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Measuring What Matters—Indicators of Social Innovativeness on the National Level

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This article presents an approach to measuring social innovation. Indicators emerge from: (1) the development of a theoretically grounded measurement model, (2) a systematic review of 30 established measurement approaches. The article serves three purposes: First, it develops the conceptual understanding for social innovation. Second, through operationalization it strengthens the link between theory and empirical phenomena. Third, it paves ground for national or regional measurement of social innovation and is thus, relevant to policy making.

Keywords innovation; social innovation; measurement; information system; indicators; metrics

INTRODUCTION

The field of social innovation is a nascent but increasingly important one that evokes interest among practitioners, policy makers, and academics alike. One result is a growing list of individual publications on the subject (Howaldt & Schwarz, 2010; Murray et al., 2010; Nicholls & Murdock, 2012). Another is the increasing number of high-profile international research projects dedicated to it.¹ One of the reasons why social innovation has become a key topic on the research agenda is that it responds to ambitions of maintaining and developing the viability of societies as well as strengthening their self-regulating and problem-solving capacity—as formulated in the EU Lisbon agenda and elsewhere around the world. This shall happen in view of social constellations, market environments, and state capacities, which are ever more often described as volatile, challenging, or austere. Innovation as a problem-solving mechanism has received much less attention with regard to social issues than market driven technical issues or state-driven political and bureaucratic ones. The debate on social innovation is thus not only important, but also timely.

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To date most research contributions have focused on the theoretical framing of social innovation and worked on a single case basis. The Theoretical, Empirical, and Policy Foundations for Building Social Innovation in Europe (TEPSIE; <http://www.tepsie.eu>) project in which the presented research has been performed, just as some of the future and ongoing research projects referred to above, aims not only to strengthen the theoretical, but in particular the empirical underpinnings of social innovation in the sense of fundamental research. Metrics play an important role in describing and analyzing empirical phenomena. As will be presented in the course of this article, a well-established set of metrics to capture innovation (capacity) of organizations, fields, or regions has been developed in view of technology as a vital component of competitive advantage in markets, but also increasingly with regard to efficiency and effectiveness in the public sector. However, there are no existing metrics for social innovation, yet. Nor are there many well-concerted and systematic attempts of filling this gap. The field of social innovation—both due to its emergent state and its proximity to established fields of research—thus, presents the special and unprecedented opportunity of being explored by theory and metrics in combination. This comes in contrast to the experience in the field of technology or the public sector, where the latter (metrics) have followed the former (theory) with a huge time-lag, thereby initially decreasing steering capacity, both politically and practically.

Two major functions are inherent to the development of a blueprint of social innovation metrics: It is meant to (1) develop the conceptual understanding of social innovation further, and (2) respond to calls for data to inform policy making and investment decisions in view of social challenges (Reeder et al., 2012). This article presents a systematic review of existing measurement approaches to propose a set of indicators with primary importance for capturing social innovation. This is done against a theoretical conceptualization of social innovation, which takes into account its commonalities, but in particular its differences to other sorts of innovation. The metrics finally proposed shall be understood as an indicator suite at the national (macro) level, tailored for implementation at that level across the EU and beyond. The indicator suite should help assess the status quo of social innovation and social innovation capacity as well as make

the existing innovation potential and innovation performance comparable across countries.

The article proceeds as follows. First, background information is given on the state-of-art of innovation measurement and its sequential development. Second, a theoretical framing for the measurement of social innovation is introduced and justified by outlining its foundation in seminal research of the social sciences. Third, a number of applicable innovation measurement approaches that are being executed at present are screened in order to define appropriate indicator categories to be classified against the initially introduced model. Then follows a theoretically grounded discussion of how these traits might have to be adapted in view of the particularities of social innovation. All of this will fifth result in the proposition of indicators and sub-indicators for capturing social innovation capacity of national systems. The last step links back to the screening stage. The article closes with recommendations for future research and practice on social innovation measurement.

BACKGROUND—FROM TECHNOLOGICAL TO PUBLIC TO SOCIAL INNOVATION

The concept of innovation has been surrounded by an aura of fascination and desirability for much more than a century. It has however, found its way into people's conscience by outstanding figures who introduced products into markets with cataclysmic effects in the late 19th and early 20th century. Among these are Henry Ford as the father of car mass production and Thomas Edison known as the man who brought electric light to the world. These personalities are the recipients of tribute, although the system of car production had been designed after the example of assembly lines in the meat industry and the idea of the light bulb had been invented by an unspecified number of others previously. In this sense they are indeed rather to be seen as (recombinant) innovators (Hargadon, 2003) than inventors—the former stressing the ideas of assertiveness, standardization, and the subsequent triggering of (large scale) change. This is reflected in the concept of economic cycles initiated by major innovations as introduced by Kondratieff (1926, translated) and elaborated on by Schumpeter (1994; first edition from 1943), who then explicitly built a link between innovation and entrepreneurship. No wonder that ever since the investigation of innovation has gained prominence in the economic and business literature. Innovation under the perspective of global competitiveness affects the organizational (Drucker, 1985; Hippel, 1995) as much as the national state level.

In parallel to advanced and concerted efforts to capture technological innovation as a key component of economic development and welfare, a discussion on innovation in the public sector has emerged and is increasingly the subject of empirical investigation (see, e.g., Australian Government, 2011; Bloch, 2011; or Miles, Wilkinson, Edler, Bleda, Simmonds, & Clark, 2009). There are different approaches to innovation in the public sector: Some research designs explore policy and operational

innovations in the public sector on a case basis, for instance in the field of housing (Walker & Jeanes, 2001). Other studies deal with the subject in an intra-sector comparative way as done by Moore and Hartley (2008) with a particular emphasis on public sector innovations in governance (for instance the stimulation of cross-sector collaboration). In any case the relative infancy of the subject makes its study and in particular its measurement far less developed than the one of technological innovation.

Recently though, yet another concept has emerged that gains importance for contemporary societies: Social innovation as

... 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 better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act (The Young Foundation, 2012, p. 18).

It is to be noted that the definition clearly reflects traits that have become evident in the allusion to technological and public innovations and indicators applied to capture both. They must be considered in building a similar indicator set tailored to social innovation.

In the context of the TEPsIE project, which takes a cross-national comparative perspective on social innovation, the authors of this article believe that it is reasonable to take a macro level approach to the measurement of social innovation. First, the macro level represents more fruitful ground in terms of developing metrics, because indicators on the macro level are usually of comparative and aggregate nature. Second, as illustrated before there are comparable approaches to innovation measurement in the commercial and in the public sector that can be applied. This is accompanied by the emerging study of so called "new welfare indicators," which try to develop complements to the measurement of well-being as currently restricted to GDP as the single measure of progress (Porter, Stern, & Loria, 2013; Stiglitz, Sen, & Fitoussi, 2009). Third, the very attempt of establishing metrics on the macro level can be related to questions and investigations of social impact at and beyond the organizational level (Lingane & Olsen, 2004; Marée & Mertens, 2012; Paton, 2003; Tuan, 2008)—the former giving insights into the mechanisms and variables at play, which influence the capacity for social innovation in larger systems, the latter being more fit for uncovering the process dimension of social innovation. After having briefly recapitulated the background against which our research has emerged, it is vital to outline in which theoretical context the screening of existing innovation metrics is being embedded in view of social innovation as a distinct concept.

Theoretical Foundations of Social Innovation

Social innovation is fed from a set of very different sources, which is why we refer to the theoretical grounding of our research as the "social innovation framework model" (Figure 1).

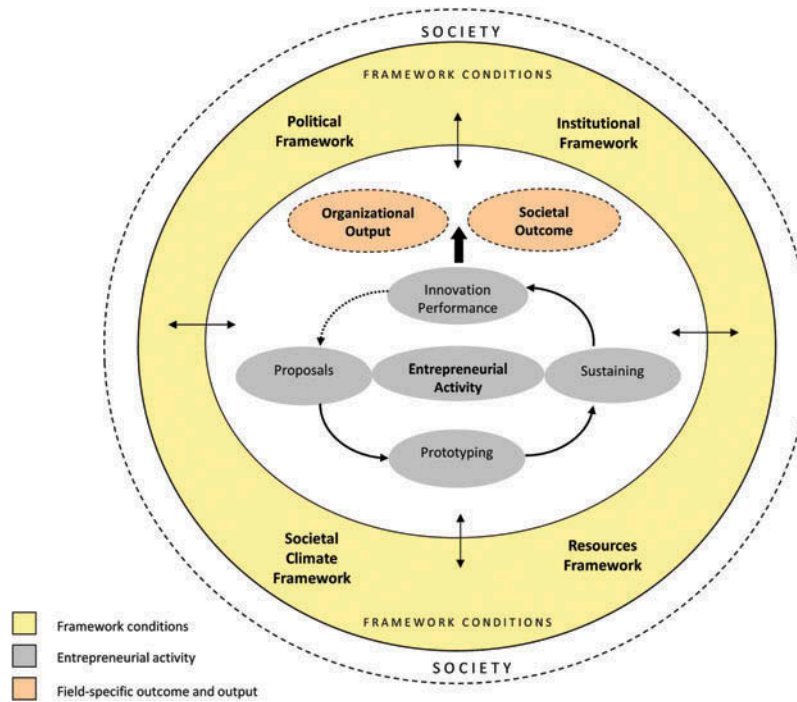


FIG. 1. Integrated model for measuring social innovation.

