

SIMPACT WORKING PAPER

Volume **2016** No **1**

Social Innovation Regimes

An Exploratory Framework to measure Social Innovation

Javier CASTRO SPILA, Álvaro LUNA & Alfonso UNCETA

March 2016

SIMPACT Working Paper Series

Covers research on the «Economic Foundation of Social Innovation» related to theorising, policy, impact assessment, foresight, modelling and scenario building.

SIMPACT

SIMPACT is a research project funded under the European Commission's 7th Framework Programme from 2014-2016 and is the acronym for «Boosting the Impact of SI in Europe through Economic Underpinnings». The project consortium consists of twelve European research institutions and is led by the Institute for Work and Technology of the Westphalian University Gelsenkirchen in Germany.

Legal Notice

The information and views set out in this report are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Commission.

Suggested Citation

Castro Spila, J., Luna, A. & Unceta, A. (2016): Social Innovation Regime. An Exploratory Framework to measure Social Innovation. *SIMPACT Working Paper*, 2016(1). Gelsenkirchen: Institute for Work and Technology.



Social Innovation Regimes – An Exploratory Framework to measure Social Innovation

Javier CASTRO SPILA*, Álvaro LUNA* & Alfonso UNCETA*

* Sinnergiak Social Innovation – University of the Basque Country

ARTICLE INFO

Keywords

Social Innovation
Indicators
Measurement
Social Innovation Regime
Vulnerability

JEL

O31, O35, I31

ABSTRACT

The development of social innovation indicators is a pending task in the analysis of innovative processes. There are diverse perspectives that suggest the application of indicators at different measurement levels: the individualistic approach, the regional/national approach, and the organizational approach. The present working paper promotes the notion of Social Innovation Regime (SIR) with the purpose of developing an integrated perspective of the mentioned levels through a series of Social Innovation indicators. This perspective seeks to understand the interrelationship between social innovation contexts (meso level - regional level) and social innovation dynamics (micro level-organizational level). Therefore, the SIR suggests a system of indicators to explore a new way of that measuring social innovation.

Contents

1	Introduction.....	2
2	The three Perspectives to measure Social Innovation	2
2.1	The Individual Approach	2
2.2	The Organisational Approach	2
2.3	The Regional/National Approach.....	3
2.4	Limitations.....	3
3	Understanding Social Innovation	3
3.1	What is Social Innovation?.....	4
3.2	How does Social Impact & Happen?.....	6
4	Social Innovation Regime	11
5	Concluding Remarks	14
	Appendix I - Regionla Vulnerability - Regional (meso level) Indicators	17
	Appendix II - Dynamics of Social Innovation - Organisational (micro level) Indicators.....	20

1 INTRODUCTION

The development of social innovation indicators is a blank spot within innovation studies. In the scarce academic and institutional literature available there are three perspectives that can be identified through which the development of social innovation indicators can be explored: i) the individualist approach which measures propensity to social entrepreneurship among the adult population; ii) the regional/national approach which measures social innovation contexts and iii) the organisational approach which measures social innovation activities. The three approaches have various limitations and in some cases they can be complementary.

The present document suggests the concept of Social Innovation Regime with the purpose of developing an integrated approach of social innovation indicators in order to understand the interrelationship between social innovation contexts (meso level) and social innovation dynamics (micro level).

At the *meso level*, the concept of regional vulnerability is proposed, which is modelled in four dimensions: a) social vulnerability, b) institutional vulnerability, c) economic vulnerability and d) environmental vulnerability. The combination of these dimensions allows the comparison of different regional contexts (in Annex I meso level indicators are suggested).

At the *micro level*, it is proposed the use of the COPI (Components, Objectives, Principles and Impact) model defined by the SIMPACT Project (Rehfeld et al., 2015) in order to explore social innovation dynamics (in Annex II micro level indicators are suggested).

This document is organised in three sections. Section 2 evaluates the three approaches towards social innovation indicators found in the literature. Section 3 discusses the concept of social innovation and provides a model of the social innovation cycle. In section 4 the concept of social innovation regime is introduced. The concluding remarks in section 5 summarise the discussion. In addition, two annexes are provided: Annex I offers a set of possible indicators in order to explore regional vulnerability, while Annex II offers a set of potential indicators in order to explore social innovation dynamics.

2 THE THREE PERSPECTIVES TO MEASURE SOCIAL INNOVATION

Despite strong demand from policy-making institutions, the development of innovation indicators is still a pending task. This is because there is still no wide consensus on what is social innovation, which are its determining factors, which are the most appropriate methodologies to measure and evaluate social innovation and the metrics required for this purpose.

In spite of the weak development of social innovation measurement models, there are three models that can be identified in the academic and institutional literature which seek to develop a system of indicators on social innovation: the individualist approach, the organisational approach and the regional/national approach (Unceta et al., 2016b).

2.1 The Individual Approach

Many authors understand social entrepreneurship as a dimension of social innovation (Ellis, 2010, John et al., 2000, Alvord et al., 2003, Maclean et al., 2013) and identify *social entrepreneurs* as *social innovators* (European Commission, 2013). In this vein, studies favour the development of social innovation indicators associated with the assessment of characteristics, motivations and contexts in which social entrepreneurs develop their activities (Zahra et al., 2009). These works focus both on case studies (Sen, 2007) and comparative analyses at the territorial level based on the Social Entrepreneurship Monitor (Harding, 2006, OECD/European Commission, 2013).

2.2 The Organisational Approach

Different from the individualist view, this approach favours organisations as the field to understand and evaluate social innovations (SINNERGIAC, 2013; European Commission, 2012). In this framework, studies on hybridisation and social innovation (hybrid structures in companies, NGOs and public sector) which highlight the emergence and governance of new business models aimed at social interests and purposes stand out (Battilana et al., 2012; Grassl, 2012; Grohs, 2014; Pestoff, 2015; cf. Terstriep, et al. 2015). Within the organisational approach, studies which highlight the development of

organisational capacities for social innovation can also be found (Castro Spila & Unceta, 2015). In this vein, the pilot Project RESINDEX (Regional Social Innovation Index; SINNERGIAC, 2013) develops a model based on the organisations' absorptive capacity. The model offers a system of indicators which allow the differentiation between potential and realised capacity for social innovation in four kinds of regional organisations: companies, NGOs, universities and research centres. This model also explores the characteristics of the social innovation projects developed by these organisations and discusses the results obtained at regional and organisational levels (SINNERGIAC, 2013).

2.3 The Regional/National Approach

Finally, it is important to consider the movement promoted by European policy makers which requires the development of social innovation indicators at meso-macro level (regional/national) which integrates data from different European statistical sources to obtain a set of comparable and agreeable indicators (Krlev et al., 2014). Along this line, the European FP7 project TEPsie has developed a model to measure social innovation. The model specifies three levels of measurement: (a) Framework conditions; (b) Entrepreneurial activity; (c) Field-specific outcome and output; and discusses the results obtained from measuring social innovation (Krlev et al., 2014).

2.4 Limitations

All these approaches have both conceptual and methodological limitations. Thus, the individualist approach makes it possible to estimate the degree of social commitment of the adult population (region or country) and becomes a relevant estimation in order to explore the social potential of social entrepreneurs. However, this approach focused on social entrepreneurs has limitations to understand and measure social innovation activities. The first one is a conceptual limitation. Indeed, this approach reduces social innovation to social entrepreneurship although they are two different universes both from the point of view of the enterprising/innovative agency and its means, and the necessary skills and impact that needs to be achieved (Groot & Dankbaar, 2014; Phills et al., 2008). The second limitation refers to the unit of analysis used

to measure. The focus on social enterprising individuals is limited in order to explore the organisational and territorial dynamics of social innovation although it can provide a good image on the active social commitment of a particular population.

