What can experience with clusters teach us about fostering regional smart specialisation?

La nueva orientación de la política regional de innovación en Europa requiere el desarrollo de estrategias de especialización inteligente (RIS3) para apoyar así las inversiones en Ciencia, Tecnología e Innovación en las que existen unas claras sinergias con las habilidades y capacidades productivas existentes. Las RIS3· se legitiman en un contexto donde la mayoría de la regiones europeas han establecido políticas *cluster* que buscan facilitar la cooperación entre empresas y otras instituciones que trabajan en áreas relacionadas y que comparten los fundamentos asociados a los principios de RIS3. El desarrollo y perfeccionamiento de la teoría y práctica de la RIS3, por tanto, plantea importantes cuestiones que tienen que ver con su relación con los *cluster* e incluso con lo que se puede aprender de la experiencia más consolidada de esa política *cluster* para la definición e implementación de las políticas de RIS3. Por ello la finalidad del artículo es estudiar la relación entre estas dos políticas. Las sinergias principales se examinan según los pasos de la «Guía de la estrategia de innovación e investigación para la especialización inteligente» de Foray *et al.* (2012) y basándose en la experiencia de la política *cluster* llevada a cabo durante dos décadas en el País Vasco.

Europako berrikuntza-politikaren joera berriak espezializazio adimendunaren eskualde-estrategiaren (RIS3) garapena behar du; hartara, zientziako, teknologiako eta berrikuntzako inbertsioak babestu ahal izango ditu. Horietan, bada, sinergia argiak daude ekoizpen-ahalmen eta -gaitasunekin. Europako eskualde gehienek enpresen eta lotutako arloetan diharduten erakundeen arteko lankidetza erraztea xede duten cluster-politikak ezarri dituzte, eta RIS3en printzipioei lotutako oinarriak partekatzen dituzte. Testuinguru horretan dute, bada, RIS3ek zilegitasuna. RIS3en teoriaren eta praktikaren garapenak eta hobekuntzak, hortaz, auzi garrantzitsuak dakarzkigute. Auziok clusterrekin duten harremanarekin dute zerikusia, bai eta RIS3 politikak definitzeko eta ezartzeko cluster-politika horren esperientzia sendoenetik ikas daitekeenarekin ere. Horrexegatik, artikulu honen helburua bi politika horien arteko harremana aztertzea da. Sinergia nagusiak aztertzeko, honako hauek hartuko dira oinarri: batetik, «Espezializazio adimendunerako berrikuntza- eta ikerketa-estrategiaren gida»ren (Foray et al. 2012) urratsak, eta, bestetik, Euskadin bi hamarkadatan egindako cluster-politikaren eskarmentua.

The new orientation of regional innovation policies in Europe requires the development of research and innovation smart specialisation strategies (RIS3) so as to support Science, Technology and Innovation (STI) investments where there are clear synergies with existing productive capacities and capabilities. RIS3 are advocated in a context where most European regions have established 'cluster' policies that seek to facilitate relationships of cooperation between firms and other institutions working in related areas and that share much common ground with the underlying principles of RIS3. Developing and refining RIS3 in theory and practice therefore raises important questions regarding how they relate to clusters and indeed what can be learned from the more established practice of cluster policies for the design and implementation of policies supporting RIS3. The aim of this paper is to explore the links between these two policy agendas. Key synergies among them are explored in the context of each of the steps in Foray et al.'s (2012) Guide to Research and Innovation Strategies for Smart Specialisation and by drawing on two decades of experience with cluster policy in the Basque Country. The paper signals several concrete areas where regional policy-makers might look to their existing cluster policies and clusters when seeking to articulate new regional processes towards smart specialisation strategies.

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1. INTRODUCTION

There is widespread recognition that territories need to construct development strategies that are focused firmly on building sustainable competitive advantages which draw upon their own unique resources, competencies and capabilities alongside intelligence on existing technological and market trends (Aranguren *et al.* 2012; Etzkowitz and Klofsten, 2005; European Commission, 2006; Porter, 2008). Connected with this need for articulating robust territorial strategies is the emergence of a debate in Europe around what have been called 'research and innovation smart specialisation strategies'. This concept (which will be referred to as RIS3 from now onwards) arose initially from the observation that many regional governments have been replicating investments in certain areas of science, technology and innovation (STI) without really taking into account the plurality and diversity of their specific

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contexts. What are required, it is argued, are regional strategies for STI that are smart in the sense of specialising in areas where there are clear synergies with the existing and potential productive capacities and capabilities of the region.

