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MASTER THESIS

THE INCORPORATION OF EU's INNOVATION POLICY IN ITS REGIONS

Insights from Basse-Normandie and Thessaly

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Abstract

Increasing global competition leads to a growing interest for innovation, which is today considered a key element of development and economic growth. This explains the increasing importance given by EU regional policy to innovation. The EU regions are requested to follow these processes. The aim of this thesis is to investigate whether and the extent to which the EU regions integrate innovation in their policies, as well as the role of EU's regional policy in this procedure. The sustainability of this process is considered crucial for the territory's future and the Union's cohesion process. Otherwise, the innovation capacity differences will lead to further increase of the development gaps among regions, endangering the achievement of the cohesion goals. To address this and have insights from the field, the regions of Thessaly (Greece) and Basse-Normandie (France) were chosen as cases of study. Key local actors were interviewed, provided their view of the policies' integration and indicated the impacts on their respective regions. The findings suggest that depending on the regional governance capacity, the political agenda and attitude towards innovation and the general socio-economic context, there are big differences in the way European regions perceive innovation and incorporate it into their policies. Therefore, if the EU regional policy keeps focusing on innovation to achieve cohesion, it has to find mechanisms to ensure the progress of the innovative lagging regions.

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Introduction

In today's global economic environment regions are becoming more and more principal actors in the endorsement of economic development (Hollanders, 2013; Cooke et al., 2003)[1]. At the same time, innovation is by many countries being promoted as main factor that can lead to economic growth and development (OECD, 2010a). These two elements of territorial development, the regions, as spatial and institutional units, and innovation, as a sectoral policy, have emerged and met together the last decades in the field of Europe's regional policy.

European Union's (EU) regional policy (cohesion policy) aims in sustaining the stability and development of the European territory. From 1988, when cohesion policy was introduced, to today, convergence and balanced development of Europe's regions remain EU's policy basic philosophy, defining the objectives of each programming period (IP, 2008). Official political statements have continuously underlined the importance of this policy in regard to the further development of European integration (EP, 2004). This perception is being reflected by the fact that, since its reform at the end of the 1980s cohesion policy continued to attract an increasing amount of budget from the Commission's poll. During the 2007-2013 programming period, EU cohesion agenda became the EU's largest policy package in terms of budget allocation (EUR 347 billion), overcoming the common agricultural policy (CoR, 2012; Leonardi, 2006).

One of the important issues cohesion policy revealed in Europe's regional policy was the territorial dimension. The EU policies in the 80s' moved from a "cohesion countries" to a "cohesion regions" conceptualization, describing cohesion as a territorial policy and not a sectoral one (Leonardi, 2006). The regulation reform on the Structural Funds in 1988, led in important regional level's changes, characterized by decentralization, Europeanization[2] and shift in the regional development model (Leonardi, 2006). The idea of the "Europe of the regions" emerged and from now on the Commission asks for extensive regional participation in structural policies (Marks, 1993; Elias, 2008). Most countries created sub-national authorities or gave constitutional powers and new responsibilities on the existing ones to assist on the implementation of the EU's cohesion policy (Elias, 2008; Leonardi, 2006). As a consequence, since the early 90s, thirteen EU states increased their regional authorities (Czech Republic, Finland, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Poland, Romania, Slovakia, Spain and the UK) (Borghetto et al, 2009).

The aforementioned changes gave to regional actors the opportunity to participate more actively in the European Policy, by-pass the national authorities and directly promote their interests to the EU (Hooghe et

[1] In this thesis the term region is used to define a sub-national functioning territorial unit with local governance and administration forms that includes more than one urban and rural community in its perimeter.

[2] The term Europeanization refers to: "Processes of (a) construction (b) diffusion and (c) institutionalization of formal and informal rules, procedures, policy paradigms, styles, 'ways of doing things' and shared beliefs and norms which are first defined and consolidated in the making of EU decisions and then incorporated in the logic of domestic discourse, identities, political structures and public policies" (Radaelli, 2003).

al., 2003; Elias, 2008). Hence, triangular relationships were created among regions, states and decision making organs (Hooghe et al., 2001; Keating, 2008) and the multilevel governance model emerged in Europe. Marks and Hoogle describe this as a labyrinth of polity with multilevel principles of governance and a "system of continuous negotiation among nested governments at several territorial tiers; supranational, regional and local" (Marks 1993; Hooghe et al., 2001).

This governance shift launched the debate between academics in regional studies, concerning whether these changes increased or not the regional power (Bourne, 2003). Although this is an inquiry with much room for subjectivity, depending on the analyst's point of view, it certainly raises questions for the administrative capacity of the regions to implement policies across the Union. It is an administrative and governance issue the Commission identified inside its competences to manage as it was perceived crucial for the quality and the effectiveness of the European programmes (Leonardi, 2006). That became more obvious after the 2006 reform, when the *National Strategic Reference* and the *Community Strategic Guidelines Frameworks* were introduced, in order to steer the national programs to the Lisbon 2010 agenda goals (Mendez, 2011). After this reform, the states and regions were now for first time responsible to design the operational programmes of the 2007-2013 programming period (Bachtler et al., 2007).

The programmes produced by this process were more simplified and aligned to the Lisbon objectives, with focus on the knowledge based economy principals, entrepreneurship, Research and Development (R&D) and innovation (Kaiser et al., 2005; Mendez, 2011). The Lisbon program started in 2000 as an answer to globalization and rapid technologic developments, having as objective to increase social cohesion and employment by making Europe the most dynamic and competitive knowledge base economy of the world (Schepers, 2013). The increase on the R&D and innovation funding for the 2007-2013 programming period was evident to that shift, since the innovation and R&D budget were tripled, reaching EUR 85 billion (EC, 2007a). The aim was to decentralize innovation policies and promote regional development and competitiveness through R&D and innovation initiatives that will help to improve Europe’s innovative performance in total (Kaiser et al., 2005). The new Europe 2020 Commission’s strategy moves to the same direction and considers regional innovation policies as key elements of development, by strengthening regional competitiveness in a globalized environment (Koschatzky et al, 2010).

However, there is a gap between cohesion and competiveness as compatible goals and that had been identified since the very beginning of the EU (Sharp, 1998). This gap becomes even bigger looking through the prism of regional innovation performance. The variation of innovation activity and funding absorbance across European regions is greater than Gross domestic product (GDP) differences even for the ones in the same nation (Oughton et al., 2002). The leading innovative regions are dominants attracting more resources towards them and further reinforcing regional inequalities (Kautonen, 2012). Thus, achieving balance requires cautious and sensitive policy-making and this has to be done in great extend by the regions

themselves, that have to discover and bring to the surface innovative potentials and abilities (Koschatzky et al., 2010). In parallel, the widely recognized fact that, geographical proximity of innovative actors affects innovation performance, is forcing to more decentralized innovation support systems (Capello, 2013). Hence, with the Commission's support, innovation policy has been localized and Regional Innovation Strategies (RIS) emerged all over Europe (Kaiser et al., 2005).

Problem Definition

The degree and rate of incorporation of innovation in regional policy is different among the numerous and diverse European regions. In an economic environment were innovation plays an important role in economic growth, these differences can aggravate the disparities among Europe's regions. Hence, innovation policy integrated in the EU's cohesion policy can be a Trojan Horse for the European convergence process.

The timing of this thesis is important as it is very recent (2007-2013) that EU's structural funds programming period was for the first time directly coordinated both by political and funding pressure towards innovation. It was the same programming period that the regions had so wide involvement both in planning and implementation of EU policies. In parallel, in this period, cohesion policies' initiatives struggle to reduce the impacts of the financial crisis that heavily affect Europe since 2008 (Christofakis et al., 2011). Under the aforementioned circumstances, the new programming period 2014-2020, which starts according to the objectives set by the "Europe 2020" strategy, consists a rather challenging bifurcation point. Thus, at this stage, monitoring the process of incorporation of innovation in regional priorities is of up-to-date importance.

Research Questions and Hypothesis

- Do the regions incorporate innovation in their regional policy and to what extent is the process followed sustainable?[3]
- What is the contribution of EU in this process?

The hypothesis of this thesis is that in each European region innovation started to be integrated in regional policy, either by EU or by self-initiatives. In order for this incorporation of innovation in regional policy to be sustainable, there are some elements that play important role: the regional governance capacity, the political agenda and attitude towards innovation and the general socio-economic context.

[3] To avoid any confusion that the overused term sustainability may cause, we define "sustainable incorporation of innovation in the regional policy" as the long term planning perspective which decision makers involved in innovation policy design and implementation should have, to guarantee the continuation of innovation processes in the future by creating a long lasting and efficient innovative environment (Johnson et al., 2004).

Research Aim

The European regions are currently incorporating innovation in their priorities and try to develop their regional innovation performance. The aim of the thesis is to contribute to this process by monitoring the procedures used by the regions, highlighting possible challenges and good practices.

Research Methodology and Structure

In order to address the research questions and test the hypothesis a research methodology based on literature review and analysis of two EU regions as cases of study has been followed. The research followed a realistic approach based on a review of relative academic literature, attracting a broad range of information coming from different disciplines (economics, politics, sociology and geography). The literature review led to a conceptual framework which was interpreted in the creation of an integrated questionnaire used to address key actors in the cases of study. Along with the interviews conducted, in order to comprehend the heavy complexity that characterize EU policy-making and implementation mechanisms (Kleine, 2014; Zahariadis, 2013) and the regions behavior, systemic reading of various publications, policies and ex-post and ex-ante program documentation in European and regional level was carried out, as well as observation of funding allocation that has been made concerning Innovation.

In this sort of research a common way of investigation is to observe similarities and differences in various EU members' regions with similar characteristics concluding in generalizations that help to understand the experiences of all the EU regions which are in a suchlike position (Bourne, 2003). In this research the generalizations are limited to the types of regions similar to the ones used as cases of study. A detailed examination of the way the innovation policy was incorporated in the regional agenda in two EU regions, in Greece and France, has been performed, to discover different patterns of regional innovation behavior. Data for the cases of study has been collected both on an aggregate level (statistical authorities, EU, national and regional agencies, local newspapers, regional websites and official brochures etc.) and directly from the involved stakeholders' opinions. Hence, all the above can provide sufficient evidence to a preliminary assessment of the way the regional innovation policies are adopted and implemented in the two cases of study.

In the first chapter the role of innovation in regional development is identified. The various elements and characteristics of a regional innovation environment, as well as the attitude of EU towards innovation are analyzed. That provides a theoretical base for the analysis of the cases of study.

In the second chapter the relationship between two basic components of this research, the EU regional policy and the local governance, is questioned. Through a timeline of events the evolution and changes that occurred in the European political scene are observed and links are drawn between these two components

and innovation.

In the third chapter the impact of the crisis in the EU regional policy and innovation across Europe is examined. The crisis socked the economic, social and political structures in Europe. It changed the dynamics and affected the behavior of the public and private actors all over the EU. Hence, it has shaped the general context in which the decisions affecting innovation were and are taken the last years.

In the fourth chapter the methodology used for the theoretical and empirical parts of the research is described. The basic methodological choices for the selection of the cases of study and the documents analyzed along with the steps towards the creation of the questionnaire used for the interviews with the regions' actors are explained.

In the fifth chapter the analysis of the cases of study is presented. After the introduction in the regions' context, the analysis takes place simultaneously for the two areas, based on the elements of our hypothesis (the regional governance capacity, the political agenda and attitude towards innovation and the general socio-economic context).

In the discussion section the main points raised in the research are summarized and the research questions are finally answered.

1. The Role of Innovation in the Development Process

In the globalized society where the access to information and markets is free, the competition among nations and companies increases and the ability to innovate becomes a key factor of economic growth (OECD, 2005).

According to John Kao's (2007) definition "innovation is the ability of individuals, companies and entire nations to continuously create their desired future". Innovation is the process that allows the creation and delivering of better solutions to cover the society's and market's needs. Four types of innovative activities can be recognized that contribute to that: product innovation, process innovation, marketing innovation and organizational innovation (OECD, 2005). In an area where these activities take place the innovative capacity is increasing, leading to economic and social development (OECD, 2012a).

In the last two decades, the importance Europe gives to innovation has increased significantly. Today EU targets innovation as primary goal in order to maintain in the future the Union's competitiveness in the global economy, its living standards, as well as to tackle environmental and social challenges like ageing population and unemployment (EC, 2013a). To do so Europe's innovation policy is focusing more and more in the local level, trying to activate the regions that lack in economic development and strengthen their innovative environment (Hollanders, 2013).

For the needs of the research, in this chapter we will clarify the concepts of "knowledge based economy" and "innovation" by expressing their main elements. Subsequently, the role of "innovation systems" and the spatial concentration of actors in the innovation process will be expressed by extracting information from the literature review. Finally the EU's behavior towards innovation will be analyzed by identifying the various innovation patterns in EU, the action that has been taken and the challenges faced. Hence, through this chapter's theoretical discussion we will identify the important elements of innovation in a region and the characteristics of an innovation system. This information will be used afterwards as a basis for the analysis of the sustainability of the innovative initiatives in the cases of study.

1.1 The Knowledge Based Economy and Innovation

The "knowledge based economy" concept is based on the rationale that the technologic and economic advantage is being formed by knowledge intensive activities that produce innovative products and services (Powell et al., 2004). The Organisation for Economic Co-operation and Development (OECD) (1996) recognized early enough this knowledge parameter as key driver of economic growth and predicted the growing trend of its importance in the following years. Especially for the intensive high technology industries, the knowledge production and knowledge distribution mechanisms are considered to be rather crucial for their survival and development (OECD, 1996). Since then, the OECD adopted the term of

"knowledge based economy" and points out today the significance of "Research and Development" (R&D), as well as "Systems of Innovation", in economic development (Leydesdorff, 2010).