The regional/national approach has a methodological limitation because the use of secondary sources is based on surveys and information which do not directly refer to social innovation activities. Indicators that can be produced in this approach are indicators of the environment of social innovation, this means they give an account of the economic, social, political, cultural and technological environment in which social innovations are produced but they do not strictly measure social innovations.

The organisational approach is the most accurate one to measure social innovation activities. Technological innovation indicators are produced from this organisational dimension and evidence shows the importance and appropriateness of favouring organisations over other units of analysis and sources of information in order to measure innovative activities (OECD, 2005). At the organisational level it is possible to make conceptual and methodological dimensions coherent in order to measure social innovation activities. However, the construction of indicators at this level leaves the question of the regional and local environments in which social innovations are produced unsolved.

Given these limitations, the production of a common set of social innovation indicators involves the conceptual, methodological development and the empirical validation of an integrated model between micro (organisational) and meso (regional) levels that give an account of social innovation dynamics and contexts. The following section contributes to the exploration of an integrated approach of social innovation within the framework of the SIM-PACT Project.

3 UNDERSTANDING SOCIAL INNOVATION

Developing a social innovation measurement model always involves a conceptualisation that answers at least four basic questions operationally to guide the development of indicators.

What is social innovation? This question is basic since it establishes the demarcation line between innovative (and scales of innovation intensity) and

non-innovative actors. But also provides guidance on the main factors that organise a social innovation as well as its results. In this regard, countless definitions of social innovation are available. Some of which are more operational and others that are rather theoretical and general. The latter do not provide guidance for the development of indicators, although they can be useful to understand the sense of social innovation and its differences with regard to other types of innovation. Operational definitions lose the richness and complexity of conceptual definitions, while their empirical capacity improves.

Who yields social innovation? This question establishes the unit of analysis and information on which social innovation is advocated (e.g. regions, communities, organisations, individuals). Again, in social innovation studies there are very different views on who develops social innovations (Cajaiba-Santana, 2014; Castro-Spila et al., 2015; European Commission, 2010, 2011, 2013; Goldenberg, 2010). In general, the academic and institutional literature distinguishes corporate actors (the list of these actors tends to be extensive) and non-corporate actors (e.g. social movements, social innovation communities, etc.). The analysis and information units are related to data sources (statistical series) or to the possibility of producing data (implementing ad hoc social innovation questionnaires). Therefore, any indicator system has to clearly define who is the social innovation agent that can be empirically «interrogated». This requirement makes it necessary to make a pragmatic choice on the analysis unit which, in many cases, has to leave out countless potential agents that may be conceptually relevant but empirically are not likely to be identified and incorporated into an indicator system.

How is social innovation made? The answer to this question is not simple since it depends on the definition (what is social innovation), the chosen unit of analysis (who makes social innovation) and the data available. Although useful for the qualitative understanding of social innovation, available models often recommend social innovation factors which are difficult to measure quantitatively. As highlighted in the previous section, there is a tension between exploring secondary sources in order to elaborate comparable indicators at regional/national level (which do not strictly measure social innovation activities, but the production context), and

building primary sources that measure social innovation (according to the definition and analysis unit) but which have the problem of (time and geographical) comparability.

Which results do social innovations have? The impact of social innovation is perhaps the most complex part to measure and understand both, in qualitative and quantitative terms. Again, social innovation results depend on the definition, analysis unit and available data. However, a first distinction between social innovation's «impact» and «effects» can be made. In the first case, they are direct and expected results of a social innovation activity in a determined period of time (such as the results of a social innovation project). The second case concerns the social diffusion of social innovation, i.e., positive and negative externalities of social innovation activities at the regional and non-regional levels whose temporariness exceeds the objectives and time of a specific social innovation activity. The relationship between impact and effect from the point of view of measurement is related to the level of control of innovative activities' results. Impact can be controlled, while effects cannot.

In line with these criteria, a first measurement of social innovation is suggested, based on an operational definition, i.e., a definition of the actors that promote social innovations, its core elements and impacts as well as the social innovation.

3.1 What is Social Innovation?

In order to offer an integrated model of measurement of social innovation, the operational definition developed by the SIMPACT project is used. It defines social innovation as:

«[...] a novel combination of ideas and distinct forms of collaboration that transcend established institutional contexts with the effect of empowering and (re-)engaging vulnerable groups either in the process of social innovation or as a result of it.»

(Rehfeld et al., 2015)

This definition strengthens the relationship between institutional context, social innovation dynamics, objectives and impact. With regard to the

context and dynamics, the definition specifies the knowledge and collaboration relationships necessary to generate products and processes capable of transcending established institutional contexts, that is, overcoming barriers to social integration (social, institutional, economic and environmental barriers). Regarding the social innovation's objectives, the definition focuses on vulnerable groups in society with the aim of empowering and re-including them in a social standard considered acceptable by the institutional context in which social innovation is produced. The condition for a standard's acceptability is linked to a specific social, economic, political and environmental configuration within an institutional context.

Social innovations express then an answer to local conditions of exclusion and marginalisation of **vulnerable** groups. Therefore, the degree of **vulnerability** (causes, conditions and integrative solutions) may vary from an institutional context to another as well as do its innovative responses. Figure 1 illustrates the main dimensions of social innovation established by SIMPACT's operational definition (Rehfeld et al., 2015).

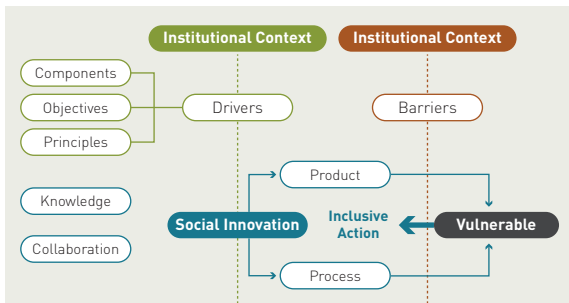


Figure 1. Social Innovation as empowerment & (re-)engaging vulnerable groups

Institutional Context

Under this scheme, the institutional context has a twofold bearing. On the one hand, institutional context refers to the interaction of political, social, economic and environmental conditions which substantiate obstacles to the social integration of vulnerable groups. On the other hand, the same institutional context creates the conditions (drivers) which facilitate the emergence of social innovations, i.e., products and processes which develop inclusion actions. Vulnerable groups are affected by different

kinds of exclusion (cultural, technological, economic, social, political, etc.) and this is why the combination inclusion/exclusion is related to the social innovation modes (Castro-Spila & Unceta, 2015). That is to say, the multiplicity of ways and mechanisms through which socially innovative products and processes promote the inclusion and empowerment of vulnerable groups.

The concept of the institutional context as a «facilitator» of social innovations as well as «originator» of exclusions and marginalisation suggests a complex relationship between different types of vulnerabilities and different modes of social innovation. As is shown below, the institutional context may be observed as an environment characterised by four kinds of **vulnerabilities**: social, institutional, economic and environmental, which create the enabling conditions for the development of different social innovation modes, in other words, several products, processes and mechanisms of empowerment and social integration. The relationships between the *context* and *dynamics* of social innovation constitute social innovation regimes which are at the core of this contribution.

Knowledge

Social innovations are the result of novel combinations of knowledge necessary to develop viable solutions to the complex problems of integration and inclusion of vulnerable groups. Knowledge is the organisations' intangible asset and it refers to the processes and mechanisms of interpretation, assimilation, recombination and exploitation of internal and external knowledge to implement social innovations, i.e., an organisation's absorptive capacities (Cohen & Levithal, 1990; Lane, Koka & Pathak, 2006). From this point of view, it can be said that social innovations set-up epistemic interventions of interpretation and solution of social problems (Unceta et al., 2016a).