The theoretical basis for the RIS3 concept has emerged over the last few years and has been very rapidly translated into a policy agenda. This policy agenda is most clearly reflected in European Commission working papers advocating that regions should apply smart specialisation strategies (European Commission 2010a, 2010b) and in the development of a policy-facing *Smart Specialisation Platform* and *Guide to Research and Innovation Strategies for Smart Specialisation* (Foray *et al*, 2012).[1] The speed of this translation from theory to policy has certain consequences. Firstly, it means that the concept itself is still very much being explored and refined at the same time as policy-makers are adopting it and putting it into use. While this can create some confusion and uncertainty in both academic and policy spheres, it has the advantage of facilitating the development of *theory in practice* rather than the often criticised linear leap from theory to practice without 'proof of concept' (Cooke, 2007). The rapid policy uptake of the RIS3 concept has also meant that there has been relatively little time to reflect on how it links with other already-established policy initiatives. Given that new policies are always introduced in the context of existing policies with their own specific histories, proponents and beneficiaries, there are dangers in overlooking the significance of policy inertia. In particular, RIS3 are advocated in a context where most European regions have established 'cluster' policies that seek to facilitate relationships of cooperation between firms and other institutions working in related areas and that share much common ground with the underlying principles of RIS3.[2] In the process of developing and refining theory in practice, therefore, there are important questions regarding how RIS3 relates to clusters and indeed what can be learned from the more established practice of cluster policies for the design and implementation of policies supporting RIS3. The aim of this paper is to explore the links between these two types of policies, with a particular focus on the process of transformative change that is central to both.

The paper is structured as follows. In the next section we provide some background on the theoretical concepts of RIS3 and clusters and explore their key differences and similarities. This analysis suggests important synergies between the concepts, particularly in terms of the entrepreneurial discovery process that is central to RIS3. Section 3 deepens this analysis by reflecting on the relevance of over twenty years of experience with the long-running Basque cluster policy for the development of a regional smart specialisation strategy. In particular, these reflections are struc-

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[1] The *Smart Specialisation Platform* can be found at www.s3platform.jrc.ec.eu.

[2] It is perhaps ironic that the similarly rapid translation of the cluster concept into policy has in the past been fairly heavily criticised for running ahead of fundamental conceptual, theoretical and empirical questions (Martin and Sunley, 2003; Sugden *et al.*, 2006).

tured around the discrete steps for a smart specialisation strategy set out in European Commission's *Guide to Research and Innovation Strategies for Smart Specialisation* (Foray *et al*, 2012). Finally, we conclude the paper in Section 4 with a summary of the key learning points from these reflections, identifying areas where regional policy-makers might seek to learn from and build from existing clusters and cluster policies for the development of RIS3.

2. CONCEPTS: SMART SPECIALISATION AND CLUSTERS

2.1. Research and Innovation Smart Specialisation Strategies (RIS3)

The concept of RIS3 has its roots in the work of the 'knowledge for growth' expert group established in 2005 by DG Regional Policy Commissioner Potočnik to provide advice on the contribution of knowledge to sustainable growth and prosperity in the European Union. Analysis of the EU-US productivity gap, and in particular of the role played by differences in R&D intensity, led to arguments based around the dual premise that: (i) R&D in Europe was fragmented along national lines; and (ii) that there was a tendency for both countries and regions to try to emulate success elsewhere rather than explore original ideas (Foray and Van Ark, 2007). This led to an initial proposal for 'smart specialisation', based on the idea that «the European Research Area will only benefit countries and regions with clear visions and strategies for developing distinctive, original and modern areas of specialisation for the future. The economic importance of the region, combined with its scientific and technological development, will dictate how broad or narrow this specialisation should be» (Foray and Van Ark, 2008, p. 28).

These embryonic arguments were rapidly adopted by European policy-makers and have continued to be developed by a group of academics associated with the 'knowledge for growth' group and the latterly established 'mirror group on smart specialisation' (Foray, 2009a; Foray, 2009b; Foray et al., 2009, 2011; McCann and Ortega-Argilés, 2011; Navarro *et al.*, 2011, 2012; contributions to this special issue of *Ekonomiaz*, among others). As stated by the European Commission (2011, p. 7) in a recent policy document: «in a nutshell, smart specialisation is about placing greater emphasis on innovation and having an innovation-driven development strategy in place that focuses on each region's strength and competitive advantage. It is about specialising in a smart way, i.e. based on evidence and strategic intelligence about a region's assets and the capability to learn what specialisations can be developed in relation to those of other regions.» There is indeed fundamental acceptance of the argument that regions should give focus to their innovation investments based on evidence and strategic intelligence about their own assets and capabilities. Where there is considerable room for debate, analysis and the development of theory in practice, however, is with regards the *processes* underlying the emergence of such

strategic intelligence and the associated identification of which specific STI activities to prioritise.