Although it is widely accepted by the international community that innovation can lead to economic growth, it is difficult to specify the role it plays practically since the impact of new knowledge on the real economy is difficult to be measured (Hong et al., 2012). Knowledge is a new economic input for which there is not yet specific pattern of efficiency, able to predict the economic output in qualitative or quantitative terms. Towards this effort, the OECD developed various indicators to create standardization (Leydesdorff, 2010). To do so, direct and indirect indicators have been presented. The OECD recognizes five categories of those indicators responsible for: measuring knowledge and learning; measuring knowledge inputs; measuring knowledge stocks and flows; measuring knowledge outputs and measuring knowledge networks (OECD, 1996). For this standardization to exist, innovation becomes the connecting link between the new knowledge and the outcomes. Innovation is presented as the technological, organizational, economic etc. activities that transform the new knowledge to a new product or procedure, with R&D being a crucial one of these (OECD, 2002). Thus the methodological challenge is to measure innovation activities and dynamics, transforming them in data that can be collected by the statistical authorities (Slaper et al., 2010).[4]

One of the first ever used innovation performance indicators was patents data, since the creation of knowledge can be official copyrighted in a patent office and represents an area's ability to innovate. But this has limited territorial accuracy since the patent holding can be different from the actual inventor. Furthermore, the patent office where the application is made in many cases is closer to the law firm representing the inventor and not his actual location (Slaper et al., 2011). Similar problems can be recognized in other indicators like the scientific publications index. That is why a single indicator is not enough to determine the innovation performance of an area or organization. Hence, EU has established a system of 25 main indicators to measure the innovation performance of member states and monitor the differences between them (see box 1 and appendix 1).

Among other drivers, in the academic literature human capital and R&D investments are recognized as main contributors to innovation processes and outcomes (Hong et al., 2012). In the new economic reality the human capital is perceived more important than ever before, being considered as a main resource of economic progress (Scott, 2004). Hence, one of the important innovation indicators is the population's level of education and the number of skilled and high educated labor force.[5]

[4] Every two years the OECD produces the *Science, Technology, and Industry Scoreboards* publication that presents indicators of science, technology, innovation and industrial performance. Furthermore, it has proposed the *Frascati Manual* to be used by local statistical agencies for collecting and utilizing R&D statistics.

[5] Florida (2002) named this labor force as "Creative Class" and developed a popular but controversial theory that correlates the GDP growth rates of an area with the percentage of the Creative Class members in the total population.

Box 1: EU Members states innovation performance

Building on data extracted by 25 indicators (see appendix 1, table 4.) this table has been produced for the EU innovation scoreboard 2014, measuring the average performance of member states.

Setting 0 as the lowest possible performance and 1 the highest, the member states are categorized in four performance groups. 100%= EU average.

Innovation leaders: Innovation performance > 120%; Innovation followers: 90% < innovation performance < 120%; Moderate Innovators: 50% < innovation performance < 90%; Modest innovators: Innovation performance < 50%;

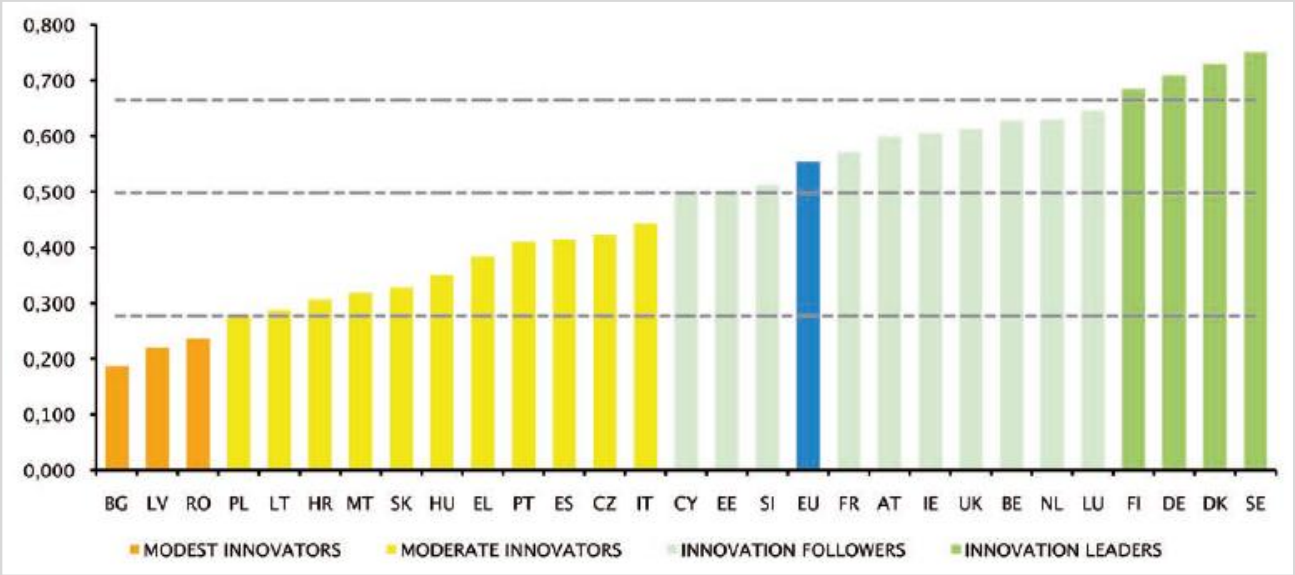


Figure 1: EU Member states' innovation performance (For country symbols see appendix 4)
Source: Innovation Union Scoreboard 2014

The importance of the R&D expenditure it is also stressed in the literature. R&D plays a very important role in innovation; it devises new products, new capabilities and procedures, creating competitive advantages and economic growth. Europe's lack in GDP growth rate and productivity compared to the USA in the last decades has been attributed to the latter's higher investments in R&D (Hansen et al., 2011; Sapir et al., 2003; Capello, 2013). R&D expenditure, R&D expenditure as the percentage of total sales for firms and R&D expenditure as percentage of the GDP for regions are the main indicators of the innovative performance (Hong et al., 2012). Policy makers who follow the knowledge-based economy concept focus their attention on innovation and R&D investments aiming in a long-term economic development (Hansen et al., 2011).

1.2 Towards Coherent Innovation Systems

The conceptualization of innovation has evolved throughout the years, calling for changes in the way it is being translated in operational terms, as a policy. Rothwell (1992) analysed the evolution of innovation process models of the past decades and ended up in five generations of models. The first in the 50s' was a simple linear technology push model where scientific discoveries pushed technological innovation and the market received the results of the applied research. The following decades the models become more complex, more integrated and market oriented, where the market gives the direction to R&D ending up in a systemic and networking approach in the 90s' (Hodday, 2005). Following this evolution, the EU turn towards innovation systems was biased by the innovation process theories that changed their perception from a linear to a systemic approach model (Seravalli, 2009).

The system is the structure, the organized context where the innovation takes place. In this structure, the innovation process engages linkages and communication amongst internal and external actors of unspecified roles, which can be at the same time scientific and economic as well as heavily reliant on the social, institutional and economic environment (Seravalli, 2009). Hence the innovative performance is not only a matter of internal capacity of an institution, a firm or a group of them. The innovation processes are depended on the specific patterns and norms of the context in which they occur (Kaiser, 2005). This highlights a territorial and context perspective of the innovation systems and explains the importance given by the EU in regional systems of innovation that can exploit advantages of the local milieu. Regional conditions (location, size, demographics, hard infrastructure, economy characteristics, governance models etc.) can influence regional innovation performance and are key factors of regional advantage or disadvantage (Fritsch et al., 2011).

This perspective is also visible on the academic concept for interactive innovation systems called the "Triple Helix Model" (THM) that gained interest among the policy makers (Rodriguez et al., 2013). The THM identifies three institutional spheres that interact and produce innovation, University-Industry-Governance (Etzkowitz et al., 1997). As Rodriguez (2013) explains various relationships emerge among these three institutions. Partnerships and strategic alliances, as well as overlaying communication networks and interactions are being created in an effort to benefit from the new knowledge produced. Nowadays universities are not only producers of knowledge but they also have an entrepreneurial role, trying to capitalize this knowledge or assist in industrial innovation, while the government takes the role of coordinator or even venture capitalist in this process (Rodriguez et al., 2013). This model's philosophy was explained by the change that occurred from linear models of innovation to interactive systemic approach. It highlights the importance of the dynamics that exists in a specific territory, and comes to test the public governance and policy making capabilities (Leydesdorff, 2010).

Apart from the spatial factors there are also relational ones that seem to foster innovation. Saxenian (1994), at her classic work *Regional Advantage: Culture and Competition in Silicon Valley and Route 128,* notes the increasing gap in the competitive advantage between two high technological intense American regions, despite their similarities, common origin and national context. This gap is attributed to the distinct industrial systems and philosophy developed in these regions. On the one hand Silicon Valley creates a network-based regional industrial system with formal and informal communication channels and joint practices inside and among firms and other actors. On the other, Route 128 has a system based on independent firms with integrated productive systems and centralized information flows which generate a culture of secrecy and loyalty creating boundaries among firms and other actors. Hence despite globalization, regional advantages and socio-cultural characteristics remain important; the geographical proximity of the actors that cooperate, interact and share the created knowledge can boost innovation performance and regional growth. (Saxenian, 1994) This concentration of individuals, institutions and business that work in same subject at the same place creates competitive advantage towards innovation, which is recognized widely by a diverse terminology in the literature (network, innovative milieu, technological park etc.). Despite that, clusters as a term and their actual impact on local development have hardly been defined accurately. (Hamdouch, 2010)

On the contrary, Capello and Lenzi (2013) with their recent work challenge that spatial impact and reject the idea that, the invention-innovation process is internal in a firm or a region and always favored by spatial concentration of actors. Capello (2013) notes " knowledge and innovation are not always led by the same actors and do not always occur in the same place" giving examples of inventions transformed in successful commercial products by actors in different locations. Hence high R&D expenditure and well educated labor force do not guarantee innovation. In this thesis, we retain this comment considering that there should be a qualitative analysis of these indicators for safe conclusion to be drawn; however the exploitation of knowledge derived from the exterior environment and used for local development is a form of innovation. It has to do with the local capacity for adaptation and as a consequence with the local relational conditions.

Creating a general framework three wide patterns of knowledge and innovation accumulation in regions is identified (according to Capello): regions which have the conditions and capacity to create knowledge and transform the knowledge to innovation; regions where there are actors capable to attract knowledge created elsewhere and adapt it to local needs to support innovation; and regions with actors using imitative procedures to familiarize with existing innovation (Capello et al., 2013).

In EU, because of the diversity of Europe’s regions and their innovation and knowledge creation processes, it is difficult for specific territorial patterns of innovation to be distinguished (Camagni, 2013). The systems of innovation, wherever they exist, follow various norms. A European Spatial Planning Observation Network (ESPON) project named *Knowledge, Innovation, and Territory in 2012*, tried to explore the territorial dimension of innovation and the dynamics in the EU. In this effort the ‘one size fits all’ policy to innovation

previously followed, was criticized and a map was produced grouping the Europe's NUTS 2 regions in five categories according to their innovation characteristics (see figure 2 and appendix 2) (ESPON, 2012).This diversification can explain the increased attention in EU for the Regional Innovation Systems the last two decades (Cooke, 2008). EU initially considered it as a threat but now sees an opportunity for exploitation of local features to promote growth.

Regional innovation systems adopt the logic that innovative labor and knowledge flows are spatial dependent and that the regions have different social, natural and economic characteristics. So, local innovation systems have to be created to bring the innovative actors together (Fritsch et al., 2011). Those systems can ensure the regions' prosperity and development by exploiting the local resources with the most productive and rational way. The presence of large and developed urban areas in a region increase its

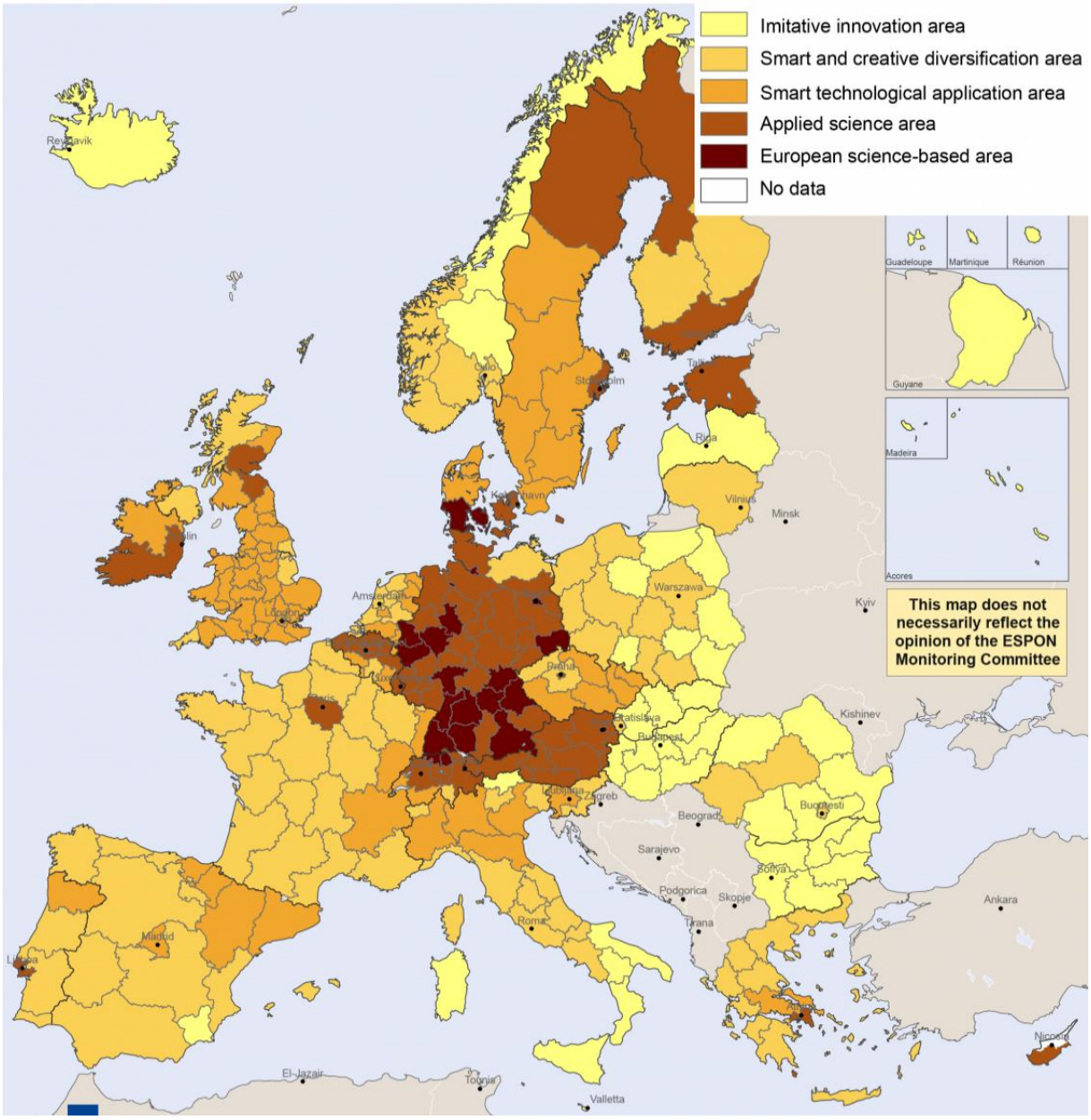


Figure 2: Territorial patterns of innovation in Europe (see appendix 2)
Source: ESPON 2013 Programme: Knowledge, Innovation, Territory