In fact, this model has neither been derived purely on theoretical ground nor based on the screening of existing metrics in technological innovation, public innovation and social indicator approaches (such as the OECD Better Life Index). It is rather to be seen as the result of an iterative process between both strands of the performed research.

The model pays respect to a major shift that has occurred in the understanding of innovation over time. As its understanding has changed, so has the measurement of the phenomenon. Basically, the change has occurred in two ways. First, in relation to the innovation process 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 the market or legislation, and specifically their interplay (Rothwell, 1994). This means that the understanding has shifted from a linear to a dynamic process. Second, and related to the innovation itself, early innovation measurement, influenced by the industrial era, tended to concentrate on artifacts and products (as innovations) and therefore largely ignored processes and intangible innovations (ideas; Milbergs & Vonortas, 2004, p. 2).

With respect to these trends in technological innovation, social innovation measurement in the proposed model has been framed in terms of three interrelated levels that form part of the social innovation cycle (cf., Figure 1).

(I) Entrepreneurial Activities

The link between entrepreneurship and innovation has been made explicit in the background chapter. It builds the core of the proposed model as it represents the very set of traits that individuals and organizations have to possess to trigger innovation. “Entrepreneurship and innovation are intrinsically related as both involve the processes of discovery, evaluation, and exploitation of opportunities (entrepreneurship) and novelties (innovation;” Crossan & Apaydin, 2010, p. 1177). Through introducing “new combinations” (Schumpeter, 1934, p. 6), as analogy to innovation rather than invention, entrepreneurs trigger change that results in “creative destruction” (Schumpeter, 1994, p. 81ff.). While originally focused on economic aspects of such activity, Schumpeter’s work always contained notions to non-economic forms of entrepreneurship, covering the areas of social life, politics, or culture. These broader meanings have been carved out by Swedberg (2006, 2009) and applied in the analysis of empirical cases in Krlev (2012), referring to a diverse set of activities from combating malnutrition in deprived contexts to renewable energy production in industrialized societies.

In the context of technological innovation Shane (1992) illustrates, in relating to fundamental literature on entrepreneurship or “innovation as change” written by the likes of Kanter (1983) or Sexton and Bowman (1985), how vital entrepreneurial action is for innovation (although the latter is not properly differentiated from invention). The author

thereby refers to freedom of action, in other words, a relative un-restrictedness by resource endowments or conformity pressures (Shane, 1992, p. 33f.). Although not all innovators have to be entrepreneurs, these two share a lot of commonalities (Shane, 1992, p. 35). In relating to Khandawalla (1977) Shane furthermore proposes that an attitude of risk taking connected to the stimulation of creativity is relevant to the innovativeness of organizations but also societies (Shane, 1992, p. 40). Drucker takes an even broader perspective on entrepreneurship by relating to Jean-Baptiste Say and by providing Humboldt's foundation of modern universities as a pivotal example in the *History of Entrepreneurship* (Drucker, 1985, p. 21; italics in original). For this reason he argues in favor of using what we know from the "discipline of innovation" to develop our understanding of social innovation (Drucker, 1987, p. 34). He refers to the stimulation of innovation as a *managerial task*. However, the description he gives on socially innovative political actions (note the proximity to public sector innovation) that slowly converge towards the civic sphere—so his assertion—rather point to what he defines as *entrepreneurial action*. The recognition of opportunities is a central motive in Drucker's discussion of entrepreneurship throughout (Drucker, 1985).

By building on the latter and combining it inherently with the element of innovation, the proposed model draws on two of the four competing interpretations of "entrepreneurship" as portrayed by Aldrich and Ruef (2006, p. 62ff.): (1) innovation and innovativeness; (2) opportunity recognition. Meanwhile social innovation is less or not necessarily pre-occupied with "high growth and high capitalization" as further listed by Aldrich and Ruef, since it is often very context bound, has to be locally embedded and thus might be locally restricted—take for instance the social enterprise farming initiative SEKEM meant to benefit poor communities in Egypt as discussed by Seelos, Mair, Battilana, and Dacin (2011). Also, social innovation does not necessarily result in the "creation of new organizations." Nonetheless, it seems that the motive of resource mobilization, treated as a differentiating element between the pre-organization and the organization stage by Katz and Gartner (1988) is a vital component of social innovation. Even in cases where no formal organization is founded, for instance when dealing with civic movements for human rights or environmental preservation as motors of innovation (Hendersen, 1993), resource mobilization plays a fundamental part (see, e.g., McCarthy & Zald, 1977). For social innovation, based on the recognition of opportunities it is always necessary to convert the creative act (e.g., the production of ideas) into concrete action. The latter has of course to be preceded by a phase of selection, since not all ideas will be executed.

Thus, the elements of knowledge/idea creation, idea selection, and mobilization of resources have been included in the proposed model. They are part of the entrepreneurial process of social innovation, which entails taking risks and the realization of new ideas against all odds, if necessary. In order to reconcile

these stages with the emerging social innovation discourse, the terminology has been adapted by drawing on existing conceptual frames (Murray et al., 2010). We have done so by formulating (1) the creation of ideas to culminate in the articulation of *proposals*, (2) the selection of ideas to be enhanced by a process of *prototyping*, and (3) the mobilization of resources to be vital in *sustaining* the proposals and prototypes, and thus turning them into practice. All three stages contribute to the eventual *innovation performance* (4), which includes the dimensions of efficiency and effectiveness, but as mentioned in the context of public sector innovation also other dimensions such as community cohesion or justice (Moore & Hartley, 2008). The model furthermore takes into account the dynamic and at times chaotic nature of innovation (Tura, Harmaakorpi, & Pekkola, 2008) by formulating it as an iterative process, which is open to short-cuts and subject to interdependencies between the phases.

(II) Framework Conditions

While "push factors" are usually ascribed to the studied organization or individual executing the entrepreneurial action, surrounding framework conditions are often regarded as "pull factors" (see, e.g., Steffek, 2012). Based on a structural-functional analysis at the theoretical level, Wieczorek and Hekkert (2012, p. 86) underline the importance of institutions, actors, and interactions for innovation processes in addition to physical or financial infrastructure. In relation to the dimensions outlined by Wieczorek and Hekkert in view of technological innovation, we propose a discrimination between framework factors, separately taking into account conditions at the "institutional," the "political," and the "societal climate" level. In view of the preceding discussion these must be complemented by a fourth dimension to be complete, namely the resources framework. We posit that these four represent the main context factors and determine the conditions for the activity of social innovators. Due to their complexity they require more detailed explanation.

The *institutional framework* (1) represents the set of values, norms, and laws that regulate the human and organizational actions on the societal level (North, 1990, p. 3). North, in his seminal work on the relation between institutional conditions and economic performance underlines the importance of institutions for innovations. As North extends his discussion to the dimension of social performance, it is made clear that social innovation would be affected likewise. Institutional frames might even be more vital in that field, since the bargaining power of actors in the social sphere, on which socially efficient outcomes depend (North 1990, pp. 16, 47) is restricted as compared to the economic sphere, specifically with regard to smaller scale organizations as often found in the context of social entrepreneurship (Krlev, 2013). Based on W. Richard Scott, we can differentiate three types of institutions (Thornton, Ocasio, & Lounsbury, 2012, p. 37, referring to Scott, 2001): (1) regulative institutions as rules that are coercive and legally sanctioned (e.g., laws), (2) normative institutions to be understood as binding expectations that are morally governed, based on

normative appropriateness (e.g., environmental protection), (3) cultural-cognitive institutions as standard logics of action or common beliefs within a shared culture (e.g., human rights).