With regards to process, the defining characteristic of a RIS3 in theory is that it «should be the end result of an entrepreneurial process of discovery» (COM, 2010: 44). Thus the discovery process that determines the activities in which a territory specialises should emerge from entrepreneurs, understood in a broad sense – «firms, universities, higher education institutes, independent inventors and innovators» (Foray *et al.*, 2011, p. 7). Indeed, RIS3 are explicitly not an argument for government to be «bureaucratically selecting areas of specialisation and fostering the development of 'national champions' in inter-EU competition» (Foray *et al.*, 2009, p. 4). Instead, Foray *et al.* (2009) suggest that the government's role should include the following objectives: providing incentives to entrepreneurs and other organisations (universities and research centres) to be involved in the discovery of regional specialisations; evaluating and assessing the effectiveness of such support, so that it is not interrupted too early or continued too long; ensuring that support is directed towards economic sectors with significant weight and opportunities for improvement; providing complementary investments (e.g., in training and education) for emerging specialisations; and providing information and facilitating coordination and connections among the different actors of a given territory and with other territories. There remains debate, however, around whether regional government should play a more active role under certain circumstances and where they have the capacity to do so (Aranguren *et al.*, 2013; Navarro *et al.,* 2012), recognising for example the risks associated with excessive private influence in regional strategies (OECD, 2011).

With regards to the actual focus of a smart specialisation strategy resulting from this process of entrepreneurial discovery, a broad approach that is not restricted to the promotion of general purpose technologies (GPTs) considers several ways of moving towards «specialised diversification» (McCann and Ortega-Argilés, 2011) or «smart diversification and upgrading» (Camagni, 2011). Four specific processes are highlighted in the *Guide to Research and Innovation Strategies for Smart Specialisation* (Foray *et al*, 2012) – transition, modernisation, diversification and radical foundation of a new domain – along with recognition that these are not mutually exclusive. Yet as Foray (2013) explicitly acknowledges in his paper in this special issue, any prioritisation of vertical activities that favour certain technologies, fields, and therefore firms, is difficult. Ultimately, how to focus public investment in STI activities is a policy decision taken by government, but the real challenge is how to inform this policy decision from an entrepreneurial process that brings together the diverse knowledge on capabilities and possibilities that is embedded and constantly evolving among a wide range of agents in the economy. This is where policy has run ahead of theoretical and empirical understanding, but at the same time it is difficult for theory to advance any further without research into live processes. In particular, it is

here where there is great potential to learn from existing processes within our regions, many of which are associated with clusters and cluster policies, to which we now turn.

2.2. **Clusters and their Relation with RIS3**

The cluster concept has been popularised over the last two decades largely through the work of Michael Porter (1990, 1998, 2003, 2008), although the theoretical ideas behind the concept have a much longer trajectory of analysis. Ever since Alfred Marshall's (1907, 1919) seminal work on industrial districts economists have tried to explain the effects derived from geographic concentration of economic activity. During the 1980s there was an influential revival of the industrial district concept in the context of the success of groups of Italian SMEs (Becattini, 1991; Piore and Sabel, 1984; Pyke *et al.*, 1990), which alongside a range of other positive experiences such as that of Silicon Valley (Saxenian, 1994) have encouraged policy-makers to seize on Porter's neat packaging of the 'cluster' concept (Aranguren *et al.*, 2013). Porter (2008, pp. 213-214) defines clusters as «geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate». It is the nexus of cooperation alongside competition in a context of geographical proximity that is distinctive in both the industrial district and cluster concepts, and this has led to a proliferation of policies that seek to nurture and support cooperative relationships among firms and with other production-related agents. Among these networking policies, so-called 'cluster policies' typically seek to establish and/or support some form of 'institution for collaboration' or 'cluster organisation' as a focal point for cooperative activities among a defined and usually evolving group of interrelated firms and other agents.

Foray *et al.* (2011) warn that smart specialisation is not the same thing as a cluster policy. We agree that they are clearly different policy constructs, and in particular would point to three key distinctions.

The first clear difference is with regards the *scale at which the policy is articulated*. Cluster policies aim to support processes of cooperation between specific groups of agents, and thus operate at the 'cluster' level. While RIS3 operate with a 'vertical logic' (Foray, 2013), this logic does not necessarily correspond to clusters. Moreover RIS3 are inherently broader in scope, as they aim to foster processes of prioritisation in STI investment that will lead the region as a whole towards sustainable competitive advantages.

The second clear difference concerns the *focus of concern of the policy***.** Cluster policies seek to promote cooperation among related firms and other agents that may extend over a broad range of areas (internationalisation, quality standards, training,

R&D, innovation, *etc.*) in enhancing the overall competitiveness of the cluster. RIS3 on the other hand is focused much more specifically on processes that lead to the discovery of the most appropriate regional investments in STI and related human capital.

