance of the single framework conditions varies between the different

¹⁵⁴ For more information see: D K Hubrich, E Bund, B Schmitz, G Mildenerger, *Comparative Case Study Report on the State of the Social Economy. A deliverable of the project: "The theoretical, empirical and policy foundations for building social innovation in Europe" (TEPSIE)*, European Commission – 7th Framework Programme, Brussels: European Commission, DG Research, 2012

social innovation fields. To give an example, human resources are especially important for health-related social innovations, since these services are particularly people-intensive. In the field *environment* knowledge, financial resources and the willingness of society to accept new technologies are often more important. Therefore a more granular differentiation for the framework conditions as well as the outcome in the single social innovation fields might be desirable. On the other hand it seems that an all too modular approach in terms of refining indicators further and further for each social innovation field would impair the aggregation to the macro level, but this is an issue to be debated. In any case it seems necessary to test the applicability of the Blueprint as presented here, before going into more detail, if found to be desirable. That is why we have restrained from introducing yet another level of complexity at this point. Its feasibility remains an issue for future investigation.

5.2. Selection of indicators

Our approach is very generic due to the sheer complexity of the field where social innovation can occur. This can be perceived as a shortcoming but also as an advantage. For social innovation measurement it seems helpful to avoid indicators that are linked to buzzwords such as “shared economy” or the like, because we do not know how long these trends will persist. A more generic understanding and measurement (independent from trends and thus durable in its usage) seems more adequate.

But it is still very difficult to select such indicators that most appropriately indicate social innovations. There is no “one best way” of measuring social innovation. But that is not a problem specific to social innovation. Existing metrics with emphasis on technological and economic innovation are also heavily criticised. Technological or economic innovation cannot be measured directly at the macro level and we need to rely on proxy data as well. However, in contrast to the lack of social innovation metrics, technological and economic innovation metrics rely on a set of established variables: most of all R&D investment and patents have proven their usefulness for indicating innovation and are used by the majority of existing innovation measurement approaches. With regard to social innovation we do not have similarly well-established metrics at the moment. Social innovation is a comparatively new topic.

In this deliverable we have taken an in-depth look at the opportunities and challenges when selecting indicators at the three analytical levels derived from our model for measuring social innovation. Taking into account the data that is available at the moment, we recommend putting a focus on the framework conditions for social innovation. Here we found a particularly promising area of social innovation metrics. The structure of the framework with its four parts allows us to draw a detailed picture of the broader environment for social innovation that helps to identify strengths and weaknesses in the national social innovation system and can be used as a guide to action.

The societal climate framework, including citizens’ attitudes towards novelty, their level of engagement in social needs and civic movements is hugely important. The potential for social innovation depends to a high degree on the attitudes of specific social groups and their willingness to contribute to overcoming societal challenges. Without contributions from the societal side, social innovations cannot be effective.

When selecting indicators relating to *organisational outputs and societal outcomes of social innovations* we face even bigger challenges. It is not possible to capture the performance of social innovation by patent-related metrics as it is in technological innovation: there is a lack of indicators

in the field of output of social innovation as measurable results of social innovation activities. Looking at the broader societal outcome of social innovation, social innovation performance may be captured by indicators at the overall societal level but we cannot methodically attribute these outcomes to social innovation. To give an example: if a measure of social integration showed that immigrants seemed to be better integrated into a society over time, it is difficult to attribute this change to a specific social innovation.

The Blueprint we have developed is a first step towards measuring social innovation at the macro level. In particular the relation between the potential for social innovation (captured through the structure of the framework conditions) and the performance of social innovation (captured through the output and outcome of social innovation) needs to be analysed. This will include questions like: does a high innovation potential in a specific region actually lead to a high degree of social innovation performance? The answer will enable us to validate the indicators at the analytical level of *framework conditions*. Do they really indicate potential for change at the societal level? Are they significant for social innovation? Therefore *outcomes of social innovations* can be used to correct the indicator suite: the indicator set *outcomes of social innovation* is an important supporting tool for the validation of the framework conditions. But, the current approach can only be tested by bringing it into use. Comparisons between different countries or regions and comparisons over time will reveal whether the right indicators are being proposed and whether the underlying assumptions are true.