Collaborations

Social innovations are collective processes. This statement suggests that innovations promote cooperation and participation processes. In the first case, cooperation is understood as the process in which two or more different actors share information, knowledge and resources to develop common objectives. They are organisational alliances. In the se-

cond case, participation is understood as processes and mechanisms from which the target population (marginalised groups) is included in the different phases of a social innovation process. Cooperation and participation processes may also be understood as governance dimensions (corporate and social) which constitutes a central element of social innovations' sustainability (Castro-Spila & Unceta, 2015; Rehfeld et al., 2014).

Vulnerable Groups

Vulnerable groups are all those who, by virtue of their age, race, sex, economic and social condition, physical characteristics and cultural and political circumstances, are facing obstacles for their integration in a determined institutional context.

Social innovators develop products, processes and services linked to the development of social competences (empowerment) within these vulnerable groups in order to reduce their vulnerability, that is, the degree of exposure to the risk of structural exclusion.

Drivers/Barriers

In its operational definition, the SIMPACT project provides an approach to identify drivers for social innovation, in other words, the factors that promote social innovations (figure 1). The relationship between drivers and barriers of social innovation may be considered as an inverse relationship according to which the higher the drivers, the fewer the barriers and vice versa. Understanding social innovation drivers and barriers as an indivisible pairing allows us to analytically emphasise social innovation dynamics. These are understood as the examination (experimentation and learning), exploitation (prototyping and development), evaluation (measurement of the impact) and expansion (escalation and sustainability) capacities that key actors in social innovation have in order to overcome barriers of several kinds. In this sense, social innovation is a process of overcoming and changing existing barriers in a specific institutional context.

3.2 How does Social Impact happen?

Social innovation can be understood as a cyclic process. The cycle concept suggests that the development of an innovative activity goes through dif-

ferent successive phases considered necessary for the innovative process to take place (European Commission, 2013; Santos et al., 2013; Mulgan, 2006).

Only few contributions on the analysis of social innovation cycles are found in the literature, while the proposed models differ in the number of phases. According to the European Commission (2013: 6), for example, the social innovation cycle comprises four successive phases, where scaling up social innovation is the final stage and one of the main aims of social innovation.

- Identification of new/unmet/inadequately met social needs;
- Development of new solutions in response to these social needs;
- Evaluation of the effectiveness of new solutions in meeting social needs;
- Scaling up of effective social innovations.

Murray and colleagues (2010) suggest a life cycle of six stages, where producing systemic change is the ultimate goal of a social innovation (figure 2):

- Prompts, inspirations and diagnoses: in this phase, factors, which underline the need for social innovation, are structured.
- Proposals and ideas: in this phase, ideas and proposals of a solution to the identified problem are structured.
- Prototyping and pilots: in this phase, ideas are implemented from the process of prototyping and pilot experiences.
- Sustaining: in this phase, support is sought in order to give experiences sustainability (companies, projects, laboratories, etc).
- Scaling and diffusion: in this phase, what is sought is scaling innovations, diffusing results and facilitating innovation by imitation.
- Systemic change: this is the final stage of social innovation and it implies including social innovation in a system of interactions with other innovations and other social actions. The systemic change suggests an architecture, which gives support to other innovations (for a critical review see Terstriep et al., 2015).

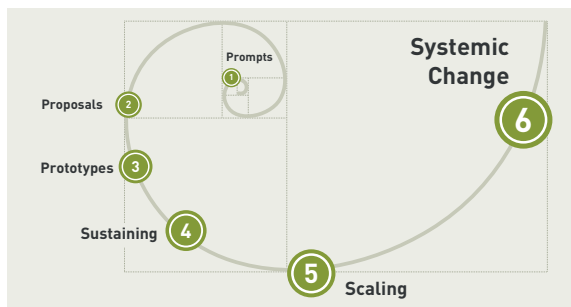


Figure 2. Six Stages of Social Innovation (Murray et al., 2010)

As can be drawn from the outlined models, social innovation cycles are described from the perspective of successful innovation with an emphasis on the scaling capacity as one of the main success measures. Alternatively, the authors propose a life cycle scheme which interprets the social innovation as an open-ended process. Such approach relates drivers to barriers with the ultimate aim to subsume the innovation in the mainstream of the institutional context in which innovation is produced. Under this scheme, scaling social innovations is just an externality, it is neither an aim in itself nor a measure of success.

Accounting for innovative failure allows for the design of appropriate policies for the different moments of the innovative process. This is particularly important as each phase in the development process involves different obstacles (barriers) and necessitates distinctive capacities (drivers) to overcome related obstacles. The scheme proposed starts from a set of assumptions:

Assumption 1: Social innovations are context specific, i.e., they are produced in determined institutional contexts. Contexts express social, economic, political and environmental conditions which are the result of a specific and endogenous paths of regional development. The institutional context functions within the framework of a particular mainstream which refers to the set of resources and knowledge an institutional context has in order to manage and solve distinct problems (political, economic, social, environmental). Thus, the mainstream operates as a paradigm (a network of policies with an epistemic community)¹ that shares a hegemonic

¹ The concept of networks of policies (Agronoff & McGuire, 2001; Klijn & Koppenjan, 2000) refers to the articulation of

vision on the characterisation of the problems and the range of possible solutions to solve them in an acceptable way for a particular welfare standard.

Assumption 2: Social innovations are not structured around the solution of social problems but around the resolution of anomalies. An anomaly expresses a kind of social problem that cannot be solved with the resources and knowledge available in the mainstream. Thus, the anomaly is expressed as the point of origin of a social innovation, i.e., a social problem that summarises changes considered negative in the social, economic, political and environmental conditions of a particular institutional context and whose mainstream cannot solve. Not every social problem is an anomaly. In general, the mainstream offers acceptable solutions to a diversity of social problems arising from the dynamics of inclusion/exclusion produced in the institutional context. The solutions' degree of acceptability depends on the moment and institutional context in question. An anomaly² is such, as long as there is a persistent situation of exclusion (economic, social, cultural, institutional, technological exclusion, etc.) that is unacceptable for a relevant part of the institutional context. The anomaly creates dynamics of vulnerability for one or more different social groups. Thus, the greater the divergence of social groups' impairment caused by the anomaly, the higher is their negative effect, the higher the difficulty to find innovative solutions and the greater the urgency to find these solutions.

Assumption 3: Social innovations are guided by the search for sustainability of their processes and impacts. Sustainability must be understood as the vector that seeks to stabilise an innovative solution

public policy objectives with the objectives of innovative companies, knowledge institutions (in particular technological ones), social agents and political parties. In this way, the design of policies and their instruments seek to align the agents around long-term strategic regional objectives. The concept of epistemic community, in this case, refers to the cognitive paradigm behind the networks of policies according to which one way of interpreting problems and guiding their solutions is hegemonic.

² The development of some dynamics of inclusion/exclusion that are found in the path of the institutional context may lead to anomalies, and some can be predicted by stipulating scenarios. Thus, for instance, in some institutional contexts, the current problems of the ageing population are manageable by the mainstream but in the long run they tend to become an anomaly. The same can be said of some environmental dynamics.

in the long term which modifies the causes and effects of an anomaly. The principle regulating this vector is the expectation of making innovative solutions part of the routine in the mainstream of a particular institutional context. This suggests that social innovations seek in their sustainability to stop being social innovations. When a social innovation is integrated in the mainstream it does it in terms of a performative integration, this is, a transformation by integration that modifies the paradigm, which now has routine (normal) solutions. In the performative integration, what used to be an anomaly is now a social problem for which the new mainstream has acceptable solutions.