The third clear difference relates to *the policy tools that are employed***.** The tools employed by cluster policies are well defined and fairly narrow in scope. They are geared explicitly towards fostering cooperation, usually through the establishment and support of particular institutions at cluster level. The specific policy tools for RIS3, however, are less well understood and indeed a critical agenda for current research. It is clear though that RIS3 require a different set of tools that are suited to a broader process of uncovering strategic intelligence on capabilities and opportunities in the region as a whole, and then using this intelligence to make clear decisions on priorities for STI investment.

The essence of these key differences in scale, focus and tools between the two policies nevertheless point to significant synergies and therefore scope for learning and support from one to the other. Firstly, while the purposes may be different, both cluster policies and RIS3 seek to facilitate forms of cooperation among firms and a range of other agents that are developing related/complementary economic activities. They are therefore both systemic policies that require new forms of governance and leadership in articulating effective decision-making processes (Sudgen *et al.*, 2006; Navarro *et al.*, 2012). Secondly, though articulated at different scales, both policies are fundamentally place-specific and therefore rely on constructing strategies and activities that build from available place-based assets and capabilities. In any given territory, the processes that both policies seek to generate thus share a rooting in what is already there in the territory, together with the constraints and opportunities that this implies. Thirdly, both policies seek to be transformative in the sense of strengthening existing and building new competitive advantages, something that requires processes of prioritization and selection. Both cluster policies and RIS3 have therefore been subject to significant debates around the role that government should play in these processes. While the consensus view in both debates is broadly that government should facilitate but not direct the transformation process,[3] the pressure to be directive is arguably stronger with regards RIS3 given the greater resource requirements for developing a critical mass in certain scientific and technological areas. Finally, and related to their both being policies that are process-oriented and systemic, both cluster policies and S3 are characterised by significant challenges in evaluating their effectiveness. The evaluation issue is widely rec-

[3] With regards RIS3, for example, Foray *et al.* (2011, p. 10) maintain that «the main issue to be addressed by policy is not «what to do» but «how to help agents to discover what to do and how to implement the policy according to what has been discovered». This is strikingly similar to Sternberg *et al.*'s (2010, p. 1065) observation regarding the clusters literature that «it is now widely accepted that governments can create favourable conditions for the emergence of clusters and facilitate their growth only once they have emerged».

ognised as problematic in the cluster policy literature (Bennett and Ramsden, 2007; Schmiedeberg, 2010; De la Maza *et al.*, 2012; Aranguren *et al.*, 2013), and is beginning to be similarly recognised in the context of RIS3 debates.[4]

These common elements of RIS3 and cluster policies point to strong potential synergies between the two in practice. Foray *et al.* (2011, p. 16) acknowledge that «vibrant innovative clusters» are a «classic outcome» or an «emergent property» of a smart specialisation policy. We would turn this around to suggest that in fact existing clusters and cluster policies in many (but certainly not all) cases embody important elements of the entrepreneurial discovery process that smart specialisation strategies seek to foster. It is therefore important to ask what we might learn for the 'difficult' entrepreneurial discovery process that is central to RIS3 from the experiences and practices that currently exist within many clusters.

The ability to learn from and build from existing experiences is especially critical when considering the issue of policy inertia. New policies are always introduced in the context of existing policies, with their own specific histories, proponents and beneficiaries. Thus following Flanagan *el al.* (2011, p. 706), the agency of actors is «enabled, shaped and constrained by the behaviour and expectations of other actors and by institutions, which themselves have been shaped by earlier action and institutions.» The success of any new policy approach is therefore conditioned to a significant extent on how it engages with the existing policy landscape. This was certainly the case with regards the emergence of cluster policies, which have been introduced over the last two decades in the context of an array of already-existing industrial, regional, STI and development policies. The result has been that the policy legacy in most places sees an evolving mix of policies with 'cluster elements' rather than a dedicated/pure cluster policy as such (OECD, 2007; Borrás and Tsagdis, 2008).[5] Given that these elements of cluster policies are such a widespread and well-recognised part of today's competitiveness policy landscape,[6] and that they embody cooperative processes with strong synergies with the entrepreneurial discovery processes sought by S3, it seems vital that we should pay more attention to examining in detail what lessons might be learned from clusters and cluster policies for RIS3.

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[4] For example, the European Commission's smart specialisation platform recently held a thematic workshop on *Economic Indicators and Monitoring and Evaluation Tools for Smart Specialisation Strategies* at the University of Groningen (24-25th January 2013).

[5] Indeed, a similar scenario is emerging with respect to RIS3. Many regions have advanced regional innovation systems that already facilitate many of the processes associated with RIS3, and so «the emphasis is on updating the existing strategies and building on the tested methodologies as well as experiences gained during the actual implementation of innovation policy support measures» (Walendowski and Roman, 2012: ii).

[6] In 2008 there were sixty-nine distinct national cluster policy programmes in Europe alone, with regional programmes also found in seventeen European countries (Oxford Research, 2008), and the widespread influence of cluster policies can also be seen clearly in the more than 1400 European cluster organisations that are now voluntarily registered at the Cluster Observatory (www.clusterobservatory.eu).