As with existing innovation metrics, it is very problematic to show causality between the single indicators and analytical levels because of the complexity of the innovation process. At the macro level this is even more difficult. To dig deeper into the analysis of causal relations and the process of social innovation we need tools at the organisational and even the project level to learn from and complement the perspectives and insights at the macro level.

We selected indicators that can be connected to data from already existing databases to make the measurement practicable at the European level. The overall availability of data is sufficient enough to fill the largest part of our Blueprint with appropriate indicators. The data selected for the Blueprint are not specifically social innovation-related. Rather they function as proxies for social innovation. In contrast to data at the European level collected for the specific purpose of measuring technological and economic innovation (e. g., CIS, Innobarometer) there is a great desire for specific data sources for social innovation (especially for the analytical level *entrepreneurial activity*). This is of course due to the fact that research on social innovation has not yet reached the level of technological or economic innovation.

We hope that the new Blueprint opens up a comprehensive perspective and stimulates discussion on these issues.

6. Conclusions and future research

The objective of this deliverable was to develop a Blueprint of social innovation indicators at the macro level and therefore to contribute to an understanding of the opportunities and the challenges of measuring social innovation. Building on an intensive review of existing measurement approaches and the extraction of main findings from the analysed approaches (see deliverable 2.3 of the TEPsIE project), we have presented a Blueprint of social innovation indicators. The Blueprint has been developed by pursuing the following steps: First, we operationalized the TEPsIE definition of social innovation from a measurement perspective. These theoretical assumptions were then integrated into the model for measuring social innovation together with a number of existing innovation metrics. Based on the model we developed a basic design of a scoreboard consisting of three analytical levels for measuring social innovation to assess strengths and weaknesses of national social innovation systems. The indicators that are most appropriate to indicate social innovation were selected and grouped in a process of refinement into indicator dimensions. Existing innovation metrics have been complemented by explicitly social indicators.

We can summarize our assessment of the opportunities for measuring social innovation as follows: Measuring the *framework conditions for social innovation* is a very promising avenue for the measurement of social innovation. At this level we have the opportunity to give recommendations to policy makers in order to create an enabling framework for social innovation. Measuring the *organisational outputs and societal outcomes of social innovations* is particularly suitable as a benchmark for the validation of the indicators contained in the framework conditions. Additionally, a comparison of the societal outcome over time could indicate changes in the social structure and therefore provide insights into social innovation performance. With regard to the analytical level *entrepreneurial activities* it has become clear that in particular survey-based data related to social innovation are necessary. Looking at technological and economic innovation, organisational surveys are conducted on the EU-level. Considering the clear importance of entrepreneurial activities as push-factors for social innovation, there is a need for empirical survey data that separately considers organisations that are socially innovative in order to improve data availability in the field of social innovation.

Measuring social innovation is a very challenging field, since social innovation is a complex process and research in this area has not yet reached the level of technological or economic innovation metrics. We need a broader consensus between scholars about what the qualifiers for social innovations are. Therefore we are still at the outset of research in this field and many questions are still open and further clarifications are needed. At the same time we must be aware that, as well as in technological and economic innovation, there is no “one best way” for measuring social innovation. The development of social innovation metrics should be understood as on-going research process that continuously needs to take into account changes in social needs and the social structure.

The measurement of social innovation marks a step forward in increasing recognition and attention for social innovation through providing empirical data about social innovation potential and performance. At the European level this is even becoming more important in a time of financial crisis and social upheaval. The macro-level approach is necessary to inform European and national policy makers, operationalize and better understand the concept of social innovation. Finally, the approach functions as a complement to organisational and broader impact measurement approaches.

As mentioned at the beginning of this deliverable, the growing interest in social innovation should not only be understood as an effect of growing societal challenges. It also signifies a societal shift towards a concern for sustainability and overall quality of life that cannot be captured by prevailing dominant sources of individual utility and life satisfaction such as earned income. With our measurement approach we hope to reflect this societal shift and promote the concept of social innovation as a promising way to enhance society's capacity to act in challenging times.

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