

Overcoming policy making problems in smart specialization strategies: engaging subregional governments

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ABSTRACT: Since the concept of Smart Specialization was launched, an effort has been made to clarify and establish criteria for its implementation. Part of the difficulties in implementing Research and Innovation Smart Specialization Strategies (RIS3) is their emphasis on bottom-up approaches, which are required because there are public and private stakeholders that are better positioned than governments to find the domains in which the region is likely to excel. Regions must shift towards a new generation of industrial policy and the difficulties for advancing in this direction are already visible. Designing and implementing a smart specialisation strategy at regional level: Some open questions. The centrality of entrepreneurial discovery in building and implementing a smart specialisation strategy. Efforts to implement smart specialization in practice – leading unlike horses to the water. The paper is based on four cases related to governance and learning for smart specialization in the Basque Country (Spain) and presents three main lessons learnt. The first has to do with connections between regional and sub-regional governments in order to construct networks of territorial actors that can act as the senses of governments in the territory. The second is about the challenge of handling complexity and conflict and the third is about the integration of social researchers in RIS3 processes.

1. Introduction

The concept of Smart Specialization and the related policy known as Research and Innovation Smart Specialization Strategies (RIS3) have become critical in European regional innovation and development policy since Dominique Foray (one of the

founders of the concept) and a group of experts known as the “Knowledge for Growth” expert group was set up a few years ago to advise the European Commission (Capello, 2014).

The smart specialization argument originally emerged out of the discussion of the transatlantic produc-

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tivity gap (Foray, David, & Hall, 2009). The focus here was initially on the role played by transatlantic differences in R&D intensity in explaining growth differentials. As McCann and Ortega-Argilés (2011, 2014) point out, the first explanation, called the “structural effect”, emphasizes transatlantic differences in industrial structure. In particular, the EU’s industrial structure is disproportionally characterized by traditional, middle and low-tech sectors, and this implies a lower capacity to translate R&D into productivity gains. The second explanation, known as the “intrinsic effect”, argues that even within the same sectors, European firms exhibit a lower ability to translate R&D into productivity gains or other types of investment (McCann & Ortega-Argilés, 2014). According to these authors, the limited knowledge-transmission mechanisms between sectors and firms and also between regions, caused by the heterogeneity of the EU integration process, hinder the ability to spread the benefits of new R&D-related technologies across all sectors and industries.

Since the concept of Smart Specialization was launched and this debate began, an effort has been made to clarify and establish criteria for taking it into practice. It is currently playing a central role in the development of a reformed European Cohesion Policy and the Europe 2020 agenda, which is based on the principles of “smart growth”, “green growth” and “inclusive growth” (Capello, 2014; Foray, 2014; Iacobucci, 2014; McCann & Ortega-Argilés, 2011, 2014). Landabaso (2014) underlines how, since 2009, and in the aftermath of the global financial and economic crisis, the concept of smart specialization has echoed in several European and global economic institutions, such as the Organization for Economic Cooperation and Development (OECD). We present this perspective in a nutshell by quoting Landabaso (2014, p. 132):

Smart specialisation implies that a member state or region identifies and selects —on the basis of a bottom-up and top-down priority setting process— a limited number of priorities for knowledge-based investments focusing on regions’ strengths and comparative advantages. This approach will hopefully help regions realise

their innovation potential and refocus their industrial and knowledge assets in the direction of emerging industries and services and international markets.

Since the concept was launched, academics have aimed to help regions to start these processes. But especially in 2014 and 2015, when some results from these experiences became available, there has been a shift in the literature towards understanding the difficulties faced by regions in their implementation processes and how such difficulties can be overcome. In this article we interpret implementation as the process of putting into practical effect in the policy making process the concepts and frameworks elaborated for smart specialization and RIS3. It includes stages prior to the approval of the strategy and also later stages.

Following Coffano and Foray (2014), most regions are moving from the “easy-to-do” structural analysis to “hard-to-do” entrepreneurial discovery and they are struggling to achieve this. Authors such as Kroll (2015) and Ortega-Argilés (2012) have already addressed this challenge and our aim is to contribute to this by sharing lessons learnt in the Basque Country.

The reflections on the Basque case help to argue that some of the difficulties faced by governments in the implementation process are derived from the affirmation that RIS3 is neither “coffee for all”, nor “picking winners from above” (Boschma, 2014; Capello, 2014; Foray, 2013; Foray *et al.*, 2009; Foray, David, & Hall, 2011; Landabaso, 2014; McCann & Ortega-Argilés, 2014). It is not about selecting firms or sectors, but about the research and innovation activities and the generic technology(ies) that can help a regional economy to diversify into higher value-added markets (McCann & Ortega-Argilés, 2011, 2014). Two of the main difficulties when implementing RIS3 are their bottom-up approaches and the aim to integrate private and public stakeholders (Foray *et al.*, 2009, 2012).