That is the aim of the next Section, where we reflect on the relevance of over twenty years of experience with the long-running Basque cluster policy for the development of a regional smart specialisation strategy.

3. LEARNING FROM CLUSTERS FOR THE DEVELOPMENT OF REGIONAL S3

3.1. Clusters and Cluster Policy in the Basque Country

The Basque Country has been at the forefront of the design and implementation of cluster policy since the early 1990s, when it embarked on a strategy to transform its economy in response to deep economic crisis and high levels of unemployment. Policy responses were sought to construct new competitive advantages, and the Basque government pioneered in, together with Catalonia (Spain) and Scotland (UK), the establishment of a Porterian cluster policy that is still in operation today (Brown, 2000; Ketels, 2004). The specified aim of the Basque cluster policy is the improvement of the competitiveness of firms and the region through cooperation in strategic projects related to three main areas: technology, quality management and internationalisation. This is operationalised by the Department of Economic Development and Competitiveness (DEDC)[7] through providing support for cluster associations. These are institutions for collaboration whose main objective is to improve each cluster's competitiveness by facilitating and fostering cooperation among their members, who include firms, R&D centres, technology centres, universities, training centres and so on.

There are four key milestones in the Basque cluster policy. Firstly the year 1992, when the first two cluster associations were set up, from which another ten followed in the subsequent years. Secondly, in 2000 there was an important change in the methodology used to manage the cluster policy. After almost a decade managing cluster agreements, a thorough reflection took place to develop a new framework which put more emphasis on the strategic planning process of the associations. Thirdly, in 2008 the focus moved towards extending the policy to other sectors, beginning a 'pre-cluster policy' to identify new clusters. Finally, a new inter-cluster initiative was launched in 2011 aiming at fostering cross-cluster collaboration. Thus while the cluster policy and the specific cluster associations that it supports have undergone several evolutions and modifications, the policy remains active today and is one of the longest running in the world. Today there are 11 priority cluster associations supported by the DEDC (alongside a 12th transport and logistics cluster that is supported by the Department of Environment and Territorial Policy), and 10 'pre-cluster' initiatives designed to foster the development of cluster associations in new sectors (see table nº 1).

[7] Until 2012 this was the Department of Industry, Trade and Tourism (DITT).

Table nº 1. **CLUSTER AND PRE-CLUSTER INITIATIVES IN THE BASQUE COUNTRY**

Activity	Cluster Association	Creation	Number of Members	Policy S upport
Home Appliances	ACEDE	1992	7	Priority Cluster
Automotive	ACICAE	1993	104	Priority Cluster
Energy	CLUSTER ENERGIA	1996	90	Priority Cluster
Aerospace	HEGAN	1997	38	Priority Cluster
Maritime	FORO MARITIMO	1997	322	Priority Cluster
Machine Tool Manufacturers	AFM	1992	99	Priority Cluster
Paper	CLUSTER PAPEL	1998	21	Priority Cluster
Environment	ACLIMA	1995	84	Priority Cluster
Port of Bilbao	UNIPORT	1995	135	Priority Cluster
Telecommunications	GAIA	1996	267	Priority Cluster
Audiovisual	EIKEN	2004	38	Priority Cluster
Transport and Logistics	CLUSTERTIL	2005	108	Priority Cluster
Food	CLUSTER DE ALIMENTACION DE EUSKADI	2008	43	Pre-cluster
Iron and Steel foundry	FEAF	2009	66	Pre-cluster
Biosciences	BIOBASQUE	2006/2009	45	Pre-cluster
Habitat and Contract	HABIC	2009	103	Pre-cluster
Forging and Casting	SIFE	2009	14	Pre-cluster
Construction	ERAIKUNE	2010	80	Pre-cluster
Hand Tools	HERRAMEX	2010	26	Pre-cluster
Steel production	SIDEREX	2010	71	Pre-cluster
Languages	LANGUNE	2012	60	Pre-cluster
Railways	MAFEX	2012	22	Pre-cluster

Source: Own elaboration.

3.2. **Step by Step: What can be learned for RIS3?**

We structure our analysis of what can be learned for newly emerging processes of RIS3 from two decades of experience with clusters and cluster policy around the *Guide to Research and Innovation Strategies for Smart Specialisation* (Foray *et al.*, 2012). This guide sets out six broad steps towards the design of a research and innovation strategy for smart specialisation (RIS3):[8]

- Analysis of the regional context and potential for innovation: a wide view of innovation;
- Governance: ensuring participation and ownership;
- Elaboration of an overall vision for the future of the region;
- Identification of priorities;
- Definition of coherent policy mix, roadmaps and action plan;
- Integration of monitoring and evaluation mechanisms.