The reciprocity of framework conditions, in this case specifically of the institutional framework, is expressed by the interlinking arrows between the spheres of the model. This design pays tribute to the interpretation of institutions as “. . . the underlying rules of the game” on the one hand side and “. . . organizations (and their entrepreneurs) . . . as agents of institutional change” on the other hand (North, 1990, p. 5). Gedajlovic, Honig, Moore, Payne, and Wright (2013, p. 462) make the case for putting more emphasis on the institutional context as a determinant of entrepreneurial action, which makes it highly relevant to the discussion of social innovation. By drawing on a wide range of classics in entrepreneurship literature, the authors point out that understanding institutional contexts helps determining *what* opportunities are discovered, *who* discovers these opportunities, *why* some opportunities and emergent approaches survive the selection process and finally *how* the pilot concepts are put into practice (emphasis adopted from original).

In sociological theory (neo) institutionalism (DiMaggio & Powell, 1991) plays an even more prominent role than in economic study. Institutions are characterized by their proximity to social norms (Parsons, 1990; compare also to Scott, 2001) and thus, not at a far distance from the political and societal climate frameworks. Institutions are differentiated from the latter clearly when formally embodied (e.g., laws or property rights), but less so when it comes to, for example, “conventions” for acceptable behavior referred to as “informal constraints” (North, 1990, pp. 36–45). It is still important to note the difference between the frameworks. The process of the initiation, discussion, and adoption of laws on, for example, the state funded expansion of child care facilities, is part of the political framework (partly influenced by the societal climate shaping this discussion). However, once a law has been passed and incorporated into the existing set of laws, it becomes part of the institutional framework.

Although primarily serving a differentiating purpose, based on the given example it cannot be denied that the different framework dimensions—despite their distinctness—are genuinely intertwined. This is becoming particularly evident where the discussion of the institutional frame is connected to aspects of (societal) legitimacy (Scott, 1983). The *societal climate framework* (2) incorporated in the model relates to the idea that social innovation is targeting the satisfaction of pressing, underserved needs (Nicholls & Murdock, 2012, p. 2). The recognition of the latter is bound to a negotiation process between various societal stakeholders that can produce legitimacy. Legitimacy can however also be interpreted as grounded in moral and norms, or as a cognitive definition of appropriateness (for all three notions see Aldrich & Fiol, 1994, as discussed in Suchman, 1995, p. 572). The latter two aspects can be linked to the formation of organizational status as discussed by

Washington and Zajac (2005, p. 82), which serves as a crucial variable to competitive outcomes (and thus, of the assertiveness of ideas or projects). Washington and Zajac find that in this regard the sociological notion of status trespasses the economic category of reputation. Status is a “. . . concept that captures differences in social rank that generate privilege or discrimination (not performance based awards)” (Washington & Zajac, 2005, p. 83). In contrast to performance based awards, status is dependent on what (parts of) society consider as fair and acceptable or desirable, for example, with regard to working conditions, the treatment of minorities, etc.

Even more than to firms do such conditional factors apply to Third Sector organizations. In addition to their role in service provision these voice minority claims and provide political lobbying for issues that are relevant to society but largely unacknowledged (Kramer, 1981, p. 9). These efforts and their results are almost exclusively based on normative virtues and convictions rather than bound directly to any alternative rate of performance. Similar to Third Sector organizations or firms with high organizational status, social innovation will be directed by societal perceptions. The legitimacy certain issues can gain in the broad public will not only affect the social innovation process itself but also the acceptance of its results and thus, their ability to unfold and grow. In the context of social work it will for instance usually be harder to acquire support for the rehabilitation of drug-addicts or ex-offenders than for assisted learning for children. In addition to public preferences, this will also depend on other cultural factors, which are of course subject to dynamic and temporal trends but largely stable. This leads us back to, for example, the cultural determinants of innovative capacity directly (Shane, 1992) or attitudes towards entrepreneurial orientation more generally as embodied in risk taking and proactiveness (Kreiser, Marino, Dickson, & Weaver, 2010). Therefore, the societal climate framework covers attitudes towards change and openness to the development of (social) innovation just as civic engagement in political and social life or the existence of a shared set of needs and awareness within society for the latter.

Yet another point of interlinkage leads us to the next framework. DiMaggio and Powell (1983, p. 150), in referring to Carroll and Delacroix (1982) posit that legitimacy is a vital resource to organizations. In the literal sense, however, *the resources framework* (3) can be interpreted by applying resource dependence theory (Barney, 1991). The theory or “view” in itself as presented by Barney has its main focus on developing a sustained, hardly imitable competitive advantage. Social innovation in contrast is often of collaborative and sharing nature.² More importantly though, it is likely that social just like commercial entrepreneurs will (have to) assemble resources that are characterized by heterogeneity, which is central to the view articulated by Barney. In so doing, they trigger innovation as a potential recombination of elements and simultaneously tap into a diversified set of resource streams.

Evidently, in addition to physical and monetary resources or the accessibility of technology, less tangible resources such as the one of social capital (Bourdieu, 1986; Putnam, Leonardi, & Nanetti, 1993), simplistically put as the “bonds between people,” are of major importance in the innovation process. Mueller, Rosenbusch, and Bausch (2013, p. 20), for instance, underline the importance of the availability of resources in terms of financial, human, and social capital for both exploitative (improvement of the existing) and exploratory (the creation of something entirely new) forms of innovation. Social capital represents a resource in its own right, but can also help to get access to other resources (Gedajlovic et al., 2013, p. 458) or be relevant in the acquisition of legitimacy. With regard to human resources (Becker, 1964) it is to be remarked that in view of social innovation the concept needs to be extended in scope as compared to technological innovation. This is because of the profound influence of volunteers in organizations operating in the social sphere.

Other, even less tangible resources such as knowledge (treated as contextual factors by, e.g., James, Leiblein, & Lu, 2013, p. 1127) are finally not to be neglected not only in determining how well an organization can exploit value from the innovations they produce (James, Leiblein, & Lu, 2013), but also in capturing innovative capacity in itself by counting, for example, the numbers of patents (Furman et al., 2002). Especially in the context of innovation, however, it is not only formally coded knowledge that matters, but also what Polanyi (1966) calls “tacit knowledge.” Explicit knowledge refers to specialized and/or formalized knowledge that is based on facts and figures. In the context of social innovation it would refer to the innovator’s familiarity with a specific problem or need, for instance the high degree of youth unemployment in certain European countries or regions, its spread and maybe some of its causes. Tacit knowledge on the contrary is needed to put solutions into action that address the need. It is much more about having a feel for the situation, bringing the right people together and stimulating regional development through events, the connection of key players, or the attraction of financial investments. 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.

Lastly, we want to highlight more explicitly the influences that the *political framework* (4) can have beyond the institutional framework and as a complement (oftentimes even a mirror) of the societal climate framework. Policy is an area to be incorporated in the proposed model beyond the aspect of stakeholder inclusion, which has been realized by addressing citizens’ attitudes and values in the societal climate framework or other individuals and organizations in their resource providing role. Policy rather has a supra-organizational character in that it affects and brings together different constituents. A way of doing so, indeed a more innovative way is discussed by van Buuren and Loorbach (2009). The authors analyze how

“transition arenas” or “pilot projects” can increase effectiveness in terms of leveraging commitment across stakeholders and improve the creation of solutions to challenges. Pilot projects try to solve problems by creating an artificial sphere where multiple stakeholders (including those directly affected, i.e., the “problem owners,” p. 378) can engage to discuss and bring up ideas to address challenges that affect communities. Transition arenas take a different approach by forming expert groups (from government, industry, NGO, or academia) to address a challenge. Both approaches represent a pre-step to actual implementation and are thus, not to be categorized as an institutional factor. This is not the place to evaluate the actual usefulness of such methods; the examples do however illustratively outline how political processes can be significant for innovation without or before being formalized. Although they are often applied to political decisions directly, such as the realization of a construction project, they outline the complex interaction necessary to create social innovation, for example, by fostering new concepts of neighborhood assistance or community based care services, which have become a prominent research subject in evidence-based health care.