The implementation of these RIS3 requires regions to shift towards a new generation of “industrial policy” and the difficulties related to those challenges

are already visible (Coffano & Foray, 2014; Iacobucci, 2014; Kroll, 2015). In order to respond to the challenges of RIS3, we will argue that governments need to develop a network of territorial actors that can act as the senses of governments in the territory. This has to do with the model of governance in the region and we will also argue for the integration of sub-regional governments in these networks, which is consistent with Barca (2009) when he proposes a place-based approach where the responsibility for policy design and implementation is allocated among different levels of government supported by both contractual relations and trust, with a role being played by special-purpose institutions such as agencies and public-private partnerships. The interpretation of RIS3 from a process perspective and the role of social researchers as active agents of change in this field will also be proposed.

2. Problems with implementation

In the following section, the main implementation problems referred to in the recent literature on RIS3 are emphasized in order to set a framework for the lessons learned from the case of the Basque Country. In this literature, there is a pattern that focuses on bottom-up approaches as a source of difficulties and on learning processes and the construction of capabilities, on the one hand, and the construction of new modes of governance, on the other, as ways to overcome such difficulties. In the following paragraphs, we examine previous studies that have led us to such an interpretation.

2.1. Difficulties with the implementation of bottom-up strategies

Entrepreneurial discovery distinguishes smart specialization from traditional industrial and innovation policies (Landabaso, 2014). These discovery processes are a “main source of information about the new activities of exploration and transformation that are likely to be prioritized” (Coffano & Foray, 2014, p. 35).

Entrepreneurial discovery processes require governments to play a different role from the one played in traditional industrial and innovation policies, which includes facilitating bottom-up processes together with more traditional top-down procedures (Coffano & Foray, 2014; Foray *et al.*, 2009; OECD, 2012). From this perspective, prioritization decisions are expected to be driven by entrepreneurial knowledge and decisions, not by policy-makers’ dreams (Coffano & Foray, 2014). This is an interactive and dynamic process in which market forces and the private sector discover and produce information about new activities and the government assesses the outcomes and empowers the actors that are most capable of realizing the potential (Landabaso, 2014).

Smart specialization was not conceived as a strategy for imposing specialization by means of top-down government planning. Rather, it was seen as being driven by a process of discovery and learning on the part of entrepreneurs, who are the best positioned agents to search for the right types of knowledge (McCann & Ortega-Argilés, 2011, 2014). Several authors have underlined the difficulties in the development of these processes.

McCann and Ortega-Argilés (2014) underline how, first of all, such a shift requires transparency in order to ensure public accountability. Coffano and Foray (2014) state how a policy design based on entrepreneurial discovery requires new models of incentives in order to encourage firms to elicit information and bring their own knowledge to the policy-makers, to induce entrepreneurs to come forward with their knowledge.

Camagni, Capello, and Lenzi (2014) and Capello (2014) argue that a bottom-up process of strategy definition runs the risk of a possible misallocation of public resources. The difficulties with prioritizing when defining this strategy are also mentioned by Capello (2014).

Iacobucci (2014) accepts that entrepreneurs are in a better position than government officials to identify opportunities and argues that bottom-up processes of entrepreneurial discovery will inevitably result in the proliferation of promising domains.

Still, without conscious moderation and guidance, a bottom-up approach seems to conflict with the idea of identifying a regional “strategy” that, in his opinion, at least at the beginning, must rely on a top-down approach (2014). Even when the stakeholders are invited to participate in the process, a top-down approach will be present when deciding which stakeholders will be involved and in the final decision on the chosen specialization domains, which depends on the regional government that is leading the strategy.

This position that argues for, but still considers the difficulties of, bottom-up approaches is also taken

by McCann and Ortega-Argilés (2011). They refer to the need for smart specialization strategies to engage with local elites in order to extract local knowledge and to tailor the policy. But they also mention information asymmetries and principal–agent problems associated with engagement with local elites, together with externalities. Boschma (2014) argues for the need to prevent local elites from assuming monopolistic positions, which calls for a flexible but continuously monitored policy implementation process.

Table 1 synthesizes the main contributions considered in the previous paragraphs on this challenge.