Assumption 4: Social innovations have a linear trajectory³ towards performative integration. The principle regulating this linear vector is the inverse relationship between the pairing driver/barrier. The social innovations considered as an evolutionary process imply a heterogeneity of competences for the overcoming of a diversity of barriers, which have the capacity of making a social innovation fail. To understand the social innovation in terms of a cycle allows us then to understand the necessary drivers to promote innovations according to different moments of their development, what guides the policy making to develop fields of exploration of innovative solutions to the anomalies of the institutional context.

In the light of these assumptions, a model of a social innovation's cycle according to four main phases is proposed. Each phase implies a relationship between driver, barrier and impact. As shown in figure 2, the scheme suggests two different institutional contexts (institutional context 1 and 2). In the first context, we explain the cycle of a social innovation (linear model) which goes from the anomaly created in a mainstream (1) towards the integration of innovative solutions in a new mainstream (2). This means, the change of the mainstream by an expansive effect of a social innovation. For each

phase within the linear model it is suggested that there are drivers (D) and barriers (B). At the higher end of the figure it is suggested that a social innovation developed in an institutional context 1 can be transferred to an institutional context 2. The scheme indicates that scaling a social innovation is an externality and that the main objective of a social innovation is to resolve (interacting with it during the whole cycle) and integrate an innovative solution into the mainstream transforming it by colonisation.

The Anomaly

An anomaly (A) expresses a kind of social problem that cannot be solved with the resources and knowledge available in the mainstream. In the proposed scheme, the anomaly is expressed as the point of origin of a social innovation, this is, a social problem that generates vulnerabilities (social, economic, political and environmental) for which the mainstream does not have the appropriate answers. A social problem is such as long as it is persistent and creates dynamics of vulnerability for one or more different social groups. Thus, the more heterogeneous the affected social groups are, the higher the anomaly's impact, the higher the difficulty to find innovative solutions and the greater the urgency to find these solutions.

The Responses of the Institutional Context (mainstream 1)

There are three kinds of responses to an anomaly: (a) the non response. This means: the institutional context does not answer to the vulnerability problems created by the anomaly and lets the problem persist (this option is related to the costs of inaction); (b) the inadequate response. This means: the institutional context gives a response to the anomaly with inadequate resources and solution criteria for the social problem and therefore the problem persists although some of its impacts may be reduced (this option is related to knowledge asymmetries and the costs of action); (c) the innovative response. The institutional context provides a new response to the anomaly.

³ Social innovations have a non-linear and interactive nature. However, for the purposes of conceptual exploration (to guide the empirical research and production of indicators) it is assumed as a linear model structured in phases of sequential development that enables the identification of drivers/barriers and impacts of social innovation.

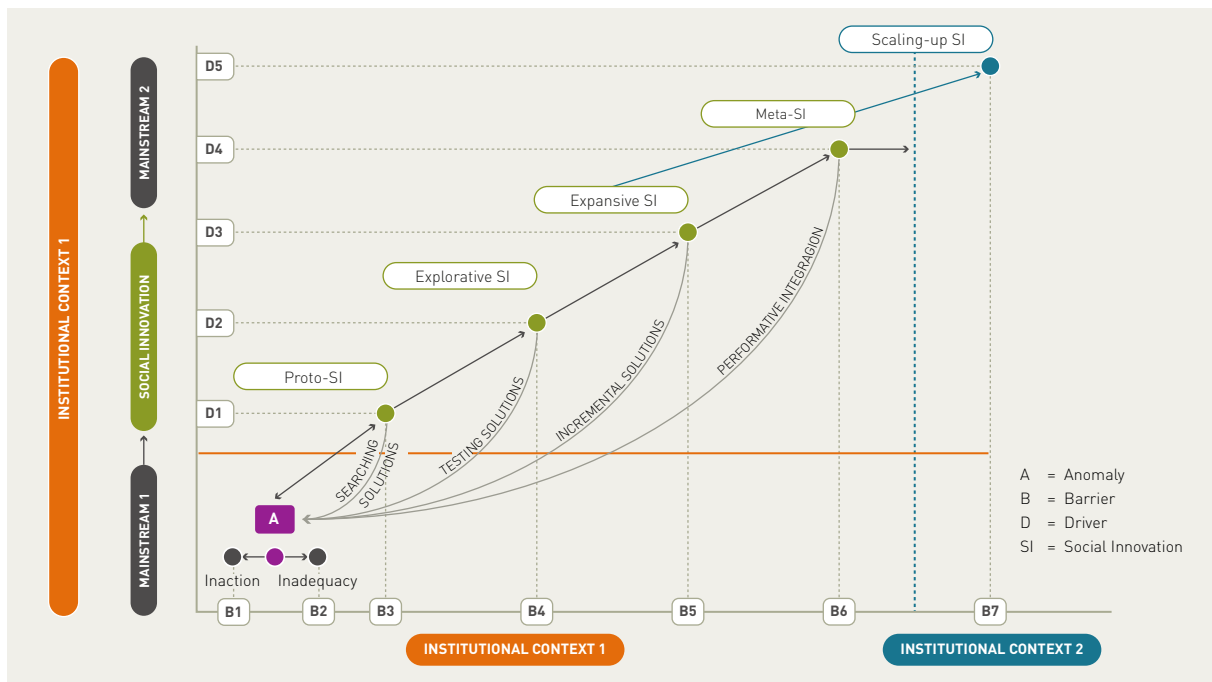


Figure 3. Lifecycle of Social Innovation

Thus, social innovation can reduce the impact of the problem and resolve the conditions linked to the production of the anomaly and mitigate its consequences. However, innovative responses may fail due to the context's resistance (social, institutional, economic, cultural resistance, etc.) in any of the phases of a social innovation. This way, three kinds of failures in the response (resolution) to an anomaly can be identified.

- (a) *Failure by inaction*: when the institutional context does not give a response to the anomaly and the problem increases and develops. This failure is linked to the barriers of Type 1 (B1, figure 3).
- (b) *Failure by inadequacy*: when the institutional context gives a non-innovative response that is inadequate to resolve the anomaly. This failure is linked to the barriers of Type 2 (B2, figure 3).
- (c) *Failure by innovation*: when the institutional context offers an innovative response (social innovation) that is adequate to resolve an anomaly but the innovative process does not succeed in overcoming the barriers imposed by the institutional context. This failure has differ-

ent barriers according to the phase in which the process of social innovation is situated (B3, B4, B5, B6 and B7, figure 3).

Social Proto-Innovation

This phase of social innovation is characterised by a process of divergent interpretation and a convergent proposal of innovative ideas to design a sustainable solution. The prefix «proto» suggests that it is a social innovation in its potential form. This is a phase of **reflective action** on the conditions in which the anomaly is produced, replicates and impacts on the vulnerable groups. In this phase, organisations mobilise essentially three types of capacities: (a) capacities of interpretation and acquisition of heterogeneous knowledge; (b) capacities of knowledge integration and modelling of ideas (design); (c) capacities of connection with stakeholders (in figure 3, these drivers are identified as D1). The main impacts that can be expected in this phase are related to the modelling of solutions, conceptual and methodological designs, development of networks with vulnerable groups and with other organisations concerned by the same anomaly for the identification of causal hypotheses and innovative solutions.

In this phase, the prototyping of potentially effective ideas to solve the social problem that represents an anomaly prevails. Proto-innovations fail when they cannot model ideas and go on to the exploration and testing phase (in figure 3, these barriers are identified as B3). It is a creative failure.

Explorative Social Innovation

The explorative phase is characterised by the implementation of experimentation processes. Social innovation has already been modelled in its previous phase and is tested. This is a phase of ***recursive testing*** of the causal hypothesis and the innovative solution in a practical, systemic and planned way. In this phase of social experimentation organisations mobilise essentially three types of capacities: (a) capacities of exploration and recombination of acquired knowledge; (b) capacities of evaluation and systematisation; (c) capacities of connection with stakeholders. Social innovations can remain during a long period in this experimental phase generating innovative evidence without being able to model a social innovation. However, at this experimental stage there are diversifications by interaction (new ideas, practices and externalities) which can result in other innovative ideas (social proto-innovations). This phase can be considered as social innovation since social experiments are piloted, and therefore, there is a level of impact and empowerment of vulnerable groups. Explorative social innovations fail when they cannot overcome the barriers that hinder passing from the experimentation to the modelling of social innovations (in figure 3, these barriers are identified as B4).