We follow these steps in turn, providing some reflections on potential learning from clustering experience in the Basque Country and more generally.

Analysis of the regional context and potential for innovation: a wide view of innovation

With regards the first step of analysing regional context and innovation potential, the guide refers to economic differentiation as «one of the central principles behind smart specialization» (Foray *et al.*, 2012). It is argued that «the key to successful differentiation is to exploit *related variety*, which suggests that a regional economy can build its competitive advantage by diversifying its unique, localized know-how into new combinations and innovations which are close or adjacent to it.» Several methods can be used to support the identification of potential niches for smart specialization, and Foray *et al.* (2012, p.29) recognise that «an integrated method that delivers a unique solution to this question does not exist: it is the combination of an array of evidence that is most likely to provide a suitable basis for this identification process.» They suggest that the most relevant methods include analysis of scientific and technological specialisation, analysis of regional economic specialisation, in-depth cluster case studies, peer reviews and foresight.

In regions where a defined cluster policy and/or *ad hoc* cluster initiatives exist there is often a strong existing evidence base for these sorts of studies. In the

[8] Each of these steps includes a number of more specific actions, which are summarised in Table nº 2, further below.

Basque case the cluster policy has been accompanied by wide range of relevant studies from the clusters themselves, from government, and from interested academics. Many cluster associations, for example, perform their own scientific/technological specialisation and prospective analysis, and are required by the policy to elaborate detailed strategic plans every 3-4 years with corresponding background analysis. These processes are supported by strategic observatories associated with the clusters that are abreast of the 'who is who' of each cluster and play a key supporting role in identifying market opportunities and the development of scenario planning. There is also a bi-annual forum (*Observatorio de Coyuntura Industrial*) designed as a space for knowledge to flow between clusters and government in generating better understanding of regional strengths and weaknesses. This activity within the cluster-government nexus is complemented in the Basque case by a series of more academic studies spurred by an interest in the cluster policy and its contribution to regional competitiveness. These include cluster mapping and analysis of regional specialisation (Aranguren *et al.*, 2008; 2011; Orkestra, 2009) and in-depth case analysis of the trajectories of specific clusters (Elola *et. al.*, 2012; Valdaliso *et. al.*, 2011).

Foray *et al.* (2012) emphasise the importance of analysis that looks beyond regional boundaries, taking into account specialisation and capacities relative to other regions in Europe. Tools for this kind of analysis can include comparative studies, rounds of interviews with other regions and inter-regional groups. Again, in the Basque case we can point to existing cluster-related activity as providing some of the basis for such analysis. For example, in their strategic plans the cluster associations compare their clusters with respect to similar clusters elsewhere, and academic work has also sought to draw international comparisons (Valdaliso *et. al.*, 2008; López, *et. al.*, 2008; Valdaliso, *et. al.*, 2010; López *et. al.*, 2012).

More generally, smart specialisation processes require the deep involvement of a range of entrepreneurial actors – firms, universities, technology centres, research centres, etc. – that are often already interacting with one another within clusters. While cluster dynamics typically favour the development of market-related knowledge, in many cases they also propagate cooperation with respect to scientific and technological knowledge. In this respect the existence of a cluster policy and/or cluster initiatives not only facilitates the knowledge around regional specialisation and potential related diversification that is embedded in the managers of these initiatives and their interactions, but also a 'know how' with regards facilitating processes of entrepreneurial discovery through cooperation within their own clusters. Thus in the Basque case, for example, we can observe that there has been a progressive learning over the last twenty years at cluster and regional level with regards the barriers for generating these types or processes and how to overcome them. A clear example can be seen in the work of Aragón *et al.* (2012) with reference to social capital (structural, relational and cognitive) in the aerospace cluster.

Governance: ensuring participation and ownership

Step two is to ensure participation and ownership of the process. As Foray *et al.* (2012, p. 21) highlight, «the fact that RIS3 is based on a wide view of innovation automatically implies that stakeholders of different types and level should participate extensively in their design.» Indeed, innovation users or groups representing the demand-side and relevant non-profit organisations representing citizens and workers should be all taken on board in the design process of RIS3. This means that governance schemes should allow for 'collaborative leadership'. As many and different actors may participate, 'boundary spanners', or people with interdisciplinary knowledge and proven experience in interaction with different actors, can help to moderate the process. Again, there is clear learning potential for the construction of such governance models from the models of governance that have been and are being used by clusters. That is not to say that cluster governance mechanisms should be replicated,[9] but that there are lessons around what works and what doesn't when articulating different interests in cooperative processes related to issues such as production, innovation and search for markets. Indeed, in the Basque case we can observe a strong element of 'boundary spanning' and 'shared leadership' behaviour in the roles currently played by the cluster association managers, both within their clusters and being brought together in forums like the *Observatorio de Coyuntura Industrial* and the dedicated *inter-cluster forum***.** Specifically, they assume leadership of processes in different moments and depending on the specific projects and agents involved. They operate in the context of a broader management team, which in turn operates in the context of a general assembly involving all stakeholders, and specific aspects of the clusters operations tend to be organised around committees relating to issues such as technology, internationalisation, etc., each with a different group of participating agents (Aranguren *et al.*, 2010).