Table 1
Implementation of bottom-up strategies

Type of challenge	Problem for implementation	Authors
Implementation of bottom-up strategies	Lock-in with respect to local historical specialization	Capello (2014)
	Monopoly positions of local stakeholders/elites	Kroll (2015), Boschma (2014),
	lock-in and corruption as potential threats	Iacobucci (2014)
	Proliferation of promising domains and difficulties with prioritizing	Iacobucci (2014), Capello (2014)
	Misallocation of public resources whenever local interests and local political needs may set unfeasible industrial targets and risky innovation strategies	Camagni <i>et al.</i> (2014), Capello (2014)
	Lack of co-investment between public and private initiatives	McCann and Ortega-Argilés (2014)
	Top-down government planning; “blind giant”	McCann and Ortega-Argilés (2011, 2013, 2014), Foray and Goenaga (2013)

Source: authors' elaboration.

2.2. The role of learning and capability building

Some of the main arguments on how to overcome the challenge posed by bottom-up approaches relate to the development of capabilities as a goal and learning processes as a means for achieving that.

Coffano and Foray (2014) argue that the implementation of smart specialization policies “requires

good institutions and strong policy capabilities at the regional level”. Some authors claim that one of the difficulties with learning is that there have been inconsistencies in the academic production on RIS3 that have led to confusion when regional authorities have tried to implement the concept in practice (Capello, 2014; Kroll, 2015). Kroll (2015, p. 3) states that “early RIS3 policy guidelines provided little in the way of helping regional policy-makers

to make sense of local complexity and dynamism to the extent needed for solid policy-making". In order to deal with the learning challenge, the European Commission has established an interregional learning platform where regional and national governments exchange policy practices (Landabaso, 2014; McCann & Ortega-Argilés, 2014). Moreover, the EU Commission has produced a number of methodological guides and materials, as well as several tools and techniques (innovation vouchers, assistance with patenting activities, etc.). It has also mobilized, for the first time, more than a hundred top academics and policy advisers to help regional and national governments with the production of their RIS3 in order to bridge the dangerously widening gap in the European Union between practitioners and academics.

Foray and Goenaga (2013) emphasize the experimental nature of the policy process and conclude that rigorous benchmarking and assessment are central elements. The idea is not to reduce the risk of error, which would result in no discovery at all, but to minimize its costs. The "blind giant" metaphor suggests that it is always very difficult to assess the stability and sustainability of a specialization at an early stage.

Landabaso (2014), in line with Foray and Goenaga (2013), finds a general reason for the difficulties that regions are currently facing when implementing RIS3 and it is related to the role of the government: the lack of an entrepreneurial public sector. He refers, among other issues,

to government structures filled with economic development professionals working hand in hand with the private sector and other key players of the quadruple helix which pursue public goals in the form of economic transformation through innovation towards higher-value added markets and sustainable quality jobs. (Landabaso, 2014, p. 135)

This is something that, in Landabaso's opinion, is hard to find today except in a few development or innovation agencies, technology centres, technology parks and the like. He also refers to

the need for a public sector that is able to take risks and experiment, one which is professional, accountable and works with the right system of incentives for the public good (delivery) and the need for public entrepreneurs that have the capacity to avoid some of the mistakes of the past in relation to old industrial policies (Ahner & Landabaso, 2011), including both the "dependency" inertia and private interests of some of the aforesaid local stakeholders.

This observation, detection and evaluation capabilities make it necessary for regional governments to work with sophisticated programmes and methodologies (Coffano & Foray, 2014; Foray, 2014). Kroll, Muller, Schnabl, and Zenker (2014) mention that some training and capacity building will inevitably be needed to enable administrations to implement the "new generation of policy measures". These authors conclude that in the case of Spain, for example, lack of competences for strategy building and the absence of multilevel governance between the central and regional governments lead to seeking assistance from consultants.

Going further into what Kroll (2015, p. 5) defines as "internal issues of regional governance", the cases in this paper fit with his argument that political habits, practices and routines (policy-making modes) are of substantial importance for the degree of efficacy and efficiency with which new initiatives such as RIS3 can be implemented. Foray (2014) underlines that path dependence cannot be avoided and that implementation is conditioned by the region's policy-making system. As McCann and Ortega-Argilés (2014, p. 24) state, the "smart specialization approach requires a serious reflection on a region's assets, capabilities and weaknesses". Camagni *et al.* (2014) support this when they note that regional innovation paths strongly depend on deep-rooted territorial elements, such as history, culture and learning processes (they refer to "the territorial approach to smart specialization").

Table 2 shows the main contributions presented on this section.

Table 2
Needs for learning and capacity building

Type of challenge	Problem for implementation/suggested solutions	Authors
Need for learning and capacity building	Lack of <i>public sector entrepreneurs</i>	Landabaso (2014)
	Lack of sophisticated programmes and methodologies and training and capacity building	Foray (2014), Coffano and Foray (2014), Kroll <i>et al.</i> (2014)
	Unsuitable political habits, practices and routines	Kroll (2015), Foray (2014)
	Rooted territorial elements (history, culture ...)	Camagni <i>et al.</i> (2014)

Source: authors' elaboration.