In view of understanding innovation in general as a complex rather than a linear process, authors have pointed out that “. . . the provision of strategic information and organizing capacity” (Klein Woolthuis, Lankhuizen, & Gilsing, 2005, p. 625) are often far more vital policy instruments (soft resources) than the provision of R&D budgets (hard resources). This is likely to be true also for social innovation, which is furthermore described as a cross-sector phenomenon (Crepaldi, Rosa, & Pesce, 2012, pp. 63f., 70, 74, 77; Nicholls & Murdock, 2012, pp. 5f.; The Young Foundation, 2012, pp. 15, 21). This applies both to the inclusion of a multitude of actors in discursive terms (consultation) as well as in operative terms (project realization). The usefulness of applying a political framework perspective is enhanced by the proximity of this very logic of social innovation to the one of “policy networks” not only as a metaphor but as an empirically useful concept that comprises “. . . public and private actors interested in specific policies and taken into account by others as players . . . ‘that reach a collective decision in a common problem’” (Pappi & Henning, 1998, p. 553 in relation to and citing Windhoff-Héritier, Knill, & Mingers, 1996, p. 35; and also Mayntz, 1993, pp. 39ff.).

Modeled against this background the political framework represents the set of incentives and interventions that derive from the political system and that are intended to foster (collaborative) social innovations directly or indirectly. Here we do not point to monetary-based incentives that are offered by national governments, but instead to activities such as social innovation prizes or multi-stakeholder events initiated by political players as direct ways of promotion. Indirect ways are to be found in political proclamations and agendas, including the degree of unrestricted civic use of ICT and social media as tools of recent cataclysmic social change of the “Arab spring” and the more decentralized, civic

communication accompanying its positive as well as negative effects.

(III) Field Specific Outputs and Outcomes

The final level of the model is dedicated to the results of the innovation activities. Outputs refer to measurable products that can be easily linked to a specific organization or individual. Outcomes on the other hand are much harder to measure and it is hard to connect them directly to specific organizational activities (see Clark, Rosenzweig, Long, & Olsen, 2004, p. 7). The proximity of outcomes to the framework conditions indicates that these outcomes might themselves serve as (new) enabling conditions.

With respect to the diversity of social or human needs and the fields of activity which respond to these, we opt for differentiating between different field specific outputs and outcomes. The field categories applied in the model have been derived from a review of existing classifications, each of which are characterized by a distinct (implicit) line of argumentation with regard to the nexus between social needs and fields of activity. Since non-profit organizations address social needs, it can be assumed that the types of NPOs (non-profit organizations) in the “International Classification of Non-Profit Organizations” (ICNPO, see Salamon & Anheier, 1992) will roughly correspond to the main types of social needs. Another line of relevant research comes from the “Munich school of social geography” that explicitly relates to human needs to define separate fields of activity (Werlen, 2000, p. 157ff.). In addition to this strand which applies categorization for the purpose of spatial planning and regional development, there are other pieces of research that follow a philosophical or psychological tradition. Among these are the “capability approach” (Sen, 1985), which refers to components of individual well-being and thereby implicitly denotes demands to be served, or Maslow’s theory of human motivation that differentiates between basic and more advanced needs from physiology to self-realization (Maslow, 1943). The whole debate about an a priori definition of basic human needs is inconclusive. But a comparison of all these different approaches results in an overlapping typology, which includes in alphabetical order: education, employment, environment, health and care, housing, social capital and networks, political participation.

The indicators finally allocated to the single categories cannot be justified here, since this would go far beyond the scope of an article. The revision of existing innovation metrics and social indicators together with the respective data sources provided in the tables of the following chapter and the Appendix will, however, outline where the included items have their foundation.

Screening of Existing Metrics

Method

On the background of and in relation to the theoretical modeling the authors have performed an extensive screening

of metrics. This screening responds to calls from scholars on extending or rather establishing ground for the measurement of social innovation (Wobbe, 2012; Reeder et al., 2012). Both, Wobbe and Reeder et al. in principle discuss potential approaches to the measurement of social innovation, but a thorough, systematic screening as presented here is unprecedented. The research method applied here is the one of a systematic review, which is common in medical research for instance, but gains importance in the social sciences as well (Pettigrew & Roberts, 2005).

Systematic reviews are usually performed to give an overview of existing research, or even to synthesize findings in a meta-analysis of data. None of these have been the main rationale of the performed research. The research goal here was to assess various existing (partly interrelated) measurement approaches at close proximity to social innovation in order to distill a set of particularly promising metrics for the assessment of social innovation. In this regard the applied method is similar to a “constant comparison analysis,” which refers to the combination of a comparative system of codification with theory building (Glaser & Strauss, 1967, p. 108). Onwuegbuzie, Leech, and Collins (2012, p. 24) bridge these two worlds by advocating the application of the method in literature reviews or “research syntheses.” What is more, despite the deviation in goals from a classical systematic review, the applied procedure is identical, including (cf., Pettigrew & Roberts 2005, pp. 3, 45ff.): (1) specification of the research question, in other words, which measurement approaches do exist and how can these be used for the measurement of social innovation?; (2) identification of the types of existing “studies” to be assessed, in other words, indicators that explicitly focus on “social” and “innovative” aspects, which is the case for innovation metrics and welfare indicators; (3) realization of a comprehensive search effort; (4) screening of search results and selection of approaches to be considered; (5) critical appraisal of the included approaches. Due to their complexity the last three aspects will be spelled out in detail in the following.

The screening effort has been preceded by an expert consultation within the larger TEPSIE research team. All the different national teams (six in total) were asked to share their existing knowledge on national or regional measurement initiatives and to tap that of their key stakeholders with expertise in these fields. In a second step, desk-based research has been executed. A comprehensive web search has been performed applying the search terms “innovation metrics,” “measuring innovation,” “indicator approaches,” “competitiveness,” “social indicators,” “social progress,” and synonyms of these. Furthermore, websites of key data authorities likely to be engaged in such measurement efforts have been analyzed (including, e.g., EUROSTAT or OECD Statistics). Benefiting from snowball effects, the search procedure (first level information) has been complemented by second level information on the existence of further measurement approaches that the reports from the first level were referring to. This effect was

particularly fruitful, since most newly developed approaches related back to former ones in terms of drawing on or combining indicators and informing their new conceptualization and the operationalization of metrics.

In total more than 45 measurement approaches have been actively assessed. To come up with a selection of relevant approaches specific criteria have been applied, including: (1) the number of times an approach had been cited, (2) the fulfillment of pre-defined quality criteria (e.g., test of content validity from an inter-comparative perspective; objectivity of the responsible institution, i.e., a clear dismissal of clientelism or fundamental bias in the analysis), and (3) whether the approach in principle complied with the most recent state of research as presented above. Finally, the extent to which the measurement approach provided transferable lessons for social innovation was a key criterion for selection. Therefore, the mode of selection is close to what Patton (2002, p. 204) calls “utilization-focused evaluation,” which the authors have performed in a collaborative research effort. The core assessment was carried out by two researchers independently. These researchers selected the measurement approaches. Due to the clarity of selection criteria, inter-rater reliability was high on average. The final decision was taken and disputes were settled based on a group consensus by five involved colleagues in total. Based on these criteria 30 approaches have been chosen for the detailed review of metrics.

The selected 30 measurement approaches have been analyzed and portrayed in “vignettes.”³ In this analysis the authors pursued two main objectives: (1) The development of a classification of perspectives realized in the individual approaches and (2) an in-depth screening of the applied indicators with regard to their usability as social innovation metrics. The explorative analysis of the available approaches has resulted in a set of differentiating variables. This analysis provides an overview of the principles and perspectives that underpin existing innovation and welfare metrics and is therefore, of significant value. Screening existing measurement approaches was also highly informative in providing a theoretical and practical grounding for selecting the indicators that are to be used as part of the blueprint. Four categories were identified as a result of screening indicators (see Appendix A for an overview of the approaches and the respective categories).⁴

In alignment with the underlying conceptual foundations of the approaches but with adjustments in view of social innovation, we have built three analytical indicator levels to measure social innovation as presented in our model. Sub-indicators, i.e., thematic blocks containing the single indicators have been introduced into the analytical indicator levels. On the basis of a data set with over 1,500 variables contained in the 30 analyzed indicator approaches, we have picked the most suitable ones for measuring social innovation. The selection criteria for doing so have been: (1) the degree to which they harmonized with the theoretical assumptions outlined in the “Theoretical Foundations of Social Innovation” that argues from a broad

set of literature in the social sciences and the following section “How is Social Innovation Different?” that spells out the key defining elements of social innovation specifically and provides arguments of how it differs from other types of innovation and their metrics; (2) the prominence of indicators (expressed in how often individual items reappeared across different models). Perceived data gaps have been filled with newly proposed indicators. Selecting sources of data has been made easier by the availability of established innovation indicators. Among these indicators are: Financial resources, knowledge, knowledge protection and patents, collaboration and networks, entrepreneurial activities, and innovation culture. These dimensions have been incorporated into the proposed measurement model wherever possible and meaningful when structuring sub indicators. 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. In response to Schibany and Streicher (2008) and following their advice—in order to avoid an arbitrary or eclectic selection of indicators the basis for selection should be grounded in their conceptual analysis, which is why the preceding foundations of social innovations are so vital. Decision making in this stage has been designed as per the pre-selection phase.