Expansive Social Innovation

This phase is characterised by the implementation of continuous improvements to the model of social innovation. Innovation has already been modelled, tested and evaluated. It is a phase based on ***incremental innovation***. In this phase, a body of empirical evidence has been integrated in a tested model that is able to transform resources into capacities. Incremental innovations do not only explain the anomaly (divergent interpretation) but they also offer a way to intervene (convergent practices) to resolve the anomaly either from its causes or by mitigating part of its consequences. The characteristic of this phase is the expansion of solutions, this

means, the regular implementation of innovation in the problems of the same nature within the same context (scaling-deep; Santos et al., 2013). In this phase, organisations mobilise following capacities: (a) capacities of knowledge exploitation; (b) capacities of social and institutional diffusion; (c) capacities of scaling-up of social innovations. In this phase, the impact of social innovation is increased (either processes of scaling-deep or scaling-up) and it gradually permeates the mainstream's network of policies and epistemic communities from verifiable and measurable evidence in a countless number of cases which show the model's effectiveness to solve or reduce the anomaly and/or its effects.

Meta Social Innovation (mainstream 2)

In this phase, social innovation is a trace. It has been integrated in the mainstream transforming it and improving its institutional and cognitive competences to provide satisfactory responses to social problems that once were part of an anomaly. It is a performative integration that changes the direction of the mainstream network of policies and epistemic communities linked to an anomaly.

Table 1 summarises, the relationship between drivers and barriers that facilitate and/or hinder the development of a social innovation according to the innovative cycle.

DEVELOPMENT STAGE	DRIVERS/BARRIERS
Failure by interaction	» B1: Failure of the state or the market
Failure by inadequacy	» B2: Failure of the state or the market
Social proto-innovation (searching innovative solutions)	» B3/D1: Express the relationship between drivers and barriers that facilitate/hinder modelling innovative ideas
Explorative social innovation (testing innovative solutions)	» B4/D2: Express the relationship between drivers and barriers that facilitate/hinder modelling innovative ideas (formalise the experiences in a SI pattern)
Expansive social innovation (incremental innovative solutions)	» B5/D3: Express the relationship between drivers and barriers that facilitate/hinder incorporating incremental improvements (expand) in a modelled social innovation (scaling-deep).
Meta social innovation (transformative integration)	» B6/D4: Express the relationship between drivers and barriers that facilitate/hinder modelling the incorporation of social innovation into the mainstream (and transforming it into a paradigm).
Transfer social innovation (scaling-up)	» B7/D5: Express the relationship between drivers and barriers that facilitate/hinder the transfer of modelled social innovation towards other social contexts.

Table 1. Social Innovation Drivers & Barriers by Development Stage

4 SOCIAL INNOVATION REGIME

As highlighted in the previous section, the different approaches to build indicators of social innovation are focused on various levels of analysis and units of measurement that do not reflect the complete picture of the context and dynamics of social innovation. The challenge then is to integrate the meso and micro perspectives in a coherent frame-

work of relationships and interactions. This is a difficult and complex task which goes beyond the purpose of the paper. Rather the aim is to indicate a possible path to explore these meso-micro relationships from an integrated model of social innovation indicators.

With the objective of offering a complete picture of the interaction between the meso and micro levels (context and dynamics) of social innovation, the concept of **Social Innovation Regime (SIR)** is introduced. The concept bases on the works carried out around the concept of **welfare regime** (Benjaminson & Andrade, 2015, Esping-Andersen, 1990). This perspective offers an interesting framework of exploration of the structural conditions through which a region presents a set of vulnerabilities which generate social problems (effective and potential ones).

Indeed, welfare regimes examine the advanced economies relating market dynamics and social policies. The thesis of welfare regimes refers to the degree in which individuals or families are included in an acceptable standard of living regardless of their participation in market relations (Esping-Andersen, 1990). Welfare regimes are a theoretical construction (with controversial empirical evidence) that enables a comparative analysis between different national realities, which differ in the different articulations between state, market and family. Different articulations result in different relationship patterns. From this pioneer work by Esping-Andersen (1990) welfare regimes can be classified as follows:

- (a) The *liberal* one, which associates a high degree of commodification in labour relations with a residual role in the public sector and families. Individuals are responsible for the welfare from the moment they enter the labour market and the solidarity mechanism is the market.
- (b) The *conservative* one, which gives a strong role in welfare to families and a residual role to the state and the market. Family and corporations play a central role as the articulation core of solidarity.
- (c) The *social democratic* one, where welfare is associated to the construction of public institutions with a residual role for the market and families, where the solidarity core is the State

and with a universal treatment for all individuals in society.

This first classification has been extended by other theoretical and empirical works, and as a result other welfare regimes such as the Mediterranean or the socialist have been conceptualised (Moghadam Saman & Kaderabkova, 2015a, 2015b).

In view of social innovation, welfare regimes have limitations to explain the conditions in which a diversity of social problems that constitute the source of socially innovative solutions. As we will see below, SIRs may be more appropriate to explain the contexts of social innovation by identifying regional vulnerability patterns: social, economic, institutional and environmental ones. The interaction between these types of vulnerability generates social problems, many of which question the effectiveness of rules and available resources of a particular institutional context to resolve these problems (anomalies).

As has been pointed out, when a social problem is not solved in an acceptable way creating the necessary welfare standards for a determined context, it tends to become an anomaly. An **anomaly** is a persistent problem whose consequences (impacts and effects) are intolerable (actively, passively, effectively or potentially) for a part of the mainstream. The **mainstream** manages relations between state, society and market for a particular context according to a paradigm (set of rules and stable resources difficult to modify in the short term). Thus, the anomaly represents the mainstreams' inability to give an appropriate, effective and inclusive response to the accepted welfare standard.

The concept of vulnerability is one that is closely linked to the concept of anomaly. **Vulnerability** always refers to an inadequate response to a potentially high-impact problem (either social, economic, institutional or environmental one). From this point of view, vulnerabilities are potentially creators of social innovations. Therefore, it can be assumed that by identifying vulnerabilities, anomalies (effective or potential) are indirectly identified.

Figure 4 illustrates the approach of a SIR. Vulnerability is in the middle of the approach. **Vulnerability articulates the micro dynamics (organisations) with the meso contexts (regions)**. It creates

a bridge between these two levels of the institutional context. The model is based on the following hypothesis:

HYPOTHESIS: The higher regional vulnerability is, the greater the probability that social innovations emerge.

The hypothesis suggests that in vulnerable institutional contexts the problems that affect a diversity of social groups are multiplied and interrelated and the mainstream's response capacity to find satisfactory social integration solutions according to an accepted standard collapses. In conditions of vulnerability, problems are confused and connected to each other increasing their complexity (associated diversity). This in turn calls for systemic solutions for which neither necessary capacities nor resources are available. Forasmuch, a situation occurs where for a systemic problem a systemic solution is not available within the mainstream. As has been pointed out, the institutional context responds to this situation in different ways (see social innovation cycle). The innovative response (social innovation) undergoes several stages until it becomes a systemic response (transformative integration). Indeed, there are different innovative solutions to an anomaly that are tested. They are fragmented, partial, local, experimental solutions. Only one or an integrated system of solutions is able to be modelled and succeeds in colonising the mainstream and giving an acceptable sustainable answer to the anomaly.

However, the degree of vulnerability is not equivalent in all institutional contexts. We find regions that are more vulnerable than others. Each institutional context has different vulnerability conditions derived from their endogenous development. This is what we call **regional vulnerability**. The regional vulnerability is a synthetic concept that express the integration of different types of vulnerability (social, economic, institutional and environmental) for a particular institutional context. The regional vulnerability enables the comparison between different institutional contexts (various regions) observed in a range that goes from a greater to a lesser degree of vulnerability.

The argument suggests that vulnerability is related to the production of anomalies. Thus, the higher the degree of regional vulnerability, the higher is

the probability of a context developing anomalies and therefore, the higher will be the probability of producing social innovations.

How can regional vulnerabilities be observed?

As figure 4 suggests, regional vulnerability should be explored according to four main vulnerabilities: social, economic, institutional and environmental (see Annex I for an exploration of these vulnerabilities). These distinct types of vulnerability have particular effects in a determined institutional context; they create specific and different kinds of problems and forms of exclusion for each context. This is the reason why social innovations are contextual, focal and difficult to scale. Every institutional context has a degree of regional vulnerability and this is the reason why even in institutional contexts with low regional vulnerability it is possible to find some degree of social innovation.

In short, the suggested concept of regional vulnerability formed by four types vulnerability is an appropriate concept to understand the emergence of social innovations. Accordingly, regional contexts should not be interpreted and classified according to the degree of institutional capacity⁴ of the mainstream to sustain social integration in the long term as suggested by the model of the welfare state regimes. On the contrary, institutional contexts must be understood by their degree of vulnerability, i.e., by the level of institutional inability to respond to the dynamics of inclusion/exclusion in the long term. The mainstream's institutional inability creates the «favourable» scenarios for the emergence of social innovations.

⁴ The institutional capacity of an institutional context must not be understood as the capacity of the public sector to meet social demands by means of specific policies, but as the capacities and resources that the State, the market and the family are able to mobilise in order to sustain a specific pattern of social integration as suggested by the model of the welfare regimes.

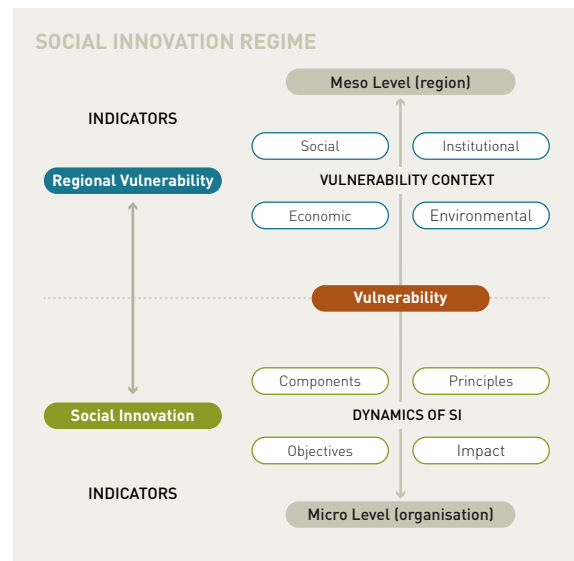


Figure 4. Social Innovation Regimes – Interplay between Context and Dynamics of Social Innovation

How do we observe social innovations?

With the proposed SIR it is suggested to explore social innovations by analysing the social innovation capacities mobilised by a plurality of organisations at the regional level (micro; see figure 4). In order to observe these social innovation capacities, the model of components, objectives, principles and impact (COPI) is utilised (Rehfeld et al., 2015).

This model suggests that social innovations are integrated by different levels: the level of actor networks and relations between actors, a level of resources (combination between several kinds of financial, organisational, technological capital, etc.) and an institutional level (social capital). In the model, these dimensions are integrated into what is defined as the «**Components**» of social innovation. These components relate in different ways according to the «**Objectives**» of social innovation. As has been mentioned, social innovation seeks to empower and improve the inclusion conditions of vulnerable groups by reducing either their social, economic institutional and/or environmental vulnerability. These objectives are developed through projects (cohesive set of actions and resources implemented in a specific time frame) that are carried out according to efficiency (degree of relationship between resources, time and impact) and governance levels (degree of inclusion of the target population in social innovation activities). These dimensions are defined

in the COPI model as social innovation «*Principles*». Finally, the model suggests that this specific cohesion between components, objectives and principles has an «*Impact*» not only at a social level (empowering effect), but also at an organisational level (learning effect) and at a spatial level (scale effect; see Annex II).

Previously, it has been argued that social innovation has four stages in its development. Now it is further suggested that for each stage there is a different combination between components, objectives, principles and impact. Thus, for example, for a social proto-innovation, its degree of networking, efficiency, governance and impact is not the same as the one of a social innovation in the exploratory or expansive stage. This way, what is meant by innovation dynamics is the active relationship between components, objectives, principles and impact (COPI) and the stages of social innovation.

This *dynamic* suggests that social innovations mobilise drivers according to the barriers they have to overcome and that the pairing driver/barrier has different characteristics according to the phase of the innovative process.

Social innovation dynamics are structured in what we could call modes of social innovation, defined as the ways in which social innovations intervene in order to empower and integrate vulnerable social groups into a welfare standard considered acceptable by a specific institutional context.

Finally, as depicted in figure 4 the relationship between meso and the micro level can be observed from a two-way corridor. Vulnerabilities connect the meso with the micro level (top-down) and the micro with the meso level (bottom-up). On the one hand, at the meso level (region), the institutional context has a level of vulnerability that causes social problems, some of which become anomalies. On the other hand, the dynamics of social innovation, at the micro level (organisations), combine components, objectives, principles and impacts and are structured in innovative actions to resolve these anomalies. That is, to find acceptable solutions that seek to integrate themselves and transform the mainstream (transformative integration; bottom-up).

A SIR can be defined as *a combination of elements that regional contexts can develop to create social innovations as a response to the anomalies and*

regional vulnerabilities of their environment. They can be explored according to two major variables: First, the *degree of vulnerability* resulting from a combination of four types of vulnerabilities, namely social, economic, institutional and environmental. The degree of vulnerability enables the comparison of different regional contexts. Second, the *modes of social innovation*, including cultural, technological, organisational, legal and infrastructural innovation (Castro-Spila & Unceta, 2015) which structure social innovation in patterns according to the COPI model (Rehfeld et al., 2015).

5 CONCLUDING REMARKS

Social Innovation lacks a common conceptual and methodological framework to build a system of indicators capable of measuring its processes, products and impact.

In this conceptual and methodological effort, the SIMPACT project offers a definition and an analysis that is key for the development of indicators. Thus, Social Innovation is understood as the novel combination of ideas and different forms of collaboration that transcend the institutionally established contexts with the effect of empowering and involving certain vulnerable groups during the process or as a result of the innovation. This definition focuses on the actors identified as vulnerable groups and the dynamic of social innovation is aimed at (re)incorporating these groups into welfare standards. Vulnerability is not the result of a personal inadequacy, but rather the result of institutional obstructions that unable the solution of the social problem increasing regional vulnerability. This is what we have called an anomaly. Given that marginalised and vulnerable groups are very heterogeneous (there are different forms of exclusion), the forms of social inclusion are heterogeneous as well. Therefore, social innovations are “pluralistic” by definition. The analysis of social innovations shows that there are various paths and phases which explain the social innovation processes linked to the resolution of anomalies by means of different modes of social innovation.

The present paper explores the concept of Social Innovation Regime defined as *the modes used by regional contexts to develop social innovations that answer to the anomalies and regional vulnerabilities of*

their environments. The model suggests a path for the development of indicators aimed at mapping social innovation contexts (meso level) and social innovation dynamics (micro level) in an integrated model whose guiding element are the different forms of vulnerability.