2.3. The need for new governance modes

McCann and Ortega-Argilés (2014) refer to the “softer” institutional and governance challenges associated with fostering knowledge dissemination and diffusion to enhance technological adoption and adaptation. This is related to the weaknesses in the linkages within the innovation system (McCann & Ortega-Argilés, 2014) and the challenge of facilitating the design of such inter-organizational connections and coordinating efforts (Coffano & Foray, 2014).

Together with the implementation problem related to the lack of capacities of regional actors and administrators to design and run strategy processes, Kroll (2015) mentions the danger of atomization of regional governments and their incapacity to advance with intra-administrative negotiations between local ministries and agencies. The concept of governance used in the later discussions in this paper refers to linkages in the regional innovation system, with specific emphasis on intergovernmental linkages between different government levels within a region.

As McCann and Ortega-Argilés (2014) note, when the concept of smart specialization emerged in the Knowledge for Growth expert group, there was no explicit regional or geographical dimension of the concept. That came later and some of the implementation problems that regions face now are a reflection of that gap. When including economic geography and spatial economics in the discussion of smart specialization, it became evident that translating the concept to a regional context was far more complex than the sectoral arguments imply.

Smart specialization remained largely non-spatial (McCann & Ortega-Argilés, 2014). By integrating several regional and subregional governments with different scales of influence and different proximity to stakeholders in the policy-making process, the later discussion on governance aims at contributing to the territorial dimension of RIS3.

Boschma (2014) and Landabaso (2014) note it is worth mentioning that

the smart specialization approach has much to gain by drawing lessons from the “constructed advantage” literature, which emphasizes the importance of policy encouraging crossovers between related industries that can provide complementary assets ... taking region-specific intangible assets as a starting point ... and promoting learning processes that are context specific. (p. 134)

The bottlenecks that prevent related industries in the regions from connecting and interacting, the lack of complementarities with other regions and the often too broad areas of specialization can also be considered implementation problems in smart specialization processes (Boschma, 2014; Iacobucci, 2014). As Iacobucci (2014) underlines, the emphasis on R&D and innovation will depend on the region's innovative performance and the general lack of key elements for smart specialization (connectedness, entrepreneurial spirit, industrial diversity, etc.) that can condition its capacity for implementation (Capello, 2014).

Previous implementation difficulties related to regional governance are represented in Table 3.

Table 3
Need for new governance modes

Type of problem	Problem for implementation/Suggested solutions	Authors
Need for new governance modes	Lack of complementarities with other regions; no analysis of relations between sectors, lack of “cross-fertilization” between technological domains	Coffano and Foray (2014), Boschma (2014), Iacobucci (2014)
	Weaknesses among the linkages within the innovation system – inter-organizational connections and coordinated efforts	McCann and Ortega-Argilés (2014)
	Incapacity to advance intra-administrative negotiations between local ministries and agencies (<i>Regional governments as atomic actors</i>)	Kroll (2015); Boschma (2014)
	Assumption that RIS3 is a spatial process	McCann and Ortega-Argilés (2014)
	The region's innovative performance (connectedness, entrepreneurial spirit, industrial diversity,...) can condition the implementation capacity; the case of technologically poor regions	Capello (2014), Camagni <i>et al.</i> (2014), Iacobucci (2014)

Source: authors' elaboration.

3. Methodology

The paper is based on four cases related to governance and learning for smart specialization. The complexity in the choice of cases responds to the need to show different perspectives of smart specialization on different government levels in order to later argue for multilevel governance.

The background case is the regional Basque Government's RIS3. The other three are subregional governments. One is a provincial government (that of Gipuzkoa), another is the Bilbao City Council and the fourth is a county development agency (that of Goierri) created by 18 town councils in order to operate in the county. Apart from the provincial council of Gipuzkoa, they are all directly addressed as RIS3 projects. The provincial council had a more general perspective of constructing a new mode of governance, which aims to facilitate not only RIS3 projects, but also any collaborative project combining top-down with bottom-up approaches and focused on territorial development.

The three subregional cases are based on action research processes where the researchers got in-

involved in dialogical processes with policy-makers in order to solve the policy-makers' challenges and at the same time generate relevant knowledge for an academic debate (Karlsen & Larrea, 2014a).

One of the authors was involved as an action researcher in each of the projects. In all subregional projects, we participated directly with the policy-makers in charge of the processes in continuous and sequential processes of reflection in action (while the action was taking place) and reflection on action (once the action had been developed). The researchers' role was to develop the reflection processes, integrating concepts and frameworks and cogenerating new knowledge with the policy-makers that would feed the new cycle of action and reflection. In the case of the Basque Government, the role was more indirect, acting as a friendly outsider and helping one of the researchers who was directly involved in the process to reflect about her own role in the process and in the interaction with the actors in the Basque Government.