Results

The classification of the different indicator approaches was important to learn about the theoretical background of the indicator sets and how innovation or welfare is measured against these as well as about the broadness of the measurement approaches in terms of the spread of indicators along the different dimensions to be discussed in the following (see Appendix A for the individual categories addressed).

First, with regard to the *research perspective* a significant number of methodologies measure structural features (e.g., financial figures or number of employees), a little less focus on institutional features (e.g., laws or codes of conduct), but few methodologies show a normative orientation. However, normative aspects are important to the field of measuring social innovation. Whether specific social needs exist or not is usually based on a normative perception of what social needs are. Legitimacy issues are related to values and norms, which are often very diverse in modern societies. In developing an approach to measuring social innovation we need to take this into account.

Second, concerning the *object of analysis* the biggest part of established innovation-based methodologies is focused on private sector activities. This might be due to the attention given to economic issues in national policies. However, it is to be recognized that the public sector is being investigated with increasing tendency as to its innovation capability. Innovation metrics focusing on the third sector and its contributions to innovation, however, are rare among existing methodologies. Indeed there are long standing arguments stressing the vanguard role of nonprofit organizations and their innovating role (Kramer,

1981), which have been recently revitalized (e.g., in Hubrich, Schmitz, Mildenerger, & Bund, 2012). Therefore, and in view of the fact that social innovations are found to emerge in every sector and inter-sector, collaboration is often treated as a pre-condition for social innovations to emerge, innovation research should more intensely be dedicated to including the third sector.

Third, among the reviewed methodologies, we can find an approximately equal distribution with regard to the *level of analysis* between approaches looking at the organizational meso level and those looking at the national or regional macro level. The largest proportion of the reviewed methodologies combined both levels, in the sense that data gathered through an organizational survey was used to generate conclusions with regard to the national level. The individual (micro) level is often neglected, even though there is a well-established discourse on the role of individual social entrepreneurs and other individuals in generating social innovations.

Fourth and final, there are particularities with regard to the applied *indicator categories*. Many methodologies use indicators to measure activities at the firm level—such as organizational strategies or R&D budgets. Only few indicator approaches include indirect societal outcome indicators. These kinds of indicators appear most often in the field of sustainability and in measuring environmental performance. However, societal outcome indicators are particularly relevant for social innovation, because of their approximating character: They capture potential results of social innovation at the societal level, such as changes in well-being. Apart from that, there is a balanced distribution between the analysis of enabling conditions, organizational activities, and output indicators in the existing approaches. Therefore, it can be concluded that the majority of methodologies examine a variety of indicators in order to capture triggering forces for innovation that may lead to favorable societal effects.

In addition to this analysis, which has been crucial in compiling the indicator suite to follow below, two models have prominently influenced the design of the framework model: The one of National Endowment for Science, Technology and the Arts (NESTA) (Miles et al., 2009, p. 8ff.; Allman et al., 2011) and the Department of Innovation, Industry, Science, and Research of the Australian Government (2011, p. 24).

From the former approach the idea has been adopted to assign framework conditions to the key functional stages of the innovation process. At the same time two major alterations have been introduced. First, we propose of four different framework groups. Second, the framework conditions (the political framework) are not linked to any one specific part of the innovation process (e.g., the selection of ideas). Instead we highlight the interdependence between and among the conditions and the process. The extent to which this happens depends on the specific social need.

The second model differentiates between internal and external drivers and barriers that affect the innovation performance, such as institutional culture as an internal aspect or legislative

factors on the external side. The idea of innovation performance has been adapted to denote the result of the interplay between drivers (here: the framework conditions) and innovation performance (in terms of organizational outputs and societal outcomes). In this framework conditions can promote or hinder social innovation.

How is Social Innovation Different?

In many areas we have a solid base to build on, which is owed to the richness of existing approaches and indicators. For the development of a social innovation measurement we aim to build on these existing approaches and indicators as they are already available and accounted for in data gathering systems. As just alluded to and implied or explicitly discussed in the text throughout, social innovation necessitates certain adaptations as compared to other sorts of innovation. Social innovation metrics will have to be tailored to meet the particularities of social innovation and the challenge of capturing it. To do so it is useful to summarize the traits of social innovation that are particularly relevant to its operationalization and measurement in the indicator suite. Some of these urge us to pave new ways. Table 1 outlines how the blueprint of social innovation indicators is designed to react to the respective criteria. This can be done by addressing each specific aspect or by deliberately excluding it from the measurement approach.

The Indicator Suite

The conceptual model described initially 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. Figure 2 summarizes the structure of our blueprint of social innovation indicators. 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.

The following excerpt from the comprehensive list of metrics (Table 2) aims to bring the structure 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 research project's partner countries (Denmark, Germany, Greece, Poland, Portugal, and the United Kingdom).

TABLE 1
Social Innovation Criteria and Measurement

Social Innovation Criterion	How to Take the Criterion into Account in the Measurement of Social Innovation
Newness	As the blueprint is not supposed to measure single cases of social innovation, the criterion of “newness” is not explicitly incorporated. The view that social innovations are mainly defined by their consequences and impact instead of their absolute degree of newness (Gillwald, 2000, p. 6) is being applied. Thus, the blueprint deals with the nature and existence of social needs in a very generic way and uses these both as reference points for assessing innovation potential and the performance of the latter. Changes in needs are interpreted as a sign for new products, services, or processes.
Multiple Dimensions of Improvement	Moulaert et al. (2005) differentiate between the content dimension (satisfaction of human needs), the empowerment dimension of social innovation (socio-political capabilities), and the process dimension (changes in social relations). With the macro-level approach we can in particular trace improvements in the satisfaction of social needs of societies as well as improvements in their innovation capacity (and thus, the first two aspects). ^a The state and the structure of relationships and networks to meet social needs (Reeder, O’ Sullivan, Tucker, Ramsden, & Mulgan, 2012, p. 8) in contrast requires network analytical methods and case studies that pay respect to the circumstance that social innovation is “[. . .] embedded in the ‘social fabric’ of communities” (Reeder et al., 2012, p. 11). Social relations can thus, not be captured in detail in the proposed measurement approach.
Sector Neutrality	The proposed approach is not focused on a single sector because social innovation can occur in any sector (Murray, Caulier-Grice, & Mulgan, 2010, p. 3; Nicholls & Murdock, 2012, p. 2f).
Process of Social Innovation	Despite the chaotic nature of social innovations, a process circle of social innovation is often being applied (Bureau of European Policy Advisors [BEPA], 2010, p. 53f.), which is also central to our measurement model. The embedding into a wider framework is also increasingly common in the context of mainstream innovation (Rothwell, 1994; or Furman, Porter, & Stern, 2002).
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. Interesting in this respect are four qualifiers for improvements: The new solution should be more efficient, more effective, more sustainable, and/or more just than prevailing solutions (Phills, Deiglmeier, & Miller, 2008). Capturing these qualifiers in-depth is rather subject to the evaluation of social innovations in the wake of social impact measurement on the organizational level. The proposed measurement approach however, alludes to these too.
Legitimacy of Social Needs	By analyzing the collaborative dimension of the social innovation process in terms of interactions in networks and broader “national innovation systems” (Blätzel-Mink, 2006, p. 133ff.; Freeman, 2002; Wiczorek & Hekkert, 2012) or “regional innovation systems” (Asheim, Lawton Smith, & Oughten, 2011) combined with the availability of a <i>diverse set</i> of resource flows, the model indirectly provides a proxy for the legitimacy aspects that social innovations involve.
Urgency of Social Needs	The element of urgency is expressed by the degree of legitimate claims that are being made towards a specific issue. This is approximated by including the intensity of discourses around specific issues. ^b

^aIn a similar manner the Social Progress Index 2013 measures social progress by using outcome-based metrics that indicate a country’s wellbeing (Porter, Stern, & Loria, 2013, p. 6f.).

^bThe Social Progress Index by Porter et al. for instance is based on a categorization of basic human needs (e.g., air, water, and sanitation), foundations of well-being (e. g., access to basic knowledge), and opportunity (e.g., personal freedom and choice; Porter, Stern, & Loria, 2013, p. 7) that also reflects degrees of urgency. This example shows how existing measurement systems could be intertwined as they apply different angles to approximate similar variables.