The model of Social Innovation Regime helps us guide the development of social innovation indicators in three different ways. The first one refers to the understanding and measurement of the conditions of the institutional context. The regional vulnerability is made up of four kinds of vulnerabilities (social, economic, institutional and environmental) that provide a clear view of the inabilities of an institutional context to resolve social problems according to a welfare standard. This path enables the comparison of regions according to their degree of vulnerability, which is the proper ground for the emergence of anomalies. The second one refers to the understanding and measurement of social innovation dynamics at an organisational level to establish the social innovation modes and cycles (patterns) according to a diversity of innovative agents. Finally, the third way is about understanding the dynamic of a Social Innovation Regime (by linking regional vulnerability with social innovation dynamics) for the design of public policies promoting social innovation.

References

- Alvord, S. H., Brown, L. D. & Letts, C. (2003). Social Entrepreneurship and Social Transformation: An Exploratory Study. *The Journal of Applied Behavioral Science*, 40, 260-282.
- Battilana, J., Lee, M., Walker, J. & Dorsey, C. (2012). In Search of the Hybrid Ideal. *Stanford Social Innovation Review*, 12, 51-55.
- Benjaminsen, L. & Andrade, S. B. (2015). Testing a Typology of Homelessness Across Welfare Regimes: Shelter Use in Denmark and the USA. *Housing Studies*, 30, 858-876.
- Cajaiba-Santana, G. (2014). Social innovation: Moving the field forward. A conceptual framework. *Technological Forecasting and Social Change*, 82, 42-51.
- Castro-Spila, J. & Unceta, A. (2015). Modes d'innovation sociale et gouvernance. In Klein, J. L. (Ed.) *La transformation sociale par l'innovation sociale* Quebec, CRISES.
- Castro-Spila, J., Unceta, A. & García-Fronti, J. (2016). Social Innovation Indicators. *Innovation: The European Journal of Social Science Research*, forthcoming.
- Cohen, W. M., & Levinthal, D. L. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1, Special Issue: Technology, Organizations and Innovation), 128-152.
- Ellis, T. (2010) *The New Pioneers: Sustainable business success through social innovation and social entrepreneurship*, New York, John Wiley & Sons.
- Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*, Princeton, Nueva Jersey, Princeton University Press.
- European Commission (2010). Social innovation research in the European Union. Approaches, findings and future directions. Available: https://ec.europa.eu/research/social-sciences/pdf/policy_reviews/social_innovation.pdf.
- European Commission (2011). Empowering people, driving change Social Innovation in the European Union. *Bureau of European Policy Advisers*, Luxembourg, 1-176.
- European Commission (2012) Strengthening social innovation in Europe. Journey to effective assessment and metrics. Belgium, pp. 1-75.
- European Commission (2013). Guide To Social Innovation. *Regional and Urban Policy / Employment, Social Affairs and Inclusion*, Luxembourg, 1-71.
- Goldenberg, M. (2010). Reflections on Social Innovation. *The Philanthropist*, 23, 207-220.
- Grassl, W. (2012). Business models of social enterprise: A design approach to hybridity. *Journal of Social Entrepreneurship Perspectives*, 1, 37-60.
- Grohs, S. (2014). Hybrid Organizations in Social Service Delivery in Quasimarkets: The Case of Germany. *American Behavioral Scientist*, 58, 1425-1445.
- Groot, A. & Dankbaar, B. (2014). Does Social Innovation Require Social Entrepreneurship? *Technology Innovation Management Review*, 17-26.
- Harding, R. (2006). Social entrepreneurship monitor. Global Entrepreneurship Monitor. London, London Business School.
- John, T., Geoff, A. & Ann, L. (2000). Social entrepreneurship – a new look at the people and the potential. *Management Decision*, 38, 328-338.
- Krlev, G., Bund, E. & Mildemberger, G. (2014). Measuring What Matters—Indicators of Social Innovation.

- tiveness on the National Level. *Information Systems Management*, 31, 200-224.
- Lane, P. J., Koka, B. R., & Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *Academy of Management Review*, 31(4), 833-863.
- Macleán, M., Harvey, C. & Gordon, J. (2013). Social innovation, social entrepreneurship and the practice of contemporary entrepreneurial philanthropy. *International Small Business Journal*, 31, 747-763.
- Moghadam Samen, S. & Kaderabkova, A. (2015a). Social Innovation in New Member States. Part I – Theoretical Investigation on Economic Underpinnings. *SIMPACT Working Paper*, 2015(2), Gelsenkirchen: Institute for Work and Technology.
- Moghadam Samen, S. & Kaderabkova, A. (2015b). Social Innovation in New Member States. Part II – Survey of Expert Panel. *SIMPACT Working Paper*, 2015(2), Gelsenkirchen: Institute for Work and Technology.
- Mulgan, G. (2006). The process of social innovation. *Innovations: Technology, Governance, Globalization*, 1, 145-162.
- Murray, R., Caulier-Grice, J. & Mulgan, G. (2010) *The Open Book of Social Innovation*, London, NESTA.
- Oecd (2005). *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data* Paris: OECD.
- Oecd/European Commission (2013). *Policy Brief on Social Entrepreneurship - Entrepreneurial Activities in Europe*, Luxembourg: Publications Office of the European Union.
- Pestoff, V. (2015). Hybridity, Coproduction, and Third Sector Social Services in Europe. *American Behavioral Scientist*, 58, 1412-1424.
- Phills, J., Deiglmeier, K. & Dale, T. (2008). Rediscovering Social Innovation. *Stanford Social Innovation Review*, 6, 34-43.
- Rehfeld, D., Terstriep, J. & Alijani, S. (2015). *Comparative Report on Social Innovation Framework*. Deliverable D1.1 of the project «Boosting the Impact of Social Innovation in Europe through Economic Underpinnings» (SIMPACT). 7th Framework Programme, Brussels: European Commission, DG Research and Innovation.
- Santos, F., Cotter-Salvado, J., Lopo De Carvalho, I. & Shulte, U. (2013). The Life Cycle of Social Innovations. In Osburg, T. & Schmidpeter, R. (Eds.) *Social Innovation: Sustainability, Ethics and Governance*. Berlin: Springer-Verlag.
- Sen, P. (2007). Ashoka's big idea: Transforming the world through social entrepreneurship. *Futures*, 39, 534-553.
- Sinergiak Social Innovation (2013). *Regional Social Innovation Index. A regional index to measure social innovation*, Bilbao, Basque Innovation Agency - Spain.
- Terstriep, J., Kleverbeck, M., Deserti, A. & Rizzo, F. (2015). *Comparative Report on Social Innovation across Europe*. Deliverable 3.2 of the project «Boosting the Impact of Social Innovation in Europe through Economic Underpinnings» (SIMPACT), European Commission, 7th Framework Programme, Brussels: European Commission, DG Research and Innovation.
- Unceta, A., Castro Spila, J. & Garcia-Fronti, J. (2016). Social Innovation Indicators. *Innovation: The European Journal of Social Science Research*, N^o 2 - Forthcoming.
- Zahra, S. A., Gedajlovic, E., Neubaum, D. O. & Shulman, J. M. (2009). A typology of social entrepreneurs: Motives, search processes and ethical challenges. *Journal of Business Venturing*.

ANNEX I

Regional Vulnerability

«Regional (meso level) Indicators»

The regional vulnerability is a unit of measurement that includes four types of different vulnerabilities: a) social vulnerability, b) institutional vulnerability, c) economic vulnerability and d) environmental vulnerability. For each of these dimensions of vulnerability a set of specific indicators are suggested in order to operationalise the different types of vulnerabilities.

1. SOCIAL VULNERABILITY

Social vulnerability is related to the socially vulnerable groups, whose identification is due to different criteria: a given contextual factor that increases their chances to face adverse circumstances for their social inclusion and personal development; the performance of behaviours, which entail greater exposure to harmful events, or the presence of a shared basic feature (age, sex, ethnic background), which is supposed to give them common risks or problems (Cannon et al, 2003; Birkmann, 2006).

From a regional perspective, some possible indicators to identify the social vulnerability may be the following:

- **Total expenditure on health (% of the GDP):** the total expenditure on health is the sum of public and private expenditure on health. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities and emergency assistance designated for health, but it does not include water supply and sanitation services.
- **Total public expenditure on education (% of the GDP):** the public expenditure on education as a percentage of the GDP includes the total public expenditure (current and capital) on education expressed as a percentage of the GDP in a given year. The public spending on education includes Government spending on educational institutions (public and private), education administration and subsidies or transfers for private entities (students/households and other private entities).
- **Total vulnerable employment (% of total employment):** vulnerable employment refers to unpaid family workers and self-employed

workers as a percentage of the total employment.

2. INSTITUTIONAL VULNERABILITY

Institutional vulnerability is understood as the inability to properly communicate and coordinate different institutional levels, what expresses institutional rigidity and also its low capacity to respond to risk situations (Porfiriev, 2007). The greater or lesser capacity to respond appropriately to risk situations would be linked to a greater or lesser degree of institutional vulnerability and to the capacity of institutional governance.

- **Voice and accountability:** it measures the capacity of a country's citizens to participate in the selection of their government, as well as the freedom of expression, freedom of association and free media.
- **Governmental effectiveness:** it measures the quality of public services, bureaucracy, the quality of the public administration as well as its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to those policies.
- **Regulatory quality:** it measures the government's capacity to design and implement sound policies and regulations that permit and promote the development of the private sector.
- **Rule of law:** it measures the extent to which agents have confidence in and abide by the rules of society, in particular, the quality of contract enforcement, police and courts.
- **Control of corruption:** it measures the extent to which public power is exercised for private gain, including both small and large forms of corruption as well as the control of the State by elites and private interests.

3. ECONOMIC VULNERABILITY

The economic vulnerability refers to the institutions' inability to manage a financial/economic crisis. This is the inability to return to the starting point prior to the risk situation or crisis (Mechler et al, 2004). More specifically, the greater the financial

institutions and organisms' capacity to evaluate and react to economic losses caused by a socioeconomic or financial crisis, the lower is the economic vulnerability. Both the strength and adaptive capacity of the economic system are decisive in this process.

- **GDP per capita (US\$ in current prices):** The GDP per capita is the gross domestic product divided by the population mid-year. The GDP is the sum of the gross value added of all resident producers in the economy plus all taxes on products, minus all subsidies not included in the value of products. It is calculated without doing depreciation deductions of manufactured goods or for depletion and degradation of natural resources. Data in US\$ in current prices.
- **Expenditure on research and development (% of the GDP):** expenditure on research and development is current and capital expenditure (public and private) on creative work carried out systematically in order to increase knowledge, even knowledge on humankind, culture and society and the use of knowledge to create new applications. The research and development area comprises basic research, applied research and experimental development.
- **Consumer price inflation (annual %):** the inflation measured by the consumer price inflation reflects the annual percentage change in the cost for the average consumer of acquiring a basket of goods and services which can be at a fixed or variable rate at determined intervals, for example, annually. In general, the Laspeyres formula is used.

4. ENVIRONMENTAL VULNERABILITY

Environmental vulnerability refers to the extent to which natural and environmental resources are susceptible to being damaged, degraded or destroyed by their exposure to a hostile agent or factor. This factor is often uncontrollable (natural disasters) or may be related to the mismanagement of natural resources or of the pertinent environmental sustainability policies. The mismanagement thereof provokes a greater or lesser degree of environmental vulnerability that together with the natural unpredictability determines to a greater or lesser extent the risk of environmental disaster, affecting at

the same time populations and ecosystems of the places where these disasters happen.

- **Consumption of electric energy (kWh per capita):** the consumption of electric energy measures the production of power stations and cogeneration plants minus the losses occurred during the transmission, distribution and transformation and the own consumption of the cogeneration plants.
- **CO₂ emissions (kt):** carbon dioxide emissions come from the burning of fossil fuels and from the production of cement. They include the carbon dioxide produced during the consumption of solid, liquid, gaseous fuels and gas flaring.
- **Total annual extraction of freshwater (in trillion cubic metres):** the annual extraction of freshwater refers to the total extraction of water without counting the evaporation losses in storage basins. The extraction also includes the water from desalination plants in countries where these are an important source.
- **Renewable fuels and wastes (% of the total energy):** renewable fuels and wastes form solid and liquid biomass, biogas and industrial and municipal waste, measured as a percentage of the total consumption of energy.

ANNEX II

Dynamics of Social Innovation

«Organisational (micro level) Indicators»

In this section, a scheme for the development of social innovation indicators at micro level is provided. For this development, the COPI model (Rehfeld et al., 2015) is operationalised, which enables the exploration of social innovation dynamics at organisational level:

Dimensions	Factors	Definition	Indicator
1. COMPONENTS	1.1. Actors	Actors refer to the degree of diversity of the relational capital organisations have when they develop social innovation activities.	1.1.1. Cooperation partners' degree of diversity (organisational proximity to develop social innovations). 1.1.2. Cooperation partners' degree of geographical diversity (geographical proximity) to develop social innovations.
	1.2. Resources	Resources refer to the level of human, technological and organisational capital organisations have when they develop social innovation activities.	1.2.1. Degree of diversity in the formation of human capital in the organisation (human capital) to develop social innovations. 1.2.2. Degree of diversity in the types of technologies available in the organisation (technological capital) to carry out social innovations. 1.2.3. Degree of diversity of the learning activities and internal transfer of the organisation (degree of organisational capital) to develop social innovations.
	1.3. Institutions	Institutions refer to the level of social capital (rules, values and social and institutional confidence) organisations have when they develop social innovation activities.	1.3.1. Degree of diversity in the technical-social confidence towards other cooperation partners (social capital) for the development of social innovations.
2. OBJECTIVES	2.1. Economic	Economic objectives refer to the economic inclusion of vulnerable groups.	2.2.1. Degree of coverage in the objective of inclusion and economic empowerment of the target population (reduction of the economic vulnerability).
	2.2. Social	Social objectives refer to the social inclusion of vulnerable groups.	2.2.1. Degree of coverage in the objective of inclusion and social empowerment of the target population (reduction of the social vulnerability).
	2.3. Institutional	Institutional objectives refer to the political inclusion of vulnerable groups.	2.3.1. Degree of coverage in the objective of inclusion and political empowerment of the social innovation's target population (reduction of the institutional vulnerability).
	2.4. Environmental	Environmental objectives refer to the degree of environmental inclusion of vulnerable groups.	2.4.1 Degree of coverage in the objective of inclusion and environmental empowerment of the target population (reduction of the environmental vulnerability).
3. PRINCIPLES	3.1. Efficiency	Efficiency refers to the capacity to meet social innovation	3.3.1. Degree of efficiency achieved in the implementation of the social innovation.

Dimensions	Factors	Definition	Indicator
		objectives by maximizing resources and minimizing costs.	
	3.2. Governance	Governance refers to the degree of inclusion of vulnerable groups (target population) in the social innovation process itself.	3.2.1 Diversity of the mechanisms of inclusion of the target population in the social innovation activities.
4. IMPACT	4.1. Organisational	Organisational impact refers to the improvements achieved in the organisation for developing social innovation activities.	4.1.1. Diversity of organisational learning acquired for having developed a social innovation.
	4.2. Regional	Regional impact refers to the degree of geographical scaling of social innovation.	4.2.1 Diversity of geographical areas in which social innovation has been scaled.