The choice for action research was the result of the researchers' aim at combining knowledge generation for the academic community with change in

policy-making. Greenwood and Levin (2007) consider action research more as a strategy for change than as a research method. The cases were presented previously in various academic publications (Estensoro, 2012, 2015; Estensoro & Larrea, 2012, 2015; Karlsen & Larrea, 2014a,

2014b). As a result of these processes Orkestra, Basque Institute of Competitiveness is becoming a research hub where different researchers and policy-makers are finding the opportunity to learn, not only from theory, but also from practice related to all of the previous long-term projects which are still operating at the time of writing this article.

4. Case studies

4.1. *The regional perspective: the Basque government*

Following the proposal made by the commission to the regions, RIS3 has mainly been considered an endeavour for regional governments, and these have been the main actors in their implementation. That is why it is necessary to refer to the Basque Government's RIS3 project as the main process of this type in the Basque Country. In a nutshell, the Basque Government has developed a strategy where three smart specialization thematic priorities have been established (advanced manufacturing, energy and biosciences – mainly human health) besides horizontal priorities and opportunity niches (Basque Government, 2014a, 2014b). In order to proceed to the implementation of policies related to such vertical priorities, three task groups that integrate a variety of public and private actors are already operating at the time of writing this article. Comparative assessments of the Basque case show that the Basque Country is one of the regions in Spain with a long tradition in research, technological development and innovation policy and good starting conditions with regard to RIS3 (Kroll *et al.*, 2014; OECD, 2012). Morgan (2013a, 2013b, p. 22), who has played a critical role assessing the Basque Government on RIS3, argues that the Basque Government can legitimately claim that it has been building up such a strategy for the past thirty years. Most academic contributions on the case share this perspective

(Aranguren, Navarro, & Wilson, 2014; Aranguren & Wilson, 2013; Valdaliso, 2014). Valdaliso, Magro, Navarro, Aranguren, and Wilson (2014) conclude that, on the one hand, scientific and technological capabilities and institutions have been created and there has been evident policy learning for the design and implementation of such complex strategies and policies as RIS3, but there are still enormous inertia and resistances to new approaches.

The goal of this article is to expand on the potential role of subregional governments to complement the regional perspective, so we do not describe the regional government's project in detail, but mainly describe the steps taken to relate to subregional governments in the process.

After establishing the priorities, in 2013 a proposal was made by the regional government together with the researchers to set up two workshops in order to identify synergies between their strategies and those being defined by different subregional governments. Representatives from the three provincial governments, from the three City Councils of the capital cities and from Garapen (the association of county development agencies) were invited to participate. At the first workshop, the Basque Government reported on the main aspects of the regional RIS3. At the second, the regional government suggested that the others should prepare reports about the synergies between their strategy and the regional RIS3. This process was not prioritized in the following stages and, consequently, the cases presented in the following sections are not formally part of the RIS3 strategy of the Basque Country. But the attempt created a precedent to construct a multilevel governance model for RIS3 in the future.

4.2. *The provincial perspective: Gipuzkoa Sarean*

In 2009, the Provincial Council of Gipuzkoa, one of the three provincial governments in the Basque Country, started an action research process to create connectedness between territorial actors (organizations) in four target groups: firms, organizations in the knowledge subsystem (universities, technology centres, etc.), political groups represented in the provincial government and the

civil society. The critical concept of the project was social capital. After diagnosing social capital, and before any intervention could be implemented, the 2011 elections led to a change of government and a different political party reached the government. Almost one year before the elections, the politician who had led the first stage of the project put its results in a nutshell when he said:

The project has been a good experience for all participants because it has been a way to meet each other and to learn how we can work with each other, and this is a way to develop social capital too. (Meeting of the executive board of Gipuzkoa Sarean on the 30 June 2010)

The new ruling party won the elections by emphasizing a shift towards more participatory approaches to policy-making. The critical concept of the project evolved from social capital to territorial development. The government, together with the researchers, defined territory and territorial development in the context of Gipuzkoa Sarean as follows:

Territory: the actors that live in a place, with their social, economic and political organisation, their culture and institutions as well as the physical environment they are part of. Territorial development: the process of mobilisation and participation of different actors (public and private) in which they discuss and agree on the strategies that can guide individual as well as collective behaviour. (Proposal of a New Approach to Territorial Development in Gipuzkoa, Working Paper in Gipuzkoa Sarean, June 2013)

The decision was made to develop a participatory approach to territorial development with the 11 county development agencies operating in Gipuzkoa. Counties are supra-municipal and sub-provincial territorial units. They do not have a corresponding government level, but they do have county development agencies, created by municipal governments that get together in order to gain critical mass to operate development policies.