Elaboration of an overall vision for the future of the region

As a third step, Foray *et al.* (2012) emphasize the importance of having a clear and shared vision of the future development of the region so as to keep stakeholders engaged in the process. This involves processes of constructing and communicating, and the vision should be a focal point for mobilizing stakeholders around something bold that they feel they can contribute to and benefit from. The key characteristics of a RIS3 vision are set out in the guide (Foray *et al.*, 2012, p. 45-47). It should pinpoint possible paths for the economic renewal and transformation of the region, include justifications for its relevance in terms of meeting societal challenges, and require the identification of combined place-specific features of the region. Reflecting on experience with Basque cluster policy, we can highlight again the strategic reflection processes that each cluster is required to undertake every 3-4 years. While

[9] Cluster governance has not typically incorporated the quadruple helix perspective, for example, and usually pays little attention to broader citizens' interests and/or social challenges.

the focus of these processes is the cluster and not the region, clusters are region-wide constructs that draw on similar sets of place-based assets and typically link their visions to the region. It seems likely therefore that the experiences of clusters in constructing and communicating a common vision among their diverse members – processes to follow, elements to have in mind, potential points of conflict, *etc.* – can be adapted to the broader process of a RIS3. Moreover the very existence of cluster initiatives and their connection with the firms that they represent can play an important role in bringing together the relevant agents needed to construct a vision for a regional RIS3 and then to communicate that vision. The potential that the Basque clusters have to play in such a process is hinted at, for example, by their current role in the *Observatorio de Coyuntura Industrial*, which is an important source of industrial intelligence for the regional government.

Identification of priorities

Step four refers to the identification of priorities, and here Foray *et al.* (2012, p. 22) underline that «RIS3 entails an effective match between a top-down process of identification of broad objectives aligned with EU policies and a bottom-up process of emergence of candidate niches for smart specialization, areas of experimentation and the future development stemming from the discovery activity of entrepreneurial actors». They add that «in this it is important to pay attention to defining horizontal-type of priorities, referring to the diffusion and application of Key Enabling Technologies (KETs), as well as social and organizational innovations». As explained above, an important recent development in the Basque cluster policy has been the launch of an inter-cluster initiative to facilitate cooperation between different clusters. This has led to the identification of priority areas in which the firms of existing clusters might co-operate in developing new activities, and it marks the start of a process of learning how to prioritise such activities from an entrepreneurial discovery process that has both bottom-up and top-down elements.[10] Facilitating such inter-cluster collaboration is likely to be an important starting point for prioritization processes in many European regions, especially given the mix in many regions of clusters based around key enabling technologies and clusters where there are potential cross-overs with these technologies in terms of developing new niches. Indeed, in the Basque case we see clusters such as GAIA (ICT) and BIOBASQUE (biosciences) that have the potential to generate transversal effects in many other clusters; for example machine tools, automotive or logistics. Even when key enabling technologies are not represented in a specific cluster – e.g. nanotechnologies in the Basque Country – existing cluster associations can still play a key role in facilitating connections between the knowledge and capacities of their firms and the agents that do have competences in these technologies – e.g. the cooperative research centre Nanogune in the Basque Country.

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[10] One of the early results of this process has been a decision of various clusters with complementary capacities to work together in the area of sustainable cities.

Definition of coherent policy mix, roadmaps and action plan and Integration of monitoring and evaluation mechanism

The final steps five and six are connected with the policy to support the development of RIS3, and we reflect on both jointly. Step 5 is to define a coherent policy mix and Foray *et al.* (2012, p. 23) emphasize that the RIS strategy «should be implemented through a road map with an effective action plan allowing for a degree of experimentation through pilot projects», adding that «pilot projects constitute the main tools for policy experimentation and allow testing unprecedented mixes of policy measures at a small scale, before deciding or implementing at a larger or more expensive scale». Step six follows from this logically, with the suggestion that mechanisms for monitoring and evaluating policies should be integrated in the strategy from the very beginning.

We have two key reflections from experience with cluster policy in the Basque Country with regards these last two steps. Firstly, the trajectory of cluster policy in the Basque region shares the features marked as desirable with regards policies to support RIS3. It was implemented from the beginning of the 1990s with a clear roadmap and action plan, based on Porter's definition of the cluster concept and an initial mapping and analysis of possibilities for cluster development at regional level. However this road map was flexibly applied, taking the establishment of each cluster on its own terms in negotiation with stakeholders. Effectively therefore the policy has evolved over time as a series of pilot cases, which have continually needed to integrate into and evolve with the whole mix of related competitiveness policies implemented by the government. Learning points from this process for the development of S3 include the importance of flexibility from the policy side to ensure that clusters are not forced but go ahead when they have sufficient stakeholder interest, and the need to develop sophisticated policy-intelligence through on-going interaction between the clusters and policy-makers with a range of different competences.