innovative capacity since it becomes a place that has hard infrastructure (universities, research centers etc.) and attract R&D funding and skilled human capital (Camagni et al., 2013). This can be identified from the KIT map (figure 2) where all the European science based areas are in capital regions or where large cities are located.

These city-regions areas are spatial and sectoral micrographies of the operating mode and philosophy of the regional innovation systems. They are cities that are concentrated on original development strategies and implement policies in order to grow, defend and strengthen their competitiveness on the global competitive environment by promoting knowledge intensive economic activities, (Hospers, 2003).[6] All the characteristics of the regional development models through innovation can be identified in their boundaries (spatial concentration of actors, formal and informal networks, sufficient human resources, governance and policy mix capacities, interspatial competitiveness etc.). As it is obvious this creates a handicap for the less urbanized regions. Hence, these areas have more difficulties on building their innovative capacity and must find ways to become more attractive for the skilled workforce and investment funds.

1.3 EU's Initiatives and Funding Towards Innovation

The first EU initiatives towards "regional innovation" started in 1993 with the "Regional Innovation Strategy (RIS)", "Regional Technology Plans (RTP)", and "Regional Innovation and Technology Transfer Initiatives (RITTS)" projects (Henderson, 1999; EC, 2002). These projects were mainly practical tools aiming to help Small and Medium size Enterprises (SMEs) to engage innovative activities. They were designed to institutionally and economically encourage the innovative environment, by raising the awareness for innovation among the key actors of the regions, identifying the SMEs' innovative needs and delivering innovation strategy and action plans to the regions and the SMEs (Landabasso et al., 2005).

The ongoing RIS3 calls European regions to create "Regional Research and Innovation Strategies" towards "Smart Specialization". The Smart Specialization (SmSp) strategy leads to the creation of regional innovation policy packages adapted to each region's innovation pattern by the incorporation of the concepts of "embeddedness" and "connectedness" (Camagni et al., 2013). This means that the new policy's direction will be influenced by the region's internal environment, taking into consideration the local capabilities and creating strong links with external environment to reinforce the knowledge flows. The SmSp strategy is being considered as solution to the regional innovation performance imbalance problem in European regions. The strategy asks for an ex-ante analysis by the regions to identify their strong points before the funds arrive. It

[6] The strategy of those cities can be explained by the concept of creative cities and creative economy. These terms ware introduced in literature and became popular after R. Florida's book "The rise of the creative class" (2002) and Ch. Landry's "The creative city" (2000) (Trip et al., 2010). Creative economy is a knowledge-based economic model in which cultural and social aspects interact with intellectual and technological property, promoting economic development and social values (cultural diversity, human development etc.) (Brewka et al., 2008).

will prepare the administrative and political structures, strengthen the links between the actors and reinforce the planning capacities of the region to increase the funds efficiency (Grillo et al., 2011).

The Commission understood that in a union of 28 nations, 21 languages and 274 diversified regions a more homogenous, a coherent and cooperative environment is needed that will contribute to the union's competitiveness. Subsequently, the EU tried to create knowledge links using various programmes (FP7 Regions of Knowledge, CIP INTERREG, URBACT etc.) and boost cross border and cross-regions synergies among authorities, universities and private sector actors to promote benchmarking and increase learning opportunities (EC,2010a).

Towards that direction was the establishing of the European Research Area (ERA) platform and the "Open Method of Coordination (OMC)" instrument deriving from the Lisbon agenda (Korres et al., 2011). The ERA was built to coordinate and promote research activities in Europe by creating the adequate conditions for the researches to work and attract society's interest towards scientific research (EC, 2007b). The main goals are to increase human mobility and knowledge flows, attract funding for advances on research infrastructure and create knowledge networks and clusters. The OMC on the other hand is a benchmarking tool and in the case of R&D policies helps to create a snapshot of the different innovation systems in Europe and provide quantitative data for comparisons and evaluation of Goals set by the Lisbon strategy (Kaiser et al., 2005).

For the period 2007-2013 €86 billion out of the €347 billion of the cohesion policy budget have been allocated to support innovation activities (Research and Innovation, infrastructures, Entrepreneurship, ICT development and human capital training) (EC, 2007a). In the forthcoming period the EU funding towards innovation will be directed through two policies, R&D Policy-Horizon 2020 and EU Cohesion Policy 2014-2020 with complementary means and objectives. The R&D Policy-Horizon 2020 aims in maximizing competitiveness and it is focused on individual R&D projects. Pan-European competitive calls for proposals are held attracting potential beneficiaries (firms, public and private R&D centers and universities) which after a selection process will be funded directly by the policy's fund (EC, 2014a). On the other hand the innovation initiative of EU cohesion policy aims in the creation of endogenous local growth and based in multiannual programmes. The funds are managed by national and regional authorities and allocated to regional beneficiaries without competitive procedures.

1.4 The Challenges of Innovation in EU

Within the knowledge based economy environment, EU, following the Lisbon strategy and Europe 2020 agenda, is developing innovation strategies aiming to increase the Union's capabilities and competitiveness in the relevant activities.[7] In this effort of stimulating innovation and development for Europe's regions two challenges can be identified: the incorporation of innovation in the European cohesion policy; and the mobilization of local governance to develop and apply innovation policies (see also chapter 2).

To address the first challenge, the Commission inaugurated the strategy "regions delivering innovation through cohesion policy". Europe's regions, apart from the economic disparities, present great diversification in terms of innovation performance (Korres et al., 2011), both among regions across Europe and within the nations. The cohesion policy, aims to address these gaps by promoting innovation in the rural and less developed regions (EC, 2014b). Innovation policy is being embedded in the cohesion package, and as an Innovation itself becomes an experimental development tool in the hands of policy makers in regional level (Koschatzky et al., 2010). Therefore, the EU regional development policy became more complex, based in a policy mix generated in regional, national and supranational level (Flanagan et al., 2007).

That leads to the second challenge. The fast spread of multi level governance in Europe created institutional forms in local level, which however lack the capacity to process innovation policies (RIM, 2010). Apart from hard infrastructure shortages, there is lack of administrative structures and insufficient human capital to deliver these policies. This complex governance environment requires advanced operational and strategic skills and tests the capacity of government agencies and local actors to understand the nature of the problems faced in knowledge based economy and make the proper decisions (Head, 2011).

These challenges are linked to the problematic that this research sets. The goal to promote convergence across European regions can be undermined by innovation policies. The richer regions are usually the leading innovative regions and are located close to large urban areas where there is high concentration of innovative actors. That leads to spatial concentration of funding since those regions are able to capture more funds coming from EU, state or private resources both in actual or proportion of GDP terms. Hence the regional disparities will increase eventually in favor of the regions with better R&D performance that can create more economic returns through innovation (Laranja et al., 2008). That creates pressure to the lagging regions and decreases their competitiveness in the globalized economy. This so called "regional innovation paradox" highlights the contradiction where the regions that need to be more innovative and invest in R&D activities perform lower than the richer regions due to lower funds absorbance capacity (Oughton et al., 2002).

[7] The Lisbon strategy set a goal to achieve an investment up to 3% of the unions GDP in R&D until 2010. The goal was never reached and is transferred to the Europe 2020 strategy. According to the Commission these investments will have long-term impacts in growth and employment rates in Europe.

The problem of absorbance is not a problem of availability of funds for those regions. A region has to have a significant number of innovative actors in order to increase the positive effects of investments in innovation (Laranja et al., 2008). The firms in these regions are not interested in innovative contributions and don't develop cooperation with other firms and regional innovative actors (research centers, universities etc.) leading the lasts' to isolation from the local productive system and the local economy with limited innovation capability (Oughton et al., 2002). Thus the regional level policies in this case have to focus on increasing the innovation capacity of the regions, by raising awareness and developing connectivity among actors, as well as promote R&D expenditures bonded in the specific local context and resources (Amin 1999; Oughton et al., 2002).

2. EU Regional Policy and Local Governance

In the previous chapter the notion of innovation was discussed and reasoned the last decades' increased interest on innovation from local to supranational policy level. The importance given to innovation is also reflected in the EU regional policy (cohesion policy). Two characteristics of this policy will be identified and discussed: a) A sectoral change that occurred in EU regional policy, leading to the integration of innovation as one of the initiatives b) Along with the institutional changes in the administrative tiers of Europe caused by this policy.

In this chapter the path that the EU cohesion policy followed through the years, leading in the incorporation of innovation as one of its policy fields will be described. In-parallel, the effects as well as the politics and power games that arise in the complicated and complex European environment, due to the catalytic role of cohesion policy in the European political scene, will be discussed; As the new actors and governance tiers that were added in the spatial and political arena as a consequence of the cohesion policy, are dealing now with the innovation initiative.

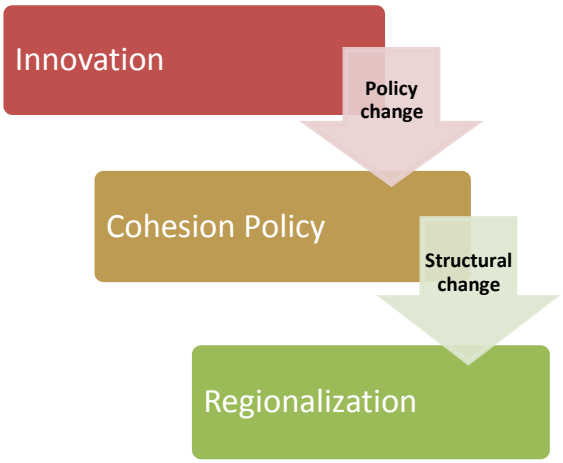


Figure 3: Second chapter's methodology
Source: Edited by the author

2.1 The Raising Importance Given in Innovation by the European Regional Policy

The European Union's cohesion policy is a set of policies which, supported by funding instruments like the European Regional Development Fund (ERDF), aims to reduce disparities and correct imbalances among the European Union's regions (see Box 2). To measure these disparities, EU recognizes the income (GDP per person) and productivity index (GDP per person employed), as indicators of economic and social wellbeing

(EC, 1991). Although the ERDF existed already since 1975, financing individual projects in the member states predetermined by the Commission, it is the year 1988 that is considered to be the birth year of cohesion policies (Bachtler et al., 2007). In the 1988 reforms, the policy's budget was doubled, a multiannual programme approach was introduced and the basic principles of the cohesion policy, as well as its priority objectives, were set by the Commission (CoR, 2012; Bachtler et al., 2007). Since then, the cohesion policy has been renegotiated at the end of every programming cycle (1993, 1999, 2006, and 2013) and changes have been introduced on the budget allocation, programme design and management mechanisms, by national and sub-national actors. These kinds of changes come after extensive negotiation processes, the outcome of which is representative of the political balance in the Commission and the decision making bodies of the Union (Hoogle, 1998).

Initially, cohesion policy was conceptualized and designed as a regional policy, aiming to help the least favored regions of the Union to develop and support, subsequently, the latter's enlargements. These regions were mainly located in the peripheral, newest and less developed members of the Union (e.g. Greece, Ireland, Spain, and Portugal) and after the 2004 and 2007 enlargements, to the eastern European countries. In reality however, the cohesion policy was regional only namely since the importance of the funds and the centralized governance system in traditional cohesion countries like Ireland, Portugal and Greece translated the policy to a national one (Andreou, 2006).

The open market philosophy prevailed in Europe, following the single market reforms launched in 1992 after the Maastricht treaty and left the national economies of the cohesion countries unprotected and vulnerable to the advanced ones (Leonardi, 2006; Allen, 2000). Since then the cohesion policy started to play a new political role. The cohesion funds that were channeled in the poorest regions of the Union, apart from the goal to reduce disparities, aimed also in the fading out of the negative macroeconomic spillovers of the single market, functioning also as a communicative instrument to turn in favor of the EU the citizens of the affected areas (Bongardt et al., 2013; Allen, 2000). The weaknesses of the single market created more inequalities and increased disparities among the center and periphery regions of the Union (Getimis, 2003). More than a decade after the launch of cohesion policy agenda, EU recognizes that it did not work out the way it was originally conceptualized, producing limited results (Hoogle, 1998) and still being unable to achieve some of the main goals, like tackling unemployment (EC, 1999).