One of the government's critical decisions in the process of developing the bottom-up approach to

working with development agencies was to work with an emergent concept of strategy based on learning, negotiation and collaboration and give up the traditional planning approach. They were harshly criticized in the media for not having a plan, but they decided to continue with this strategy. Action research was at the core of learning, negotiation and collaboration.

As a result of the process, several task forces were created among representatives of the provincial government and county development agencies. One of these was focused on the energy sector. The result of learning, negotiation and collaboration was a government decree whereby counties could apply for money to hire new staff to contact firms in energy and related sectors in the county. Each of them had to make a diagnosis of the energy value chain in the county and the gaps they had and search for opportunities for new activities. The goal was to help firms that were not in the energy value chain to enter it and those who were already in the value chain to evolve towards more value-added activities. The learning approach was critical in this group as participants from every county development agency together with the representative of the provincial government followed an action research programme in which training based on the real challenges of the process was given on concepts and frameworks such as value chains, clusters and the energy sector, and they were supported with the development of their own diagnosis, reflection and action cycles. When asked what this process offered to the provincial government, the politician most closely involved in the process answered:

This is a decision making tool for us, which helps us to decide what to do. It also offers more capabilities to implement, as now we all [referring to participants from county development agencies] understand the policy process. (Ugaitz Iturbe, interviewed on the 22 July 2015)

4.3. *The county perspective: Goierri County*

Goierri is a county located in the southern part of Gipuzkoa province in the Basque Country with ap-

proximately 42,000 inhabitants and an area of 271.3 square kilometres. Economic activity in Goierri is mainly concentrated in the industrial sector, where 45% of the working population is employed. Industrial activity is predominantly shaped by subcontracting relationships between large firms located in the area and competing in the global market and their dependent suppliers, most of which are small-to-medium enterprises (SMEs).

Goieki, the local development agency, was created by the 18 municipalities in the county to support development policies in Goierri. The project used as a case study in this paper is the Industrial Forum (IF), which was created in 2012 as a “multi-actor” space where shared strategies for industrial development could be created. The IF is formed by six of the largest firms in the county together with training centres, the county technological centre and the agency, and its aim to promote sustainable industrial development for the county led to a new mode of governance.

The action research process that started in late 2012 within this forum has resulted in the definition of several priorities for industrial development. One such priority is related to the aim to facilitate the transition of the county’s industrial activity towards “advanced manufacturing” or “Industry 4.0”.

This is a challenge that we all [referring to all industrial firms] share. It is not about a buzz concept, but about a need. (Manager of a firm; Meeting of the Industrial Forum on the 17 June 2015)

Researchers contributed theoretical and conceptual frameworks related to smart specialization and specific statistical analysis that made it possible to discuss the challenges for industrial development in the county. This contribution provoked dialogue between the participants, and the priority of supporting Industry 4.0 resulted from that dialogue and reflection. The IF considered that the county’s industrial development strategy should focus on horizontal priorities that the maximum amount of firms could benefit from, rather than selecting and supporting specific industrial sectors or activities.

During this process, participants in the IF studied the Basque Government’s RIS3 process and observed the linkages between what they were working on and the Basque Government’s process. Several attempts were made to connect the processes, but there were no established channels to make this possible.

Although we will continue supporting our priorities, we need to know what the [Basque] government’s priorities are. Synergies between the different strategies can facilitate more support for our priorities. (President of a firm; Meeting of the Industrial Forum on the 19 November 2013)

4.4. *The metropolitan perspective: Bilbao NextLab*

Bilbao City Council initiated this project in 2013 with the aim of promoting the economic transformation of the city and preparing it for present and future challenges. These challenges included issues as diverse as the exhaustion of the strategy of urban development transformation, the decline of gross domestic product per capita, the ageing of the population and poor performance in innovation. This suggests that the City Council wanted to be more proactive in economic and innovation policy, an area where the local government lacks formal competences.

From September 2013 to May 2015, the Mayor’s Cabinet on the Bilbao City Council, together with Bilbao Ekintza (the county development agency) and the researchers, initiated an action research process that was mainly focused on the smart specialization strategy that the City Council wanted to promote.

At the beginning of the process, the researchers delivered reports containing an analysis that helped policy-makers to find out whether the previously set priorities were correct or not.

We need to check our work ... we need the university to evaluate our policies. (Head of Mayor’s Cabinet on the Bilbao City Council; Meeting on the 9 September 2013)

This role, which was initially far from being an action research process, did however develop trust

between the researchers and politicians. The dialogue touched on more delicate issues than the politicians had initially expected, and the role of the researchers was not to evaluate or contrast any decisions that had already been made, but to raise questions that could facilitate the development of the specialization process that the City Council was seeking. The following are literal quotes from policy-makers that help to understand how the nature of the relationship with the researchers evolved. The final sentence is related to how they interpreted the government changeover in 2015.

It is true that we had not thought about governance until we started this process ... we initiated that reflection because of you ... it was a new path. (Member of the Mayor's Cabinet on the Bilbao City Council; Meeting on the 3 October 2014)

I think that we chose the right direction: you are learning and we are too. we have done a good job ... Our role when we leave [referring to the next change in government] is to be honest, handing over all of our knowledge and that which we co-generated with you, because we believe that this is the best thing for the city. (Head of Mayor's Cabinet on the Bilbao City Council; Meeting on the 3 October 2014)

A main issue in the process was coordination between Bilbao's smart specialization strategy and the Basque Government's RIS3. The vertical priorities defined by the Basque Government did not include any area prioritized by Bilbao's specialization strategy. The City Council believed that the potential of urban economies had not been considered by the regional government.

If, after all this work, the [Basque] government considers our strategy, my aim will have been achieved. My aim is to generate an "urban lobby". (Head of Mayor's Cabinet on the Bilbao City Council; Meeting on the 16 September 2014)

Although the Basque Government's aforesaid attempt at coordination was interrupted, the Bilbao City Council and the development agency remained proactive in their attempt to argue that the specialization prioritized by the city in terms of knowl-

edge-intensive business services (KIBS) would facilitate the specialization in "advanced manufacturing" that the regional RIS3 supported.

For us it is very important to remember that it is not all about manufacturing and products. The integration of creative industries and advanced services also means considering the urban dimension. (Director of Bilbao Ekintza; Meeting on the 16 September 2014)

5. Concluding remarks and lessons learnt

In this section, we present the main lessons learnt from the cases presented above. The discussion does not come exclusively from either theory or practice. The action research processes presented are the result of continuously testing theories in practice and reflecting on practices that can contribute to theory.

Three critical discussions have emerged that connect to the three challenges posed in the section about problems with implementation. The first is that regions are not homogeneous units in terms of territorial scales for the implementation of RIS3, although they have often been treated in the literature as such. This lesson is directly connected to the challenge of constructing new governance modes (see Table 3). The second is that the approach to complexity in the literature is unclear and has underestimated power issues. The integration of power issues can help understand how bottom-up processes develop (Table 1). The third is that there is an implicit approach to social research on RIS3 that positions social researchers as outside observers of these processes when they can play a role as insiders in the construction of new modes of governance. We propose action research as an approach that responds to the challenges posed in terms of learning and capacity building (Table 2). The next sections focus on these discussions.

5.1. Connecting regional and subregional governments

The case studies show that regional governments might have the competences for RIS3, but often

lack the capacity to be present in many of the spaces where opportunities can be found. Policy-makers (elected politicians, civil servants and other staff in governments and their agencies) would benefit from a long-term dialogue process with representatives of firms, technology centres, universities and other organizations with potential useful knowledge for the RIS3 strategy. Our practical experience trying to operationalize the concept of entrepreneurial discovery shows that regional governments often lack people to get involved in this dialogical process. But subregional (provincial, county, local or municipal) governments that lack the competences for RIS3 do sometimes have staff with long-term trust relationships with such stakeholders. We propose that multi-scalar governance can contribute to enhance a territory's capabilities to develop RIS3 approaches as governments in different subregional scales have close relations with a multiplicity of private actors with whom regional governments cannot directly interact. This interaction is what we referred to as the senses of regional governments: people involved in the dialogue with stakeholders can be physically close to stakeholders to share the intangible assets in the context, to listen and to see what is going on. They also talk to stakeholders and can help integrate the voice of regional governments in these processes.

There is a systematic absence of references to subregional governments in the literature on RIS3. Although many regions are designing their own policies, decentralization in this specific sphere has often stopped at the regional level. Local governments (including provincial or municipal governments) have in some cases been included as one more stakeholder in local partnerships (Ortega-Argilés, 2012); still, there is no clear role defined for them or systematic academic reflection on the role of different government levels in this type of process.

Some authors recognize interdependencies between different levels of government and consequently propose multilevel governance to enhance their coordination (Charbit, 2011; Hooghe, Marks, & Schakel, 2010; Vanthillo, Vanoutrive, & Verhetsel, 2014; Vanthillo & Verhetsel, 2012). But there is little

literature on how this coordination should be constructed. The cases in this paper showed attempts to construct such processes.