Blueprint of social innovation indicators	Framework Conditions	Resources Framework	Financial Resources
			Human Resources
			Infrastructural Resources
		Institutional Framework	Normative Institutions
		Regulative Institutions	
		Cultural-cognitive Institutions	
	Political Framework	Policy Awareness about Social Innovation	
		Political Environment	
	Societal Climate Framework	Social Needs/ Demands as reference points for Social Innovation	
		Social Engagement / Attitudes	
	Entrepreneurial Activities	Investment Activities	Expenditure in Innovation by Social Economy
			Expenditure in Innovation by Public Sector
		Start-ups Activities	Start-ups and Death Rates of firms dedicated to a social purpose
		Business Environment for starting a Business	
Collaboration and Networks		Citizens' Involvement in social entrepreneurial activities	
		Cluster Development	
Organizational Output / Societal Outcome	Education	Equality Opportunities / Inequalities	
		Skill Acquisition	
	Health and Care	Access / Quality of Health Facilities	
		Health Status and Research	
	Employment	Jobs and Earnings	
		Work and Life	
	Housing	Housing Situation	
		Access and Quality	
Social Capital and Networks	Frequency and Quality		
	Social Cohesion		
Political Participation	Voting and Being Informed		
	Citizens' active Involvement		
Environment	Patents and Certificates		
	Preservation of Natural Capital		

FIG. 2. Structure of the blueprint of social innovation indicators.

In Table 2 we have included some of the available data. The table is intended to illustrate how the blueprint can be put into practice. When the table is compared to Figure 2, it is becoming evident which parts of the blueprint have been selected for illustrative purposes to check data availability. The first dimension of “entrepreneurial activity” contains the sub-categories of “investment activities” and “entrepreneurial start-ups and death-rates,” which each contain individual items. For the dimension of “output and outcome” the field of education has been cho-

sen 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.” In order to provide some form of evaluation, the reliability of the proposed indicators needs to be examined first.

TABLE 2
Illustrative Data of the Blueprint for 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:	Expenditure on innovation activities by firm size (community innovation survey)	Used in ordinary innovation metrics → <i>No equivalent for social innovation currently available</i>					
Social economy organizations	<i>No data currently available</i>	<i>No data currently available</i>					
Public sector	<i>No data currently available</i>	<i>No data currently available</i>					
2. Entrepreneurial start-ups and 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 and 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

(Continued)

TABLE 2
(Continued)

Indicator Dimensions	Proposed Metrics (Data Source)	Illustrative Data						
		DK	DE	GR	PL	PT	UK	
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 organizational populations)	7.9%	3.7%	—	0.5%	3.5%	2.5%	
Public social expenditure	Total public social expenditure as percentage of GDP (2009, OCED 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, OCED social expenditure statistics)	2.7%	2.0%	1.8%	unclear	1.6%	5.3%	
2. Societal framework								
2.1. Demand 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%/	57.7%/	19.0%/	21.2%/	21.0%/	66.3%/	
Memberships in civil society organizations	“Do you belong to an organization/group in environment, ecology, animal rights” (2008, European Value survey)	19.6%	30.0%	34.3%	50.4%	32.0%	20.5% (2009)	
Citizens’ attitudes towards entrepreneurship	“One should not start a business if there is a risk it might fail” (Strongly disagree/disagree; Eurobaro.)	15.6%	3.8%	2.4%	0.8%	2.1%	6.7% (2009)	
		56%/	33%/	37%/	27%/5%	31%/3%	35%/27%	
		12%	10%	13%				

DISCUSSION

Despite their vital importance, as outlined in the theoretical foundations, data availability is a challenge with regard to the different *framework conditions*, specifically when it comes to denoting value-based and normative dimensions included mostly in the societal climate framework and the political framework. The reason for it is that these are not as well explored as for instance resources needed for innovation, which can often be measured in financial terms. There are key figures describing the social economy or public social expenditures for example, yet they are not as well established and identifiable as their commercial counterparts. The issue of identification and codification comes into play where tacit and diverse knowledge is needed for social innovation as outlined in the theory section. Things become even more complicated when framework dimensions involve multiple actors, interaction between these or perceptions. Take for instance the aspects of legitimacy or the orientation towards social needs. It is hard to find data that can really pin these down. Despite the broad range of indicators available in the measurement approaches analyzed, we therefore decided to outline alternative data sources beyond these approaches to fill the indicator dimensions of the blueprint not yet covered.

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,” which illustrates the intensity of certain web search topics, to get an idea of new, emerging, and urgent needs. These can only serve as a rough proxy and are probably best applied to specific questions (such as depression instead of the broad subject “health”). What is more, it seems they would need to be complemented by actual “needs mappings,” but might, nonetheless, present a fruitful point of departure. A similar logic could be applied to the political framework: For getting a grasp on such soft resources for social innovation as well as the underlying political agendas and the actor constellations involved it would be useful to apply “policy domain analyses” (Knoke, 1990, p. 164, referring to Laumann & Knoke, 1987) used in political science both to shape and trace policies. However, there is no accessible data source on these and issues are often so diverse that individual analyses would have to be performed. Yet, it would be desirable to establish an analytical stance towards policy streams and discussions and their relation to social innovation.

The difficulty in assessing framework conditions is generally increased by the unanswered question of what is the main driver of *social* innovation. Is it (1) necessity and thus, a high degree of pressing social demands, mostly found in structurally lacking regions or (2) system capacity, in other words, the ability of a society to respond to such challenges? The latter would include bureaucratic efficiency, a high degree of social cohesion, financial resources, etc. (note that these aspects do again span across the different frameworks). If we look at successful cases of innovation as outlined in the course of this article, it is

likely that both will play a role—their exact relation and ways to capture these aspects however still have a long way to go. This does not only affect policy and the societal climate, but also the design of institutional frames.

Although they are more accessible, *social* innovation also alters the view on *entrepreneurial activities*. The fundamental challenge lies in the fact that organizations involved in social innovation are not necessarily big, nor primarily interested in growth and thus, more easily overlooked. This is reflected by missing or unfit data. The Global Entrepreneurship Monitor 2010 (Bosma & Levie, 2010) for instance has newly introduced a section on social entrepreneurship. But the information given is not innovation-related. Similarly, the nationally conducted “community innovation surveys” (CIS) executed by EUROSTAT contain relevant information.⁵ However, this information is not separately accessible for entrepreneurship in the field of social innovation. Given the relative proximity of so called “social economy organizations” (a considerable part of which is formed by the Third Sector) both to innovation and social issues (cf., Borzaga & Tortia, 2007, p. 34ff.), it is furthermore strange that these organizations are covered least by established approaches of innovation metrics.

A more balanced and comprehensive approach is needed. EU-wide innovation surveys considering organizations separately that engage in social innovation would be necessary to fill the gap as also advocated for by Reeder et al. (2012, p. 19). The main challenge is hidden in the circumstance that current data does not allow for filtering “social mission driven organizations.” As social innovators partly defy formal categories and spread across all sectors, there is no distinct, identifying criterion such as legal status, which works well in defining firms or public bodies. Legal status and similar criteria are limited in their applicability to social innovation. Thus, although it has been demonstrated that entrepreneurship is inarguably a vital part of social innovation we are yet often unable to identify the relevant entrepreneurs (like Humboldt, for instance). An auspicious option is the road paved in the Social Entrepreneurs as “Lead Users” for Service Innovation project (Huysentruyt & Stephan, 2010) on social enterprises and innovation that used a method of “respondent driven sampling” (pre-selected organizations nominate others that they deem innovative).

The codification of entrepreneurship in social innovation is further challenged by the fact that it comprises ideas and attitudes as well as practices or policies and does not necessarily result in the foundation of organizations or the development of a product.

While the other two levels are mainly affected by data availability, the level of *output and outcome of social innovations* is least backed-up by existing, broadly agreed reference points and often relates to welfare indicators, which are themselves only just emerging. We believe that the field specific differentiation guided by human needs represents at least a mediating role to increase precision. Nonetheless, many issues remain at this level. If compared to the field of technological innovation,

where output measures prevail, the indicators from existing measurement approaches to be utilized for social innovation are primarily outcome-related. There is a lack of indicators in the field of organizational output (as measurable results of social innovation activities). This is due to the fact that we cannot capture the performance of social innovation by patent-related metrics. This might not least be grounded in the very nature of social innovation. Ebrahim and Rangan (2010) outline that where both “theory of change” and “operational strategy” are complex, which is likely in socially innovative solutions, performance is best measured by outcomes. The measurement problem, in other words, the challenge in expressing outcomes in accurate and reliable ways is well known from the tradition of evaluation in development assistance or cost-benefit analysis; the broad scope of fields that social innovation covers is not likely to simplify this task.

CONCLUSION

The approach to social innovation metrics as presented in this article, though deeply grounded in theory, is very generic in the proposition of an empirical application due to the sheer complexity of fields and contexts where social innovation can occur. This is also where the main limitation of the conducted research lies. Generally, there is no “one best way” of measuring social innovation. But that is not a problem specific to social innovation. Existing metrics for technological and economic innovation are characterized by to their approximating nature—so will social innovation metrics. This article is to be seen for what it is, a first step towards establishing a measurement perspective on social innovation. Shared standards are yet to emerge.

In response to this, the research contribution has significant merits. It has outlined the key theoretical foundations of social innovation and related real world data to the discussion of an emergent concept. This has uncovered gaps between the conceptualization of social innovation and efforts to grasp it as it occurs empirically. It has furthermore proposed a well-concerted set of innovation dimensions and specific indicators that can be used to fill these dimensions. In doing so the article has outlined how social innovation differs from other types of innovation, for example, in that it cannot be captured by relying on output measures such as patents or by the fact that social innovation measurement has to take into account a wider variety of conditions and depends on aspects that seem to defy metrics.

Future research should pick up on the issues sensitized for in this article and try to answer open questions, such as:

- How can we identify and describe social innovators accurately in view of the organizational types and unformalized engagement involved?
- How are the potential for social innovation (captured through the structure of the framework conditions and entrepreneurial activities) and the performance of

social innovation (captured through the output and outcome of social innovation) actually related?

- How can we denote and measure this innovation performance (mainly outcome or impact-based measurement)?

Explorations of these questions would help validate or modify the indicators proposed, specifically those related to the analytical level of framework conditions as rather new elements of innovation measurement. Framework conditions seem most relevant to fathom the complexity of social innovation processes, yet they are much in need of further development. Survey-based techniques and data are necessary to denote these conditions—likewise will they be useful in finding definition criteria for social mission driven organizations and performance outcomes.

This can only be done if research, practitioners and policy makers try to bring the proposed approach into use. Indicators have been selected so as to connect to existing data at the European level. Comparisons between different countries or regions and comparisons over time will reveal whether the right indicators have been proposed and how the interplay between data and theory alters our understanding of social innovation. We hope that this article has made its contribution in motivating scholars to enhance the conceptual understanding of the phenomenon and to provide a source of information for political decision making and practical action alike.

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NOTES

1. For an overview, see for instance: <http://www.siresearch.eu/social-innovation/research-projects>.
2. This is, however, not necessarily so. Tracey and Jarvis (2007) outline that the concept of social franchising for instance in principle follows the idea of its commercial counterpart.
3. The “vignettes” are accessible on the project website and discussed in depth in the extensive version of the blueprint: http://www.tepsie.eu/images/documents/D2.4_final.pdf.
4. The vignettes set out in a project report contain more detailed information and cover (1) the theoretical foundations of the individual indicator systems (e.g., definitions, assumptions); (2) the “measurement concept,” in other words,

what is being measured and how and (3) the operationalization of the concept, in other words, the particular indicators and data sources used.

5. See <http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/cis>.

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APPENDIX A
Classification of Analyzed Measurement Approaches

	Approach ^a										Sector ²			Level ^c			Indicator Set ^d		
	Normative	Structural	Institutional	Public Sector	Third Sector	Private Sector	Society	Other	Micro Level	Meso Level	Macro Level	Enabling Conditions	Organizational Activities	Organizational Output	Social Outcome				
Innovation Metrics																			
Oslo Manual (2005)	x		x			x						x	x		x				
OECD Measuring Innovation (2010)	x	x	x	x		x	x	(x)	x	x	x	x	(x)		x				
EU Innovation Union Scoreboard (2013)	x	x	x	x		x					x	x	x		x				
Global Innovation Index (2012)	x			(x)		x	x		(x)	x	x	x	x		x				
Economist's Intelligence Unit's Ranking (2009)	x	x	x			x	x			x	x	x	x						
DIW/Deutsche Telekom Stiftung/BDI Innovation Indicator (2009, 2010)	(x)		x			x	x		(x)	x	x	(x)							
Nordic Innovation Monitor (2009)	x		x			x	x			x	x	x							
NESTA's Measuring Wider Framework Conditions (2011)						x				x									
European Policies and Instruments to Support Service Innovation (2011)	x	x		x	x	x			x			x	x						
European Commission's RIS (2012)	x	x		x	x	x			x			x	x						
Massachusetts Innovation Economy (2010)	x	x	(x)	(x)		x			x	x		x	x						
Maine Innovation Index (2012)	x	x		x	x	x			x	x		x	x						
European Public Sector Innovation Scoreboard (2012)	x	x		x		x			x	x		x	x						
Australian Public Sector Innovation Indicators (2011)	(x)	x	x	x		x		x	x	x		x	x		x				
Measure Public Innovation in Nordic Countries (2010)		x	x	x		x			x	x		x	x						
NESTA's Innovation in Public Sector Organizations (2011)	x	x	x	x		x	x					x	x						
Global Entrepreneurship Monitor (2012)	(x)	(x)	x			(x)													
Science, Technology, and Industry Scoreboard (2011)	x	x	x	(x)		x		(x)	x	x		x	(x)						
NESTA's Measuring Sectoral Innovation Capability (2009)	x	x		x		x			x	x		x	x						
The Global Competitiveness Index (2011)	x	x	x	x		x	x		x	x		x	(x)						

Vision's Social Innovation Index (2011)	x	x	x	(x)	(x)	x	(x)	x
Welfare Indicators								
OECD Better Life Index (2011)	(x)	x	x	x	x	x	(x)	x
European System of Social Indicators (2013)	x	x	x	x	x	x	(x)	x
TTT-Index for Germany (2007)	x	x	x	x	x	x	x	x
Civil Society Index (2004)	x	x	x	x	x	x	x	x
Index of Economic Freedom (2012)	(x)	x	(x)	(x)	(x)	(x)	x	x
International Property Rights Index (2012)		x	x	x	x	x	x	x
Environmental Performance Index (2006, 2012)		x	x	x	x	x	x	x
National Footprint Accounts (2003, 2010)		x	x	x	x	x	x	x
Sustainable Development in Germany (2004, 2008)		x	x	(x)	(x)	x	x	(x)

^a Specifies the research perspective: Where is the selection of variables directed and grounded? Structural aspects (number of employees, number of people with a doctoral degree or GDP); institutional aspects (legal frameworks or codes of conduct); normative aspects (social values).

^b Specifies the object of analysis: Which sphere does the system of metrics focus on? Private sector (firms); public sector (local government, national health organizations); the third sector (associations, foundations); society at large; other (specific themes such as education systems, ecological issues).

^c Specifies the level of analysis: At which level are the measurement systems operating? Micro level (of individuals), the meso level (of organizations) and the macro level (of sectors or national states).

^d Specifies indicator category: What do the indicators capture? Enabling conditions (R&D investment, political stability, voters' participation); organizational innovation activities (organizational investment in innovation, number of highly skilled employees); organizational output (number of registered patents); societal outcomes (changes in well-being, the reduction of CO2 emissions, reduced unemployment).

APPENDIX B
Framework Conditions—Complete Indicator Set and Metrics

Indicator Dimensions	Proposed Metrics (Data Source)
(a) Social Innovation Resources Framework	
1. Financial resources (dedicated to social purpose)	
<ul style="list-style-type: none"> ● Monetary variables of the social economy ● Public social expenditure ● Private spending 	<ul style="list-style-type: none"> ● Share of expenditure of social economy organizations as percentage of GDP (national sources, including expenditures of foundations) ● 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) ● Voluntary private social expenditure as percentage of GDP (including households, individuals, NGOs; OCED Social Expenditure Statistics database)
2. Human resources	
<ul style="list-style-type: none"> ● Voluntary working ● Professionalization/creative workforce in social fields 	<ul style="list-style-type: none"> ● Number of volunteers (Volunteering in the European Union, GHK) ● ISCED 5-facilities offering educational programs for staff in social economy organizations (National analysis) ● Percentage of ‘creative occupations’ (Eurostat; <i>used in ordinary innovation metrics</i> → <i>No equivalent for social innovation currently available</i>) ● Workforce who report wanting to act “socially entrepreneurially” (no data yet)
3. Infrastructural resources	
<ul style="list-style-type: none"> ● Academic resources deployed on social innovation ● Social innovation relevant networks ● ICT and overall infrastructure (as basis for social innovation activities) 	<ul style="list-style-type: none"> ● Number of articles with the keyword “social innovation” per country (<i>no data per country currently available</i>) ● 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” ● 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) ● 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	
1. Normative institutions	
<ul style="list-style-type: none"> ● 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)

(Continued)

APPENDIX B
(Continued)

Indicator Dimensions	Proposed Metrics (Data Source)
<ul style="list-style-type: none"> ● Gender equality ● Solidarity ● Environmental sustainability 	<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 with elderly, sick, unemployed, and immigrants (European Value Study) ● “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 Behavior)
2. Regulative institutions	
<ul style="list-style-type: none"> ● Legislative background for social organizations ● Legislative background for social security benefits ● Legislative reforms in favor of social innovation ● Commissioning and procurement 	<ul style="list-style-type: none"> ● Legislative background for starting a social organization (national analysis) ● Committed rights of social security benefits (national analysis) ● Number of new laws and regulations enhancing social innovation or social economy (e.g., Social Value Act in the UK, national analysis) ● Decommissioning rates to capture the “creative destruction” of innovation (old services being replaced, national analysis)
3. Cultural-cognitive institutions	
<ul style="list-style-type: none"> ● Human rights 	<ul style="list-style-type: none"> ● Universal human right index (United Nations)
(c) Social Innovation Political Framework	
1. Policy awareness	
<ul style="list-style-type: none"> ● Policy awareness about social innovation ● Policy awareness about social needs 	<ul style="list-style-type: none"> ● National innovation strategies/social innovation projects funded by government (national sources and analysis) ● Emphasis of party programs (national sources and analytics)
2. Political environment	
<ul style="list-style-type: none"> ● Political stability and democracy ● Government effectiveness ● Transparency ● Legislation ● Press freedom 	<ul style="list-style-type: none"> ● Political stability and absence of violence/terrorism Index (World Bank, World Governance Indicators) ● Freedom-House Index—democratic governance (Freedom House) ● Government effectiveness (World Bank, World Governance Indicators) ● Corruption Perception Index (Transparency International) ● Rule of law index (World Bank, World Governance Indicators) ● Judicial Independence (World Economic Forum, Global Competitiveness Index) ● Press freedom index (Reporters Without Borders, Press Freedom Index)
(d) Social Innovation Societal Climate Framework	
1. Needs or demands as reference points for social innovation	
<ul style="list-style-type: none"> ● Interest in shared social needs ● Request for change 	<ul style="list-style-type: none"> ● Google Trends tool (Google) ● Questions and requests to the EU Parliament (EU Parliament, national parliaments)

(Continued)

APPENDIX B
(Continued)

Indicator Dimensions	Proposed Metrics (Data Source)
2. Social engagement and attitudes	
• Political participation	<ul style="list-style-type: none"> • 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 Organizations	<ul style="list-style-type: none"> • Membership in humanitarian or charitable organizations (World Value Survey) • Membership in religious organizations (World Value Survey) • Membership in organizations 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 toward entrepreneurship	<ul style="list-style-type: none"> • Attitudes toward starting a company (moving average over two years; Flash Eurobarometer)
• Citizens' openness for something new, risk taking	<ul style="list-style-type: none"> • Positive attitude toward taking risks (moving average over two years; Flash Eurobarometer) • Interest in inventions and new technologies (Eurobarometer)

APPENDIX C

Entrepreneurial Activities—Complete Indicator Set and Metrics

Indicator Dimensions	Proposed Metrics (Data Source)
1. Entrepreneurial Investment Activities	
• Investment in innovation by social economy organizations	<ul style="list-style-type: none"> • Expenditure in innovation by firm size (Community Innovation Survey) <i>(used in ordinary innovation metrics → No equivalent for social innovation currently available)</i> • <i>No data currently available</i>
• Investment in innovation by public sector	
2. Entrepreneurial Start-Up Activities	
• Number of start-ups	<ul style="list-style-type: none"> • Start-up activities (moving average over four years), 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>) • 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 (percent of income per capita); minimum capital (percent of income per capita; World Bank, Doing Business) • Ease of starting a business (World Bank, Ease of Doing Business Index)
3. 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 organization
• 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>)

APPENDIX D

Output and Outcome of Social Innovations—Complete Indicator Set and Metrics

Indicator Dimensions	Proposed Metrics (Data Source)
1. Education	
1.1. Equality Opportunities/Inequalities	
<ul style="list-style-type: none"> ● Disabilities ● Gender 	<ul style="list-style-type: none"> ● Equal opportunities/inequalities regarding disabled people (EUSI) ● Share of women in graduates in ISCED 5A, 5B, and 6 (OECD) ● Equal opportunities/inequalities regarding women/men (EUSI) ● Share of foreign students in all students (OECD) ● Equal opportunities/inequalities regarding citizenship groups (EUSI)
<ul style="list-style-type: none"> ● Migration 	
1.2. Skill Acquisition	
<ul style="list-style-type: none"> ● Social and personal competence ● Subject-specific and methodical competence 	<ul style="list-style-type: none"> ● Educational attainment (OECD Better Life Index) ● PISA results in problem solving (OCED) ● PISA results in reading (OECD) ● PISA results in math (OECD)
2. Health and Care	
2.1. Access and Quality of Health Facilities	
<ul style="list-style-type: none"> ● Satisfaction with system of health care ● Access 	<ul style="list-style-type: none"> ● Trust in institutions: system of health care (EUSI) ● Regional disparities of the availability of health care facilities (EUSI)
2.2. Health Status and Research	
<ul style="list-style-type: none"> ● Health status 	<ul style="list-style-type: none"> ● 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 patents (OCED Patent Database)
<ul style="list-style-type: none"> ● Health-related patent 	
3. Employment	
3.1. Jobs and Earning	
<ul style="list-style-type: none"> ● Employment rate ● Equality opportunities/inequalities 	<ul style="list-style-type: none"> ● Long-term unemployment rate (OECD, Labor Force Statistics database) ● Female participation in labor force (International Labor Organization, Key Indicators of the Labor Markets Net) ● Equal opportunities/inequalities regarding employment of women/man, disabled people, citizenship, generations (EUSI) ● GINI Index (World Bank) ● Average annual earnings of full-time employees (OCED estimates based on OECD National Accounts database and Economic outlook)
<ul style="list-style-type: none"> ● Income 	
3.2. Work and Life	
<ul style="list-style-type: none"> ● Working hours 	<ul style="list-style-type: none"> ● Employees working very long hours (OECD Labor Force Statistics database) ● Time devoted to leisure per day (OCED Time Use Survey database) ● European workers satisfied with their work-life time balance (Second European Quality of Life Survey) ● Employment rate of women with children of compulsory school age (OECD Family database, national sources, OECD Labor Force Survey database)
<ul style="list-style-type: none"> ● Satisfaction with work-life time balance 	
<ul style="list-style-type: none"> ● Work and family 	
4. Housing	
4.1. Housing situation	
<ul style="list-style-type: none"> ● Living space 	<ul style="list-style-type: none"> ● Rooms per Persons (European Union Statistics of Income and Living Conditions, national statistic offices) ● Living space per Person (EUSI) ● Accessibility of shops, public transport, family doctor (EUSI) ● Noise/air/environmental pollution (EUSI) ● Accessibility of green spaces (EUSI) ● Crime in the residential area (EUSI)
<ul style="list-style-type: none"> ● Living environment 	

(Continued)

APPENDIX D
(Continued)

Indicator Dimensions	Proposed Metrics (Data Source)
4.2. Access and quality	
• Homelessness and poor housing	• Homelessness and poor housing (EUSI)
• Satisfaction	• Satisfaction with housing (Gallup World Poll)
5. Social Capital and Networks	
5.1. Frequency and quality	
• Frequency	• Frequency of social contact (European Union Statistics on Income and Living Conditions)
• Quality	• Trust in others (Gallup World Poll)
	• Quality of social relations at the work place (EUSI)
5.2. Social Cohesion	
• 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	
6.1. Voting and Being Informed	
• 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)
6.2. Citizens' Active Involvement	
• 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	
7.1. Patents and Certificates	
• Environment-related patents	• 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 (OCED Patent Database)
• Environment-related certificates	• ISO 14001 Environmental management systems (International Organization for Standardization [ISO], The ISO Survey of Certification)
7.2. Preservation of Natural Capital and Resources	
• Protected area	• Share of protected areas (EUSI)
• Renewable energy	• Share of renewable energy sources (EUSI)
• State of environment	• 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)