With the Lisbon Treaty in 2000, development through knowledge intensive procedures became a strategic goal and presented as solution to these problems. The Lisbon Strategy introduces the goal of making the EU "*the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion*" (European Council, 2000; Schepers, 2013).

Box 2: The EU cohesion policy in brief

European Union's cohesion policy is a policy package that tries to reduce economic, social and territorial disparities across the Union. It is the largest entry in the EU budget, making about up to 32,5% of total Commissions' expenditure and has a 351.8 billion budget for the 2014-2020 programming period.

Cohesion policy is translated into financial disbursements through its two main instruments: the Structural Funds and the Cohesion Fund. There are two main cohesion policy structural funds: a) the European Regional Development Fund (ERDF), which supports programmes addressing regional development, economic change, enhanced competitiveness and territorial cooperation issues, b) the European Social Fund (ESF), which is the main financial instrument, allowing the Union to accomplish the strategic objectives of its employment policy. The Cohesion Fund was created as such in the 1993 reform, and has a national, rather than regional, focus, targeting those Member States that the GDP per capita is lower than 90% of the EU average. It is reserved for environment and transport infrastructure.

Prior to 1988, EU cohesion policy was unstructured and financially much smaller. Cohesion policy began with the introduction of the EU's multi-annual spending guidelines or "Financial Perspectives". The programming periods were the so called Delors 1 package for the period 1989–1993, the Delors 2 package for the period 1994–1999, the Agenda 2000 package for the period 2000–2006, the 2007-2013 that introduced the National Strategic Reference Framework (NSRF) logic and now the new 2014-2020 period aligned with the Europe2020 strategy. After the 1999 reform, where the forthcoming EU enlargement was a major focus point, an effort was made to simplify the Structural Funds procedures, which for the period 2000–2006 were divided into three objectives, instead of six as previously. The 2006 reform simplified further the funds and increased the thematic concentration, while rephrased the objectives as:

1. The "convergence" objective to accelerate the convergence of the least developed EU Member States and regions by improving growth and employment conditions.

2. The "regional competitiveness and employment" objective to anticipate economic and social change; promote innovation, entrepreneurship, environmental protection and the development of labour markets.

3. The "European territorial cooperation" objective to strengthen cooperation at cross-border, transnational and interregional levels in the fields of urban, rural and coastal development, and foster the development of economic relations and networking between small and medium-sized enterprises.

For the funds spatial distribution, Europe's regions are divided in three categories according to their eligibility criteria: The less developed regions (GDP/capita < 75% of the EU-28 average), the transition regions (GDP/capita between 75% and 90% of the EU-28 average) and the more developed regions (GDP/capita >=90% of the EU-28 average).

Sources: (Smyrl, 1997; Sapir A. et al., 2003; IP, 2008; EC, 2010; Lackowska et al., 2012)

The effects of this strategy in the cohesion policy were not immediately visible, since the ongoing programming period was already in action and the main priority was the transition of the new member states. Two years later, the president of the European Commission, Romano Prodi, assigned a group of experts to evaluate Europe's new strategy and estimate the feasibility of its goals. The "Sapir report" that was produced, criticized strongly the cohesion policy, proposing in parallel other, new policies to increase Europe's competitiveness and promote growth (Sapir et al., 2003; Faloudi, 2009; Wallace, 2005). This political and ideological pressure on the cohesion policy resulted in its "Lisbonization" by the 2006 reform. The change was evident both in the new objectives set by the Commission and in the priorities of the operational programs designed by the member states. It was also visible in the typology of all the documents produced, since the language and the key words used included terms as innovation, research and development (R&D), entrepreneurship and knowledge economy, neglecting in some cases traditionally top priorities, like accessibility (Mendez, 2011).

Meanwhile a political battle in the EU was taking place between the two major political groups, the Neoliberals and the European regulated capitalism favors and the cohesion policy budget and program was a main political conflict arena during the negotiation periods (Hoogle, 1998). The effectiveness of the cohesion policy has continuously been criticized by the richer members' states that recognize gaps in the evaluation process and incompatible policy goals (Hoerner et al., 2012). It is true that the evaluation process of every programming period takes up to three years after the end of a period, so the results cannot be directly translated in learnt lessons and transferred to the next period, since this has already been designed and implemented (Hoerner et al., 2012). Hence the policy's evolution is based mainly in mid-term evaluations.

The tension occurred during the negotiation period of the 2006 reform is characteristic to describe these conflicts. Strong disagreements between the net contributor nations in cohesion policy budget took place considering the redistribution of resources (Bachtler et al, 2007). Those countries advocated that not much benefit was arising by funding regions in the core of EU. This tension continued for the following years and an incident that took place in 2009 is characteristic of the pressure; a leaked draft paper of the Directorate-General for Budget stated that funding should be focused on the less developed countries and not the

respective regions (Petzold, 2013). Finally, the paper was never officially published and the redistribution logic remains regional for the 2013-2020 period.

In terms of GDP, the cohesion countries achieved high growth rates in the 1994-2006 period and started to catch up with Europe's core (EC, 2007). However, it remains unclear whether this growth resulted from a single market agglomeration effect, the private investments relocation in Europe, the budgetary adjustments by national states to meet the criteria of the monetary union or the cohesion policy, since all these changes occurred simultaneously (Leonardi, 2006). In this case it is interesting to observe how the interpretation of results is being used according to the interests of each actor, making it difficult to arrive at an objective conclusion. The Commission for example considers cohesion policy as the main responsible for this growth (EC, 2004; EC, 2007a). EU in favors in peripheral countries uses these results to suppress public euroscepticism. While the candidate countries see this policy's social character and especially the funds as the main benefit arising from an integration process aiming to reach the living standards of the EU (Bongardt, et al., 2013).

After 25 years of the regional cohesion policy there are many conclusions that can be drawn about the disparities across the EU. In the state level, the disparities between the European core and the periphery decreased significantly in the 90's and the 00's but the development gap within the Europe's regions started to grow (Leonardi, 2006). The national context matters but there are even greater disparities within the individual member states (Getimis, 2003). The variance in development grow between the more urbanized and capital regions and the rural and declining industrial ones (Lackenbauer, 2004). Additionally, the enlargements of EU opened the development gap in EU in state level and the impact of the financial crisis increased further the disparities all over Europe in the regional level (LE, 2013). In the open market competitive economic environment, regions focused on endogenous and sustainable growth performed better in the convergence process, than the ones that used resources to directly reduce income inequalities (Bongardt et al., 2013). The incorporation of innovation in the cohesion policy and the regional priorities moves towards that development paradigm. In order to be part of this the regions have to activate and create effectively their innovation capabilities. Hence a matter of strategy, governance and administrative capacity emerge for the sub-national authorities.

2.2 The Local Government in EU Policy Making

One of Commission's main goals in the field of governance was to increase the presence of sub-national authorities in the member states (Smyrl, 1997), either numerically, by pressing towards their creation where not already existed, or in terms of power, via the assignment of more competencies. In the European bibliography this phenomenon is known as "Regionalisation" and refers to the process of increasing the power of European authorities that operate in a sub national level, in a territorial unit between national and

local (municipal), usually but not always equated with NUTS 2 [8] regions (Borghetto et al., 2009; Marks et al., 2008).

To assist this shift in regional governance legislative and political measures were taken by the Commission in the early 90's. One of the most evident was the establishment of the Committee of the Regions (CoR) in 1994. The CoR tries to support and promote the regions interests' in the EU and, although it does not have legislative power, it has an advisory role for the issues that are related to the regions' competence (Andrikopoulou 2004; Hönnige, et al. 2013). In institutional terms, a mostly symbolic action towards that direction can be recognized in the article 203 of the Maastricht Treaty, suggesting that a member state can be represented in the minister's council by a local governor (Borghetto et al., 2009). Furthermore, the principle of subsidiarity, that is also included in the treaty, provides a Pan-European legal shield for the regions, regulating their accountabilities.

Regarding the Commission's operational goals, a way of achieving increased effectiveness of the regional development programmes was the transfer of financial technical and political resources to the sub-national level (Smyrl, 1997). In addition, by adding more layers of governance in the European decision making system EU tries to increase its democratic legitimacy by increasing in parallel the number of citizens involved in the policy drafting and implementation (EC, 2001; Hooghe et al., 2003).

The main policy that has pushed further the regionalization process is the cohesion policy. The Commission put pressure for the coordination and partnership between local and national actors in the management of the structural funds (Newig, 2014). Hence, the member states had to create or give competences to the regions in order to adapt in the policy's needs for regional participation in the implementation of EU programmes (Leonardi, 2006; Andrikopoulou, 2004). These competences were continuously increasing. In the 2007-2013 programming period the sub-national authorities had taken extensive part in the design of the operational programs and drafting the official documentation in many member states (Bachtler et al., 2007). In the 2014-2020 period, in many cases the regions are even entirely responsible for these tasks.

This will of the Commission to share management and design of the EU funded development programmes with sub-national actors, mobilized the most advanced of the Europe's regions, which wanted to decrease their political and resources' dependence from the central government of the member states (Smyrl, 1997). Regions established offices in Brussels, understanding the important role that informal governance and invisible actors play in the configuration of the European agenda (Kleine, 2014). Those offices, apart from covering some administrative needs, are working as branches that can take part in the EU decision making process, setting up relationships with other regional actors and participating in the large lobbying

[8] Nomenclature des Unités Territoriales Statistiques are territorial subdivisions of the member states of the EU in order to harmonize the process of collection and elaboration of national and Community statistics.

community of the capital of Europe (Elias, 2008; Newig, 2014).

In addition, another effect of regionalization was polarization in some parts of Europe. Many minority nationalistic and regionalist parties saw that as an opportunity since initially was thought that these changes would wane the sovereign nation's power (Elias, 2008). Those parties became key actors in the regional or national politic scene, acting in some cases in favor of their autonomist interest and on others in a more nonpartisan way towards trans-national and cross-border cooperation (Malloy, 2010; Carter et al., 2010).

All these developments in European politics triggered a long lasting debate about the extent of empowerment, of the regions and other sub-national actors, by the regionalization process. For the notion of "regional power" Bourne (2003) describes it "as the ability to influence decisions, to control or escape the control of political actors in other territorial levels and formulate policies different from those of other territorial entities". The answer of course depends on the point of departure for each ones conceptualization and the regional geographic socio-economic and administrative context of each territory, since not all European regions have the same degree of autonomy and power (Pasquier, 2011).

Marks (1993) early suggested that regionalization was a two way process that creates decentralization on decision making in favor of sub-national authorities and at the same time increased competences in the supranational level. While Smyrl (1997), gives an answer based on actors capability, stating that: "Only the regions that were already self-governed and had an entrepreneurial orientation strategy were finally empowered by the transfer of community's resources because of the individual qualities of managerial and entrepreneurial ability of the local actors". Although, the three basic views expressed, are more fractionated. On one hand, some authors argue that political restructuring in Europe created the adequate conditions for the regions to mobilize, playing an active political role and pursue their interests (Keating, 2008). On the other hand it is supported that supranational institutions like the EU limit the regional actors' power, forcing them to follow theirs norms and interests (Bourne, 2003). While finally, there it is also suggested that the national governments dominate the political arena. They act as gate keepers retaining control in both sub national and supranational level, not leaving many influence capabilities to the Commission and the regions (Pollack, 1995).

By the late 90s' it was clear that the open market economy had been an important parameter for the major changes occurred in regional economies that increased disparities among EU regions and the political tension among EU actors. The globalization had created a new territorial balance. As Keating (1997) explains, the firms escaped from territorial limitations having the ability to move investment around the world, while the communities which have concrete spatial bounds become more depended on them. To deal with this, regions had to establish more integrated regional development planning that requires strong and capable regional authorities.

The authorities now are part of a multilevel governance network, a notion that is very popular in the European studies. The Commission promotes the multilevel governance system where in their perspective each actor contributes according to his capabilities to the overall union governance in a sharing knowledge system (EC, 2001).That creates some contradictions. Policy making in lower administrative levels is made by people directly affected by the political decisions and investment choices can be less market oriented and promote limited interests (Hooghe et al. 2001). That comes against the favors of neoliberal economy in the central level because moves the decision making process away from the market (Head, 2011). Furthermore the knowledge sharing and partnership rules contradict to national interest and many countries seem reluctant to lose their gatekeeper role (Hooghe, 1998).

Eventually, two decades after the Maastricht treaty things had changed for Europe. It is obvious that the idea of the Europe of the Regions has not finally occurred and the lobbying impact that the regions produced in Brussels is limited (Elias, 2008; Hönnige et al., 2013). However, it is a fact that the regional dimension started to been taken into account more than ever by the European polity (Sweeney, 2005). Under these circumstances, the current policy followed tries to balance between two political tendencies: the cohesion oriented approach, which asks for stronger role of the multilevel governance, the commission and the public actors in local level; and the competitiveness oriented, which is in favor of more cross-border cooperation, less public intervention and a more active role of private sector actors in decision making (Lennert et al., 2010).

As Giannakourou noted already in 1996, Europe moves away from the traditional social and territorial cohesion of resources' redistribution logic, by promoting cohesion through the equality in competitiveness by knowledge diffusion and networking, preventing just in the borderline the risk of spatial and social exclusion without answering the risk of a multi-speed Europe. In this context, where EU's territorial solidarity is expressed through a better ticket for the competitive economy arena, the regions don't have the luxury, the means and the time, to enter in the European and globalized complex political and ideological battle. They have to take actions to ensure their territorial prosperity and development. The challenge for the regions is to build the innovative governance system that has the capacity and the ability to follow the economic social and scientific development and adapt their policy as soon as possible towards them (Schepers, 2013). In the competitive environment of "Knowledge based economy" two are the main parameters that will determine each region's development performance: the way innovation will be integrated in regional policy and, of course, the outcomes produced.