Of course, we claim no representativeness for the Basque case and we are aware that the multilevel governance context will be different in every region. There is a lack of cases in the literature that offer this multilevel perspective. One exception is the process in Flanders, where subregional discussion has been studied explicitly (Ceuninck & Reynaert, 2011), and where there has been academic production with regard to RIS3 and the role of subregional platforms as an approach to place-based development (Vanthillo *et al.*, 2014; Vanthillo & Verhetsel, 2012). They argue that these platforms have some characteristics of the place-based approach, but they also acknowledge that the goal of more integrated subregional economic development failed due to the relative powerlessness of the platforms (Cabus, 2002) and that there is no real significant decentralization in terms of competences and resources at the subregional level (Voets & De Rynck, 2006).

5.2. Handling complexity and conflict

When the landscape for RIS3 includes not only regional governments, but also subregional ones, the active role of different government levels and their platforms can generate a feeling of chaos. There is often a temptation to simplify and create order and structure. For instance, the Flemish government talks about downsizing the so-called crowded government house, arguing that in previous decades too many new structures and organizations were established, each of them with their own competences, financial resources and decision-making procedures (Ceuninck & Reynaert, 2011). Fragmentation is also mentioned (Flemish Government, 2014). Our argument is that in order to connect to emerging processes, entrepreneurial discovery might require a certain level of complexity and that prioritizing simplicity might be a difficult challenge in these cases.

RIS3 should be able to connect the different emerging potential entrepreneurial discovery processes and this might be difficult to do in very simplified

structures. Making processes simpler for the regional government might hinder potential discoveries. This is a challenge for multilevel governance and an adequate definition of roles for subregional governments could allow for creative solutions without increasing inefficiency. Based on the previous cases, we argue for the development of capabilities to handle complexity as a more efficient behaviour than avoiding complexity.

Our contribution to this debate comes from discussions held with territorial actors (mainly governments) that are working to implement RIS3 processes on subregional levels. The lessons learnt led us to go beyond an interpretation of complexity that underlines that RIS3 is a process consisting of interwoven parts that is difficult to understand. The concept that best helped in the processes was one that introduces power issues by claiming that there is a situation of territorial complexity (Karlsen, 2010; Karlsen & Larrea, 2014a) when there are autonomous but interdependent actors involved in a process that might have different interpretations of what the challenges and the answers to such challenges are, and where none of the actors are in a position to instruct the others on how to proceed. This, of course, does not mean that no actors are more powerful than others and some of them do influence the process in very clear directions. However, when there is a situation of territorial complexity, command and control processes do not work well and alternative work methods and spaces must be constructed in order to keep dialogue going.

Dialogue is at the core of development of bottom-up processes and it requires empowerment processes not only of entrepreneurs, as is often underlined in the literature (Coffano & Foray, 2014), but also of different levels of subregional governments. Dialogue can only work if it is assumed that although there will be powerful players, governance is not a question of the other actors (either private or other government levels) adapting to the regional government's plan. It is a question of handling a situation where every actor might have the legitimacy to propose contradictory positions on smart specialization and RIS3. The case studies have revealed such complexity.

5.3. Integrating social researchers in the process

Our third argument is that social researchers can play a more varied role than we are playing in most RIS3 processes nowadays. Although social researchers are often involved in RIS3 processes, this is in the role of experts who analyse the region, diagnose the situation, help reflect on governance and priorities, make recommendations on these issues and try to measure and evaluate how governments or private actors are dealing with the process. These roles are usually played out as outsiders to the process.

When working on the concepts and methods of RIS3 with governments and agencies, there is a role seldom played by social researchers, to help construct new modes of governance to handle complexity. This involves complementing the mainstream methodological approaches to research on RIS3 with other research approaches that integrate the role of social researchers as facilitators of social processes. In this paper, we presented four cases inspired by action research, an approach that may help to develop this role.

There is a wide variety of approaches to action research. The approach to the case studies was systematized in Karlsen and Larrea (2014a, 2014b) and Estensoro (2015) and is based on the principles of pragmatic action research (Greenwood & Levin, 2007; Gustavsen, 1992; Johnsen, Knudsen, & Normann, 2014). We propose action research as a strategy for change that requires the researcher to play the role of facilitator of dialogue processes. Concepts and frameworks are discussed among participants in the RIS3 process in order to build trust and a shared view that can help to handle complexity. This means that the researcher's interaction with the participants in RIS3 shifts from interviews, surveys and observation to dialogue and co-generation of knowledge and from reports and papers to collective knowing (Karlsen & Larrea, 2014a) that is expressed in action.

Our final argument in this article is that action research could be an approach to learning and capability development that helps construct new governance modes for bottom-up processes in RIS3.

6. Disclosure statement

No potential conflict of interest was reported by the authors.

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