The second reflection refers explicitly to evaluation processes, which we have argued share similar challenges with respect to both cluster policies and RIS3. Tentative first efforts were made to evaluate the effectiveness of the Basque cluster policy in 1998, when the DITT initiated a policy reflection process (Ahedo, 2004), and subsequently there has been a long trajectory of research that has taken on board different cases and approaches (Aragon *et al.*, 2010). A key conclusion stemming from the most recent evaluations has been the importance of combining different methodologies – in particular impact evaluation techniques and participatory evaluation processes – to capture more completely what is happening with the clusters and to ensure that evaluation becomes an integral source of policy learning (Aragón *et al.*, 2012; Aranguren *et al.*, 2013). We suggest that these lessons are likely to be important too for the evaluation of the processes and policy support measures associated with S3.

4. CONCLUSIONS

So what should regional policy makers do when confronted with the need to develop smart specialisation strategies? The central message of the paper is that there is much to be learned from looking first at the existing policy landscape, and in particular the cluster policies and elements of cluster policies that characterise this landscape in most places. Like RIS3, clusters were adopted very rapidly by policy-

Table nº 2. **SOME LESSONS FROM CLUSTER EXPERIENCE FOR THE SIX STEPS TO S3 DESIGN**

Steps to RIS3 design	Contribution from clustering experience
Analysis of the regional context and potential for innovation: a wide view of innovation A strategy rooted in regional specificities Looking beyond regional boundaries Entrepreneurial dynamics: prospects for a process of entrepreneurial discovery	The existence of cluster policy and functioning cluster initiatives can provide a strong basis for analysis and knowledge about regional context, through for example existing diagnostic processes within clusters, cluster mapping exercises, and in-depth cluster case analyses.
Governance: ensuring participation and ownership Including market and civil society «quadruple helix» Collaborative leadership Boundary Spanners Management Team, Knowledge leadership group	Clusters themselves exhibit a long experience with ensuring participation and effective governance, and there is significant potential to learn from and improve these governance structures and processes in the development of RIS3.
Elaboration of an overall vision for the future of the region Constructing the vision: scenarios… Communicating the vision	The strategic reflection processes of existing clusters can provide lessons in constructing common vision, and the clusters themselves are important vehicles for construction and communication of a regional vision.
Identification of priorities Combine top-down and bottom up approach Vertical and horizontal type priorities	Inter-cluster approaches and collaboration among and between KET actors and clusters can play an important role in facilitating the coordination of bottom-up and top-down input into prioritization processes.
Definition of coherent policy mix, roadmaps and action plan Effective action plan (road map + experimentation possibilities)	Cluster policies have followed a similar path, and experience shows the importance of policy flexibility and mechanisms to ensure sophisticated policy intelligence.
Integration of monitoring and evaluation mechanisms Monitoring to follow the process of experimentation Evolve and adjust according to changes in economic and framework conditions	Experience with cluster policy evaluation suggests the importance of mixed methodologies and a policy learning focus.

Source: European Commission (2012) and own elaboration.

makers and have required the development of 'theory in practice' with regards their functioning and empirical grounding as valuable competitiveness policies. What is more, cluster policies also share many basic characteristics with RIS3 which suggest both the potential for learning from previous and existing experience and for constructing from existing processes in the design and implementation of RIS3. This is particularly so with regards the problematic and underexplored entrepreneurial discovery process that is central to the theoretical basis for RIS3.

Our analysis has highlighted key differences between cluster policies and RIS3 in terms of scale, focus and tools, but suggests that there are also inherent synergies in four key areas. Firstly, they both seek to facilitate forms of cooperation among firms and a range of other agents that are developing related/complementary economic activities, and therefore require new forms of governance and leadership in articulating effective decision-making processes. Secondly, they are both place-specific and rely on building from existing place-based assets and capabilities. Thirdly, they both seek to be transformative, requiring difficult processes of prioritization and selection that combine top-down and bottom-up forces. Fourthly, they are both characterised by significant challenges in evaluating their effectiveness. These key synergies have been explored in the context of each of the steps in Foray *et al.*'s (2012) *Guide to Research and Innovation Strategies for Smart Specialisation* and by drawing on two decades of experience with cluster policy in the Basque Country. The conclusions of this analysis are summarised in Table nº 2, and signal several concrete areas where regional policy-makers might look to their existing cluster policies and clusters when seeking to articulate new regional processes towards smart specialisation strategies.

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