3. Cohesion and Innovation in the Turbulence of Crisis

Nowadays, major challenge for a socio-economic research is the complex context in which these socio-economic processes take place that is characterized by continuous crises, constant imbalance and outcomes difficult to be predicted. The seemingly linear development of economic activities has been interrupted since the breakthrough of the global financial crisis in 2008. The new dynamics that were created influenced in great extent the economic social and political structures. A new framework has been created in which the limits, the performance and resilience of the planning processes, the political decisions and policies are tested.

In this chapter the role the EU regional policy, and more specifically the cohesion policy, played during the crisis will be analyzed. Furthermore, EU's behavior towards innovation during the crisis is examined, using as indicator the expenditure in R&D of both public and private actors.

The crisis triggered developments and conflicts in various political fields and stressed the complex relationships among the multilevel and diversified actors in the EU. The cohesion policies, the main policies towards convergence, and the innovation policies, currently important economic development policies, surely were influenced by this crisis, but at the same time were used as tools to suppress the latter's effects and accelerate the recovery process. Furthermore, many regions launched their innovation initiatives during these years of economic crisis and recovery. Hence it deems necessary a reference to the literature that deals with the innovation and cohesion policies' role during the crisis to understand the general context under which the decisions were made.

3.1 Cohesion Policy in Times of Economic Crisis

First of all, it has to become clear that, the failure of the Lisbon agenda to fulfill its goals can't be attributed to the financial crisis. The financial crisis had not been foreseen by the European Commission and was not part of the policy planning. The Lisbon's goals had already been redefined to a lower level in 2005 before the beginning of the recession (Schepers, 2013). The problematic now lies on Europe 2020 strategy which replaced the Lisbon agenda since it seems to steps on the same path. The new goals and policy directions follow the Lisbon agenda's philosophy, creating concerns about their sufficiency and efficiency; especially at this point where the socio-economic problems created by the crisis are greater (Hefeker, 2013).

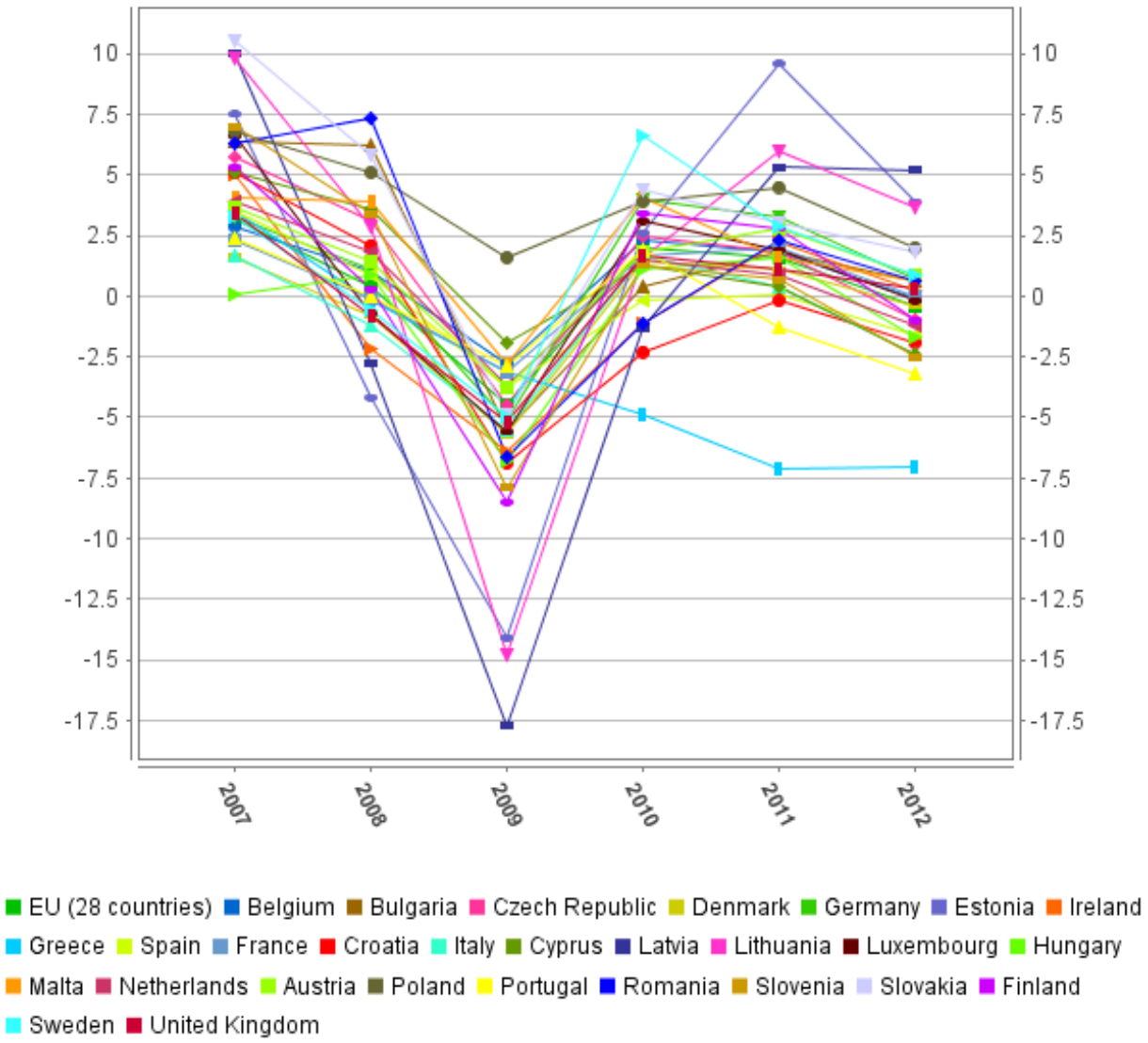
The cohesion process has been heavily influenced by this recession and the effects become more evident in countries like Greece, Spain, Portugal, Ireland (the traditional cohesion countries) and the newest member states (Christofakis et al., 2011). These countries after two decades of economic convergence become to diverge, their productivity in terms of GDP which dropped sharp in many cases (figure 4), stressing the cohesion process limits (Bongardt et al., 2013). The cohesion policy was used by the Commission as a

response to the crisis. Reforms to the structural funds took place between 2008 and 2010 (Smail, 2010; EC, 2008). These new regulations increased flexibility of the cohesion funds mechanisms allowing: modifications and increased cash flows (pre-payments) to the operational programs; simplification of the procedures for the financial management of smaller projects and weaken of the state aid rules; two years extension of the 2000-2006 operation programmes payments until 2010 (EC, 2010b; Smail, 2010).

Although these regulations were not sufficient by themselves to tackle the large financial problems faced, in any case they made the cohesion funds a more accessible resource for the regions (Smail, 2010). The crisis and the austerity measures that followed the direct fiscal injections to the lagging member states created socio-economic implications especially to the labor market (Hermann, 2013). The large unemployment rates and the measures taken, which lowered the wages and increased insecurity in the job market, caused large emigration rates (Hefeker, 2013). Especially the younger, most educated and capable labor force looking for better conditions started to emigrate in Europe’s core, undermining the future capacity of the periphery to catch up (Filippetti et al., 2010).

Eventually, the productivity (GDP) in many European countries after 5 economic years is still dropping or slightly increasing (figure 4). Hence, under these circumstances EU funding becomes more important for the heavily crisis-affected regions, acting in many cases as a stability pillar and the main investment tool.

Figure 4: Real GDP per capita, growth rate EU countries & Europe 28
Source: Authors' elaboration on Eurostat data, last update 12/05/2014



3.2 Attitude Towards Innovation in Times of Crisis

The crisis affected the economic activity worldwide and therefore innovation was also one of the sectors that experienced the consequences. In 2009 a significant drop in investment on R&D and innovation was evident by nations and firms all over the world (Dutta et al., 2013). In Europe although, during the crisis the expenditures on R&D continue to growth but some weaknesses of the EU's innovation system exposed since the innovation performance of member states started to diverge (EC, 2013b). The economic recession

influenced the innovative performance of member states and individual firms and some studies monitored the behavior of innovative actors, private and public, during the crisis, using data mainly provided by the Eurostat and Innobarometer [9].

To explain this behavior when it comes to government expenditure in times of crisis, two types of actions can be recognized a) the pro-cyclical and b) the counter-cyclical. In the pro-cyclical an economic expenditure like innovation has positive correlation with the general economic state and since in a crisis the economy experiences a downturn a subsequent decrease in innovation budget is also expected (Makkonen, 2013). In the counter-cyclical the exact opposite occurs. The correlation between an economic sector and the general economic environment is negative, hence the innovation expenditures increase in an effort to create value and contrive a driver of economic recovery (OECD, 2010b; Walde et al., 2004).

In figure 5 the EU's total and the members R&D budgets are displayed as a presentence of GDP. The data used concern the national context due to lack of availability of sufficient data for the regions. However, the different states influenced by the crisis disproportionally and this influence affected relatively their regions and that allows draw of conclusions for their behavior.

The years selected are: 2006 two years before the crisis, 2009 the year which influenced Europe's economic performance most with the sharpest drop in EU's GDP and 2012 the year that many economies in Europe have already recover. Neutral, pro- cyclical and counter-cyclical behaviors can be identified as a result of the large differences between the countries' behavior that comes from their governmental choices. On the one hand there were states which invested more in R&D in 2009 following the counter-cycle logic, mostly the more advanced ones. But on the other hand there were states that reduced the funding to R&D, following their general financial difficulties. The 2012 expenditure data shows a more rational behavior by the states that seems to return in their pro-crisis performance path. These corrective actions explain the total EU's performance fluctuation that shows increasing expenditures but with lower rate. A conclusion that can be drawn is that the general trends in the EU for growing the proportion of GDP channeled to R&D continued during the crisis. That same trend continues after the crisis, even in a lower rate but the 3% goal set by the EU strategy Europe 2020 is still far from reach.

[9] Innobarometer is an annual poll contacted on the behalf of European commission monitoring businesses and general public attitudes and activities towards innovation.

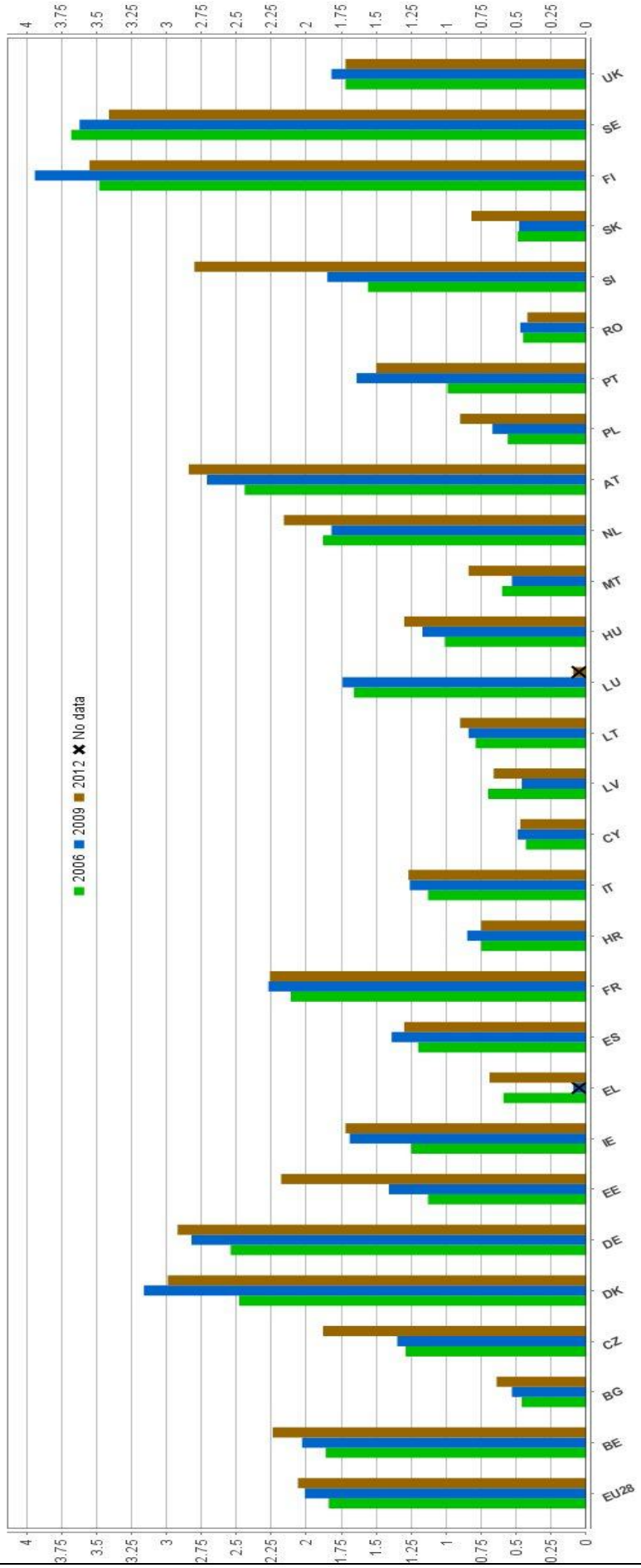


Figure 5: Gross domestic expenditure on R&D as % of GDP, EU countries and EU28 average
Source: Authors' elaboration on Eurostat data, last update 12/05/2014

When it comes to the firms' attitude towards innovation during the crisis, the outcomes are more complicated. The Schumpeter's notion of "creative destruction" became up to date in the academic world during the crisis and a motto that "the crisis generates opportunities" was in many cases used by policy makers. This slogan comes from Schumpeter's ideas that times of crisis have winners as well. Creative destruction speaks about the innovation process suggested that in this process there are competing sides where winners and losers can be found (Hanusch et al., 2006). Hence, firms that during the crisis managed to keep up their activities without large downsizing procedures in human capital and cuts in innovation investments will be favored at the end of the recession (Archibugi et al., 2013). It is also considered to be a great opportunity for newest, more innovative and flexible, entrepreneurial oriented and technological intensive start-up companies to win market shares (Hanusch et al., 2006).

On the contrary there is the "creative accumulation model". That suggests that older, larger and more successful companies can be more innovative in times of crisis as more capable to unify new and the old already acquired knowledge (Ergek et al., 2011). Usually this model is obvious in those firms working in oligopolistic and high technological intensive markets and perform systemic R&D affords (Archibugi et al., 2013).

Archibugi et al. (2013) using data by the Innobarometer analyzed the behavior of European companies' during the crisis as regards to innovation activities. The main findings showed that the firms' innovation attitude changed. Summarizing the general conclusion it can be seen that:

- Before the crisis the firms that had higher interest in innovation were large, well established and well net-worked with their suppliers firms. Those firms now are more likely to search for opportunities in new markets than develop new products. (Archibugi et al. 2013)
- During the crisis the smaller and younger firms were more willing to risk, invest in new products, explore new opportunities and collaborate to each other. Those firms are more likely to develop new products and increase innovation expenditure after the crisis. (Archibugi et al. 2013)
- Firms in general mainly maintained innovation activities related to ongoing projects, making more cautious moves and were unwilling to engage in new ones. (Filippetti et al. 2010)

In general the OECD "Science, Technology and Industry Outlook 2012" report monitored the global trends for innovation during the crisis. The findings indicate that one quarter of the EU's firms decreased their innovation expenditure due to the economic recession. While the patent data reject the theories influenced by the creative destruction that innovation could be fostered by the crisis (OECD, 2012b).

It has to be noted that certainly the national context matters in regional innovation behavior since the crisis affected unequally the EU. Member states with less developed innovation systems and more affected by the

crisis struggled more to maintain their R&D expenditures leading to an increase in the technological gap in Europe (Filippetti et al., 2010). That can be observable by the latest 2013 data in Innovation Union Scoreboard 2014, showing that the innovation conversance in Europe is happening but the rate of the process slowed down the last years going back to the pro-crisis levels (EC, 2014c). Although the lack of data for European regions behavior does not allow generalizations, an indicative position will be expressed by this research. Hence, in the cases of study analysis that follows, it is interesting to observe the regional attitude towards innovation in the economic and innovative environment that has been formulated after those years of economic instability.

4. Methodology

There are two main methodological approaches which were combined in this thesis. The first suggests to follow an exact theoretical framework extracted from the literature review, from which one ends up in a hypothesis to be tested (start with the hypothesis before any data collection). The other, is to look the concrete reality and gather sufficient data ending up in a formulation of a hypothesis to be tested in the analysis of cases of study (grounded theory). (Glaser et al., 1999; Cipriani, 2013) In this thesis a mixed methodological approached was used (figure 6). Starting from an analysis of the theoretical context through the literature review and documentation in regional and European level, we ended up in a conceptual framework. This framework created both the research hypothesis and an integrated questionnaire which was used as the main methodological tool to interview key actors in the cases of study.

In this chapter the methodology used for the cases of study analysis is presented. The main points stressed and explained are the creation of the conceptual framework that was used, the data collection methods (interviews procedure, documents analysis) and the cases' of study selection criteria.

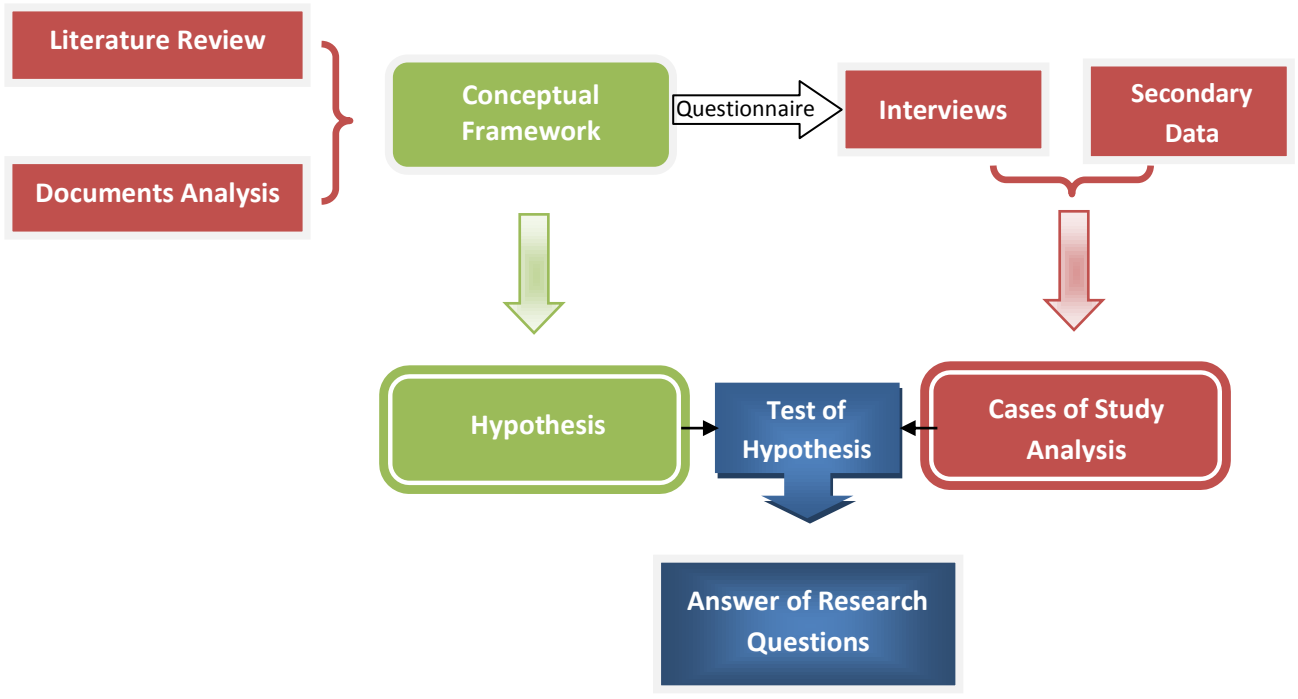


Figure 6: Thesis methodological steps
Source: Edited by the author

4.1 Setting the Framework

In the previous chapters the analysis of the existing literature and operational documentation took place. Key concepts and theories were identified and used to create the frame in which this thesis stands.[10] This information has been synthesized and summarized ending up on a conceptual framework (table 1).

In this table the elements effecting the incorporation of innovation policies in European regions are categorized. We have set up five main pillars affecting this process and classified multiple elements of influence, according to which they refer to. This structure was used, to formulate the questions asked to the actors interviewed and also to test the hypothesis at the cases of study analysis.

Table 1: Points of departure for the case of study analysis
Source: Edited by the author

Setting Priorities	Planning	Governance	Management	E.U.
Attitude towards innovation	Policy design	Main actors	Knowledge exploitation	Funds (importance & use)
Crisis & EU influences	Measurement indicators	Partners (internal/external)	Crisis effects	Initiatives (monitor & input)
	Regional power	Capacity		
		Systems & networks (formal/informal)		

4.2 Interviews and Documents Analyzed

The cases of study analysis, is based mainly on qualitative data[11]. These data were either information extracted by the actors' interviews or secondary data, extracted by various sources (regional documents, operational programs, etc.), always associated to actions and policies for regional development related to innovation and relevant European initiatives (table 2).

The main documents analyzed can be grouped in three categories according to their contents. The first one includes documents that address innovation directly, describe the regional innovation capabilities, plans, targets etc. Apart from those, documents that refer to general regional development plans, processes and policies as well as EU documentation like the regional operational programs of the programming periods were used, to identify if and to what extend innovation is incorporated on these.

[10] The hypothesis formulated by this process is that the sustainable incorporation of innovation in regional policy depends on the regional governance capacity, the political agenda and attitude towards innovation and the general socio-economic context

[11] The quantitative data collected, were translated in qualitative information and used in the analysis.

Table 2: Documents studied
Source: Edited by the author

Basse Normandie	Stratégie régionale de recherche et d'innovation pour une spécialisation intelligente (RIS3 2014-2020), Synthese du diagnostic territorial strategique, Schéma Régional d'Aménagement et de Développement du Territoire, Stratégie régionale d'innovation: Compétitivité des entreprises et des territoires bas-normands par l'innovation et la recherche (2009), Basse-Normandie Programme operationnel FEDER 2007-2013, Basse-Normandie Programme operationnel FEDER / FSE 2014-2020, Official websites, regional magazines etc.
Thessaly	Regional development plan, Intermediate draft regional Innovation strategy based in smart specialization RIS3, Operational programme Thessaly 2007-2013, Study on the growth of the region by the association of industries in Thessaly, Regional development plan of Thessaly for the Period 2014-2020, Official websites, regional magazines, local newspapers etc.

The interviews were the main methodological tool for the cases of study analysis and were conducted in a semi-structured way in April and May 2014. The actors interviewed (table 3) take directly or indirectly part either in innovation strategy/policy design or implementation, in the regions studied, and have deep knowledge of the EU innovation initiatives and influence.

A questionnaire was used to guide the interview process (appendix 3). The questionnaire was the result of the conceptual framework and was organized around the same axes in order to stress all the possible issues encountered in the theoretical part of the work. However, the interview was not aligned exclusively in the questionnaire. As the most interesting and useful part of the interview is to get backstage data (McNamara, 1999) the interviewees were suggested to speak freely on many issues. This allowed to bring on the surface many issues that would not be discovered by a structured interview since it would be difficult for the researcher to engage more with the local reality and particularities.

The main challenge of the interview in qualitative research is to interpret the meaning of the interviewer's words (Kvale, 1996). Hence, during and after the analysis of the interviews the deeper meaning of what was said has been identified drawing hidden connections in the answers and general attitude of the interviewers and reflected in the analysis of cases of study that follows.

The interviews lasted approximately 45' each. The interviews for the Basse-Normandie region were held in the Regional offices in Caen and Brussels, while those for the Thessaly region were conducted via videoconferencing. The interviewees were contacted beforehand by email and a thesis outline was given to them to prepare themselves. The interviews were recorded and translated in English, if needed, by the author without changing the sense of the interviewer's position. Parts of the transcripts are used on the cases of study analysis that follows while the full transcripts are available on the CD accompanying this thesis.

Table 3: Names and competences of actors interviewed
Source: Edited by the author

Basse Normandie	**Zoe Buyle-Bodin:** Project manager in the regional representation of Basse-Normandie in Brussels. **Rachel Gandon:** Head of European affairs and territorial cooperation for the region. **Laurent Lecoeur:** European projects officer at MIRIADE (Mission régionale pour l'innovation et l'action de développement économique) agency for Innovation & business development in Basse-Normandie.
Thessaly	**Ioannis Tolias:** Development consultant, member of the design team for the RIS3 strategy in Thessaly. **Dimitris Kouretas:** President of the Regional Innovation Council/ Vice president of university of Thessaly.

4.3 Selection of Cases of Study

The cases of study are used to increase our level of understanding on the issues discussed in the research. Through a deep analysis of the context and the dynamics formulated in the areas of study, we can reach to conclusions that will test our hypothesis and provide answers to the research's questions.

Two EU regions were selected to be used as cases of study. The areas selected are NUTS 2 regions and their geographical and administrative borders coincide, in order to be compatible with EU policy standardization and statistical categories. The regions selected are the region Basse-Normandie in France and the region Thessaly in Greece (figure 7).

This selection has been done according to numerous criteria that we set; either based on conclusions extracted by the literature review or on other prerequisites. Preliminary it was based on the national conditions:

- We decided to leave aside regions from the newest EU members and select some from the oldest ones that could have been affected by EU innovation policies from the beginning of those initiatives.
- Among these members in order to explore influences of the national context that effect regional innovation a "north-south division" was used to select the EU members from which the regions selected. Hence, we end up using a case of study located in the most developed north (France) and one from the traditional cohesion countries (Greece) in the south.

Subsequently towards the selection of the specific regions in France and Greece it was decided to:

- Exclude capital regions or regions that include in their perimeter large urban center since there, the innovation dynamics are stronger.
- Exclude regions neighboring to capital regions too, to avoid regional innovation spillovers from the innovative capital area.

- Select among the remaining regions two that have as many common characteristics as possible.

These similarities are important for our study because we want to focus on the crux of the problem of the integration of innovation in regional policies. By studying areas with common features we efface external factors and context specificities that could affect our findings.

We can identify common geographical and economic characteristics on the regions selected:

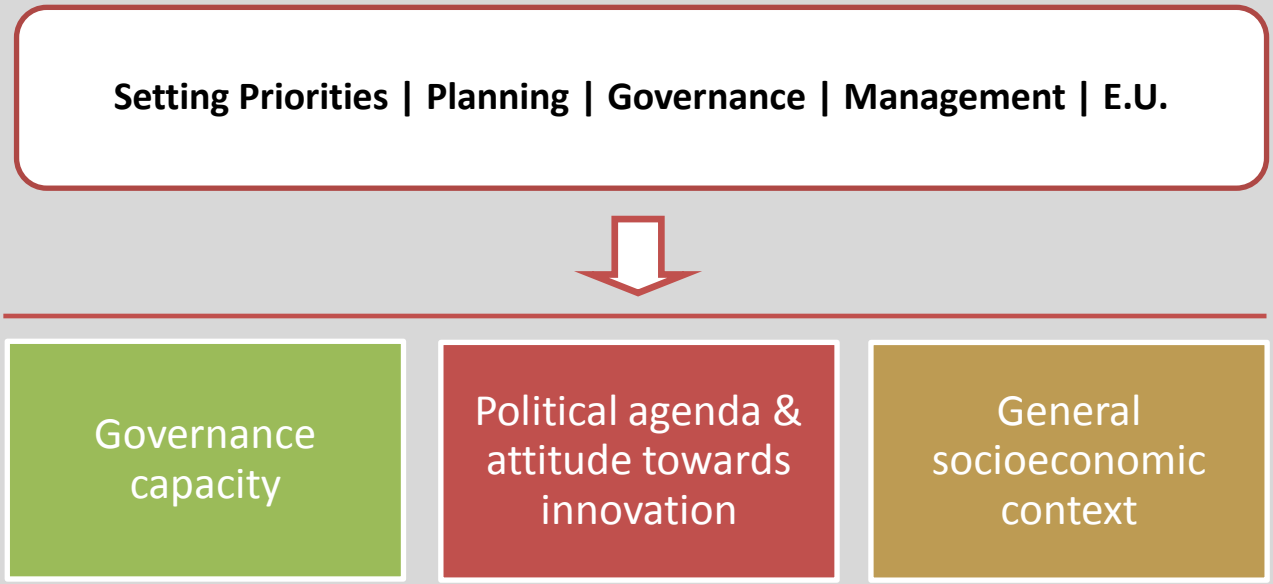
- Both regional economies, when it comes to GDP per capita performance, stand beneath the average of the national levels since Basse-Normandie ranks 18th of the 26 French regions and Thessaly 10th of the 13 Greek regions.
- Both regions have rural and agricultural areas that cover a big proportion of their land, a significant coast line and touristic attraction sites recognized in national and international level. The primary, secondary and tourism sectors are crucial for the regional economies. (SDTS, 2013; ELSTAT, 2013)
- Both regions have in each case two urban centers with population over 100,000 inhabitants (Caen and Cherbourg for Basse-Normandie, Larisa and Volos for Thessaly) while also there is one dominant university in each region that expands its branches to multiple locations.
- When it comes to innovation performance both regions classified as moderate innovators according to the EU regional innovation scoreboard 2014.

In order to create a clear image of the cases of study the analysis of the regional context follows. In this, with the available data one can identify the aforementioned similarities and particularities of the areas.

Figure 7: The position of Basse-Normandie and Thessaly in Europe, France and Greece
Source: Edited by the author

Box 3: Towards the analysis of the cases of study

The points of departure set in the conceptual framework will be merged to meet the hypothesis axes (governance capacity, political agenda and attitude, and general socioeconomic context). A specific categorization cannot be done since many of these points overlap issues that are important for more than one of the hypothesis axes. The analysis of the cases of study will be done based on these axes and at the end the conclusions drawn from this process will test the hypothesis validity.



5. Cases of Study Analysis

Context: Region Basse-Normandie

The Basse-Normandie region (figure 8) is one of the 26 regions of France located in the north-west part of the country. It was created in 1956 after the official establishment of the French regional division and emerged of the Normandie province that was separated to Haute-Normandie and Basse-Normandie. In 1982 the region gained increased power after the decentralization reforms that took place in the country, while in 1986 the local government was elected directly from the people for the first time. (Pasquier, 2011)

The Region consists of three departments Calvados, Manche, and Orne, while Caen, Saint-Lô, and Alençon are their administrative centers respectively. The population of the region is 1,477,000 inhabitants (in 2011) and represents the 2.34% of the country's population. The demographic development is low and has high variation among the departments; between 1990 and 2006 the population of Orne decreased by 0.1% while in Calvados increased by 7.8%. At the same time the ageing population consists a problem since the under aged population decreased by 9% in the period 1999-2008. (SRI, 2009; SDTS, 2013)

The administrative and economic center of the region and the largest city is Caen with an urban area of 396,959 inhabitants (22nd in France) (INSEE, 2010). There are 1802 towns and communities in the region but the population density is quite low, 83.2 inhabitants per km² (in 2011), compared to the country's 114 inhabitants per km². The region's area covers 17,740 km² (3.28% of the national one), from which 76% is agricultural land, making Basse-Normandie the region with the largest percentage of farm land among the French regions.

The GDP per inhabitant is €23,800, significant lower than the country's average of €30,700. The regional economy is focused on the primary and secondary sector with 5.6% of the population employed in the agricultural sector and 17% in industry (3% and 14% is the national average). Various maritime economic activities including touristic ones as well as activities concerning the nuclear plants of the region are also important. The unemployment rate is at 9% (in 2013) (INSEE, 2013; SDTS, 2013).

The region's major educational institution is the University of Caen Lower Normandy with 24,000 active students (SDTS, 2013). The population aged between 25-64 years with tertiary education attainment is 25.8% (32.1% the national) while the R&D expenditure consists of the 0.9% of regional GDP (2.3% the national one) (OPBN, 2013; Eurostat, 2013).

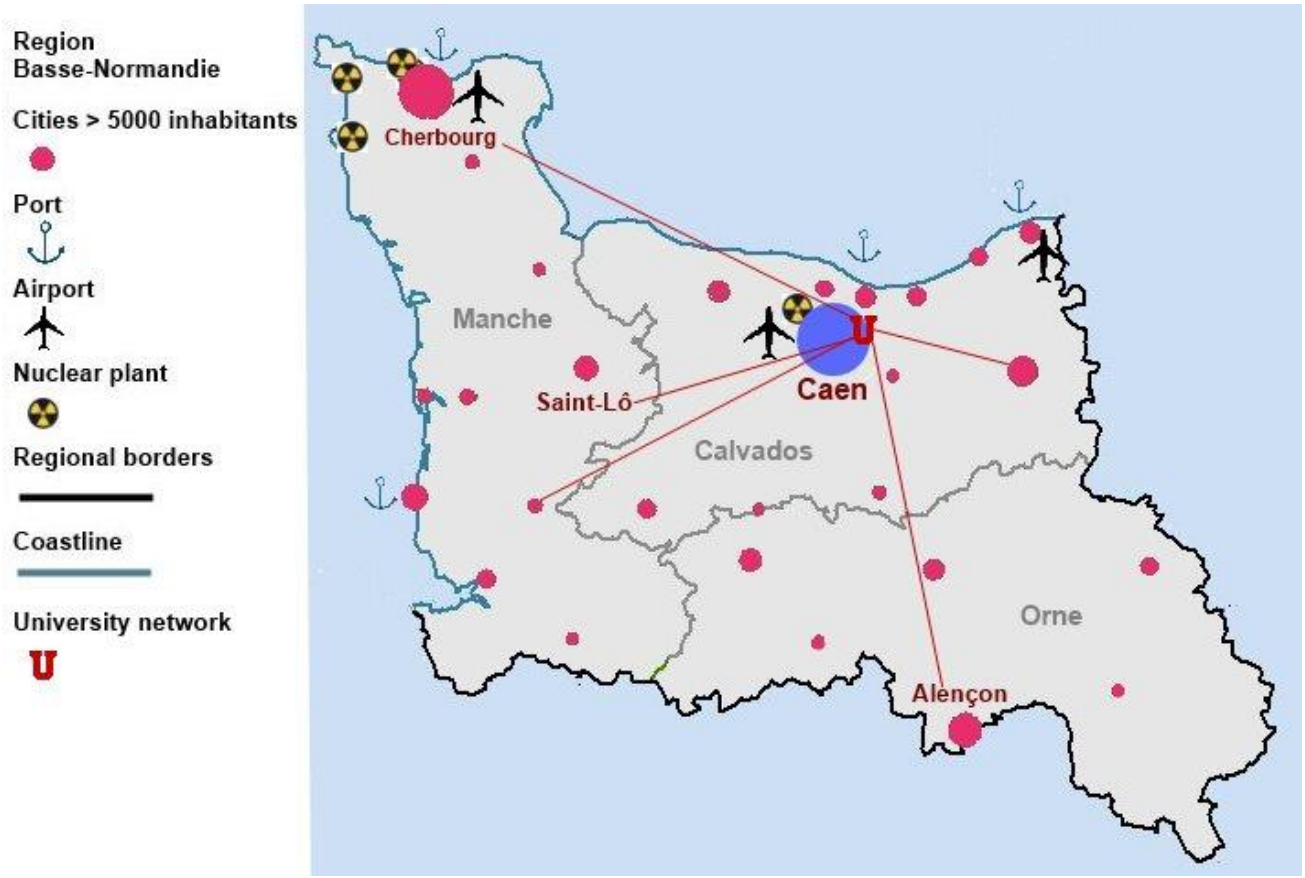


Figure 8: The region of Basse-Normandie
Source: Edited by the author

Context: Region Thessaly

The region of Thessaly (figure 9) is one of the 13 regions in Greece and it is located in the central part of the continental country. The region existed as a geographic entity but gained administrative powers in 2011 after the decentralization reform that took place in Greece. Then the Country's 54 prefectures lost their administrative role, became regional units and were replaced by 13 administrative regions. The region Thessaly derived by merging the four prefectures that the region had (Larisa, Magnisia, Trikala and Karditsa) and an elected local administration undertook the governance from the 1st January of 2011. After the 2011 reform all of the region's towns and communities have been merged in 25 new municipalities that were created.

The main economic activities are concentrated in the four capitals of the regional units with Larisa and Volos being the most important poles. The region's population is 730,730 inhabitants (in 2011) representing the 6.77% of the country's. The biggest city and administrative center of the region is Larisa with 162,591 inhabitants (in 2011). The region has low population density with a rate of 52.1 inhabitants per km² (82 is the countrys's average) and faces an aging population problem. (ELSTAT, 2013)

Thessaly covers an area of 14,037 km² (6.77% of the national one) and has a variable landscape with 46% of the area being mountainous while the rest consists of the country's biggest plain area (ECG, 2013). Apart from the continental part the region includes a complex of 18 islands named "Sporades" with high touristic and ecological importance since the Europe's largest marine protected area is located there.

The GDP per inhabitant is €13,000, (€18,500 the national average) and the economy is heavily dependent on the primary sector and industry where 22.9% and 16% of the population is employed respectively (Eurostat, 2013). The unemployment rate has increased significantly during the financial crisis from 9.2% in 2009 to 27% in 2013 (ELSTAT, 2014).

The percentage of the population aged between 25-64 years with tertiary education attainment is 25.1% close to the 27.4% national average (Eurostat, 2014). The University of Thessaly is the major academic institution in the area with 12.306 students enrolled in 2012 and when it comes to research performance the regional expenditures on R&D is 0.4% of the GDP, which is below the national 0.6% (RIMP, 2014).

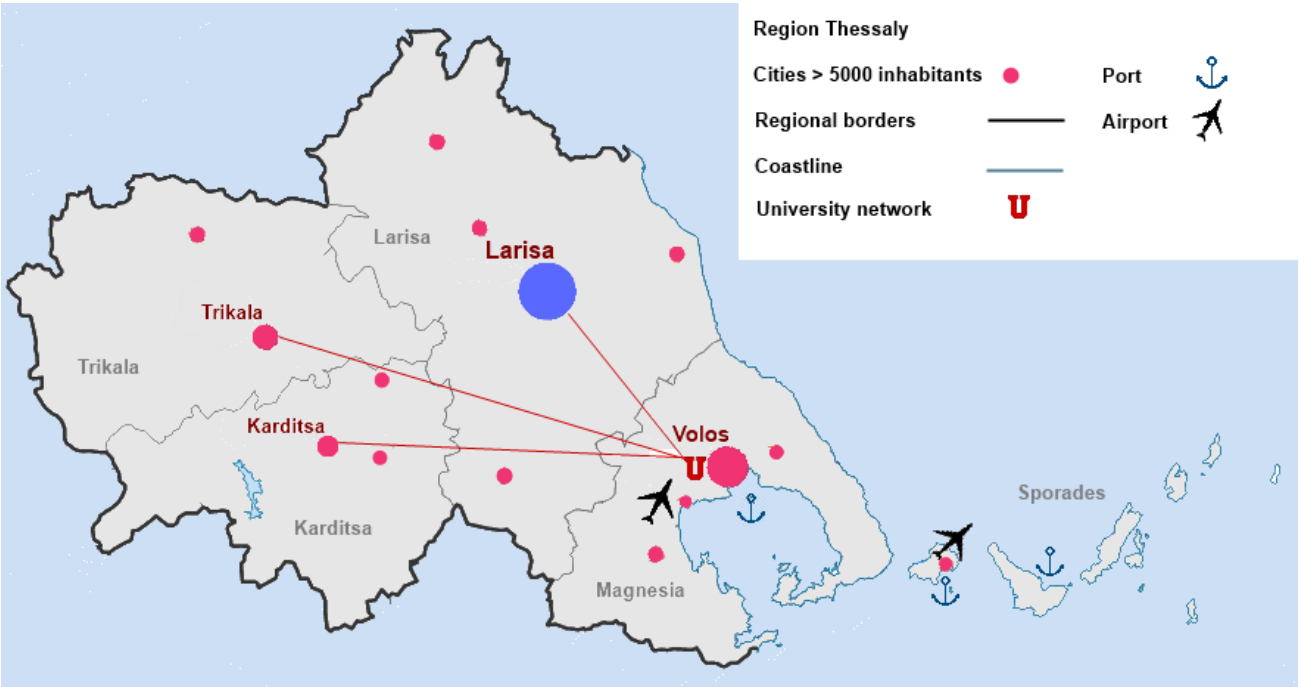


Figure 9: The Region of Thessaly
Source: Edited by the author

Regional Political Agenda and Attitude Towards Innovation

In Basse- Normandie

The Basse-Normandie region has identified innovation as an important element that promotes regional development, making it one of the top priorities in regional policy (Buyle-Bodin, Int. 2014; Gandon, Int. 2014).[12] This attitude is evident in the regional documentation and in the importance the administrative authority gives to innovation. Insights to that can be observed in the region's operational program for the ERDF fund 2007-2013, where from the four priority axes identified, the first one axe is focusing on innovation[13] (OPBN, 2012). Furthermore apart from the programmatic ground, the administrative authorities are actively involved in the innovation policy making.

"Innovation is definitely a priority for the region. Evidence comes from the fact that among the various committees with different responsibilities, the local elective representatives in the region are divided; the president of the region chooses to be responsible for the one dealing with research and innovation. So there is strong evidence that the region's authorities are very interested in innovation." (Buyle-Bodin, Int. 2014)

Although the region had developed a positive attitude towards innovation early enough, two external factors reinforced this attitude the previous years. The first one is the European Commission. The dynamic developments and the increasing importance given to innovation by the EU, pushed the region to produce in 2008 the first "regional innovation strategy" (BNRIS3, 2014). The aim was to improve the competitiveness of the region and its companies, through innovation, better exploitation of research and knowledge-intensive procedures (SRI, 2009). This strategy's orientation emphasized on the region dynamics, specified the innovative sectors, concretized the regional innovation policies and set more focused targets. The second reason was the financial crisis. Innovation went up on the political agenda due to the crisis; the region perceived innovation as a way out of the economic recession and subsequently increased the interest and assistance to innovation activities.

"The regions understood that they can't do business as usual anymore and they had to be more innovative in order to create growth and jobs." (Buyle-Bodin, Int. 2014)

"The crisis enhanced the interest in innovation. Surprisingly the region responded well in the crisis. The attractiveness increased and we performed better than other French regions. The companies of course had more development problems than the public agencies. The regional authorities supported innovation during the crisis and maintained the funding level." (Lecoeur, Int. 2014)

[12] When interviewees' answers are used as references or quotes in this chapter, they are accompanied by the actor's surname and the indication "Int. 2014" (Surname, Int. 2014).

[13] 160 million Euros were absorbed by the 2007-2013 ERDF R&D targeting four measures towards R&D and innovation promotion: strengthen the regional strategy; make research a priority tool for improving the competitiveness of the regional economy; make businesses strongly committed to clustering activities in order to improve their visibility and effectiveness on the global economy; improve the performance of the regional economy by increasing the benefit deriving from the innovation strategy.

The creation of MIRIADE (Mission régionale pour l'Innovation et l'Action de Développement Economique) in 2007 is indicative of the importance given to innovation from the regional authorities. MIRIADE replaced an earlier, but not well structured, innovation agency in the region, becoming simultaneously an innovation and regional development agency. It is thus a regional agency, working on the promotion of innovation and this is the only case in France that the innovation agency is incorporated in the body of the region and is not an external agency or public-private partnership organization (Lecoeur, Int. 2014). MIRIADE aim is to support innovative projects, business development and R&D processes, using partially European funds, but mainly the economic resource is the regional financing (Lecoeur, Int. 2014; BNRIS3, 2014). The work undertaken mainly focus on: Promoting of the territory to attract investment funds; Informing local companies for the availability of EU funding opportunities and help them to access them; Fostering collaboration between industry and researchers and helping during the process of commercialization of an idea; Hosting or being a partner institution in INTERREG and other cooperation projects (Lecoeur, Int. 2014; BNRIS3, 2014).

A flagship project that MIRIADE organized and can sum up the above working fields, is the EU co-financed program called "BRIDGE project". The BRIDGE is a knowledge transfer and cooperation platform between French and British actors located in the Channel area. With focus on eco-technology and eco-materials it became the connective link for companies looking for partnerships to develop innovative R&D projects as well as an incubator for innovative start-ups in green technologies (Lecoeur, Int. 2014).

A supplementary action was the production of the first regional plan for higher education and research Schéma Régional de l'Enseignement Supérieur et de la Recherche (SRESR) on 2012 (RIS3, 2014). The four years plan aims to increase the access to higher education, improve the study conditions and support skills and lifelong education activities (SRESR, 2012). At the moment, following the EU requirements, the SmSp strategy document is being finalized. On the occasion of the creation of this strategy, various actors came together and based on the territorial potentials and resources, identified 5 main domains and 13 sub-domains of competitiveness where innovation efforts will be focused on (Lecoeur, Int. 2014) (figure 10).

In general Basse-Normandie is identified as a "knowledge follower" region, where the regional actors absorb and accumulate knowledge created elsewhere, and adjust it in their needs. However, there are sectors, in which the region is specialized. There is sufficient research efforts and new knowledge production concerning innovative application and products created for nuclear applications in cancer treatment, exploitation of marine-renewable energy and bio-products (Buyle-Bodin, Int. 2014).

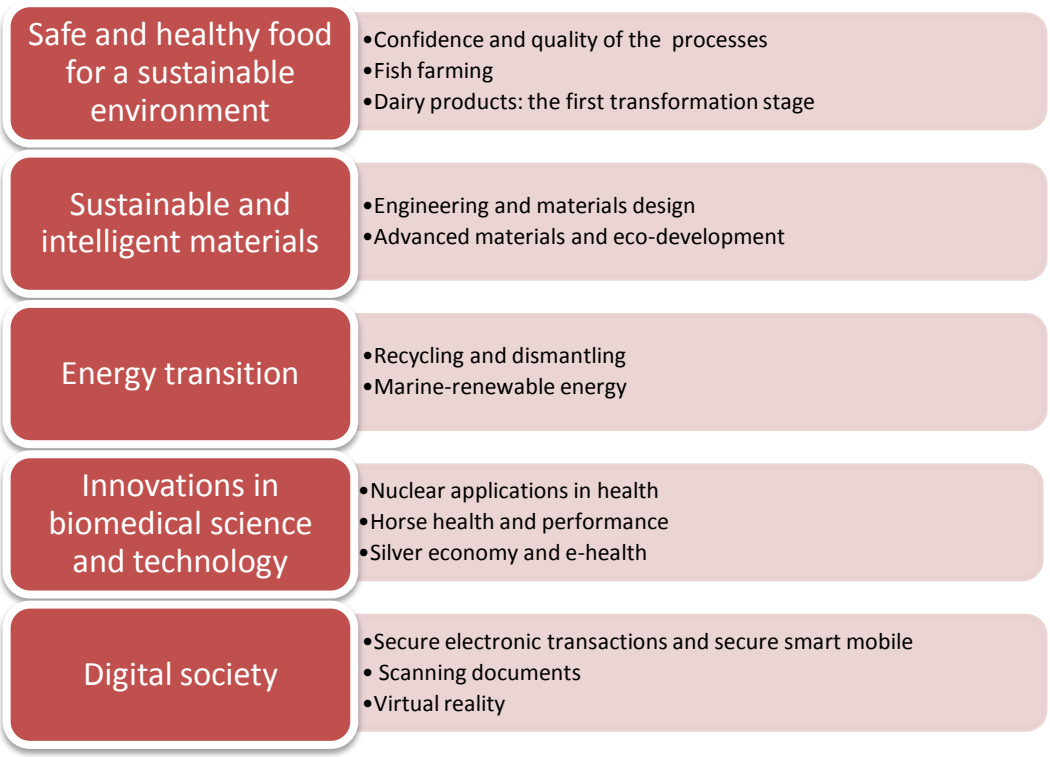


Figure 10: Main domains and sub-domains of innovation in Basse-Normandie
Source: (BNRIS3, 2014)/edited by the author

In Thessaly

Thessaly is a region with a peculiar attitude towards innovation. The area has the potential and a relevant to innovation tradition since many initiatives supporting innovation had occasionally started to develop; however, integrated innovation support systems have never been fully activated and exploited (Tolias, Int. 2014).

Since 1997, the region has taken part in a series of actions to promote innovation derived from various European programs (RIT 1994-1999, RIS Thessaly 1997-1998, RIS+ Thessaly 1999-2001, InnoRegio RECITE II 1999-2001 and INVENT 2002-2003) (Petrakos, 2009; THRIS3, 2014). These initiatives due to the lack of integrated development planning, narrow-minded funds absorption logic and mismanagement did not deliver the desired results. Such recent example was the "Regional Innovation Pole" of Thessaly. It was created during the 3rd Community Support Framework but lasted only for two years (2005-2006). It had a governance structure that is similar to the Regional Innovation Systems; but it was exclusively dependent on European funding. Consequently, when the funding ceased, all the mechanisms that had been created were immediately dissolved. (Tolias, Int. 2014)

"The regional innovation pole was substantially a failure; it worked only for two years but did not leave anything behind." (Kouretas, Int. 2014)

Despite the lack of a permanent structure to strategically support and manage innovation activities, innovation appears on the documentation as a priority for the region and key element for regional development. In the 2007-2013 regional operational programme concerning the cohesion funds, Innovation was referred as the third regional priority (OPTH, 2007). In the current program for the 2014-2020 period, strengthening research, technological development and innovation has become the first goal (RDP, 2013). However the general environment and the previous experiences do not allow optimism for materialization in actions of what is mentioned in the official documentation.

"If you read and hear the plans innovation seems a top priority for the region, but in reality is more talking than actually acting." (Tolias, Int. 2014)

The European Union through its programs and structural funds seems to be the only motive that pushes the regional actors to get involved with innovation. In spite of the apparent failure of the previous programs to establish an innovative environment in the region, these initiatives left an inheritance by creating relationships among people and an unofficial network of actors that now start to operate towards innovation promotion. The regional council, under the pressure of the EU SmSp strategy and after a bottom-up proposal, adopted in 2013 an initiative for the creation of a "regional council for innovation". The SmSp RIS3 strategy is currently being produced and is based on attempts of individuals involved in the regional council, university professors, individuals and researchers who worked on a voluntarily basis.

"For example with the RIS3 process, until this moment, regional authorities are struggling to be part of that. We set up a team, mainly formed from people working on the private sector or the university and prepared it ourselves. It is a totally bottom-up process. The regional innovation council was the impetus to start this work and where this network of people started. We work for them and a lot of people do it on a voluntary basis." (Tolias, Int. 2014)

This RIS3 document is the first comprehensive plan for innovation in the region and after public consultation is expected to be approved and officially adopted. A balanced and realistic assessment of the current situation in the region has been conducted. The strategy proposed is focused around two main axes for innovation activities, according to the production base and research capacity of the region (figure 11) and tries to serve as a base for the creation of a coherent regional innovation system.

"We use the OECD typology for regional innovation policy. We identify ourselves as a primary sector intensive region with low potential influence on the framework conditions. We try to create a "catching up" strategy. We try to follow the developments, not to copy but to enter the innovation game somehow." (Tolias, Int. 2014)

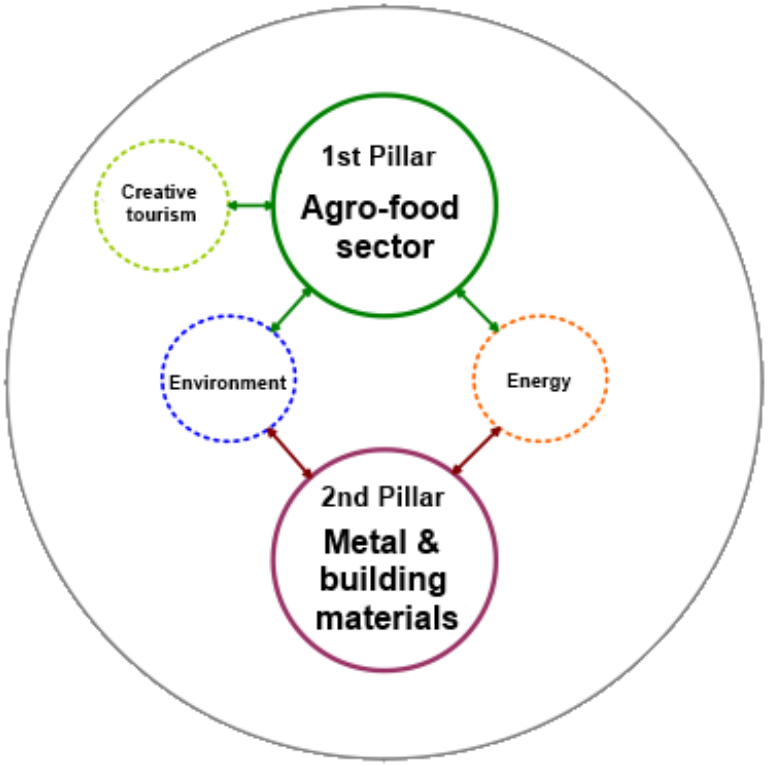


Figure 11: Basic pillars of innovation strategy, in Thessaly
Source: (THRIS3, 2014)/ edited by the author

Governance Capacity

In Basse- Normandie

In Basse-Normandie the innovative actors are divided into four main groups. 1) The actors involved in the funding and development of innovation strategies (like the region, the EU or the state). 2) The actors dedicated in technology transfer and development of innovation (like MIRIADE, the competitive poles, the startup business incubator and the development agencies). 3) The higher education institutions, (mainly the Caen University and the engineering college) and public or private research centers. 4) The companies and industries operating in the region. (BNRIS3, 2014) However, despite the large number of actors involved in technology transfer and innovation processes, there has been recognized a problem in knowledge exploitation and commercialization of research. There is a low rate of new innovative start-ups and the development of the existing companies is not focused on innovative products and procedures. (BNRIS3, 2014; Buyle-Bodin, Int. 2014)

The region is in a transitional period when it comes to strategy and innovation policies design. The region had already the competence to design such strategies but only as part of local development plans. Regarding the region's development planning within EU initiatives, the state was responsible for setting the priorities

and directions so far. Until the 2007-2013 programming period it was the French state that had the dominant responsibility for drafting the documents and design development strategies. For the forthcoming period however, the region will be responsible and autonomous to do so and the links with the state or EU authorities will only influence individual projects and not the strategy's direction (Buyle-Bodin, Int. 2014). That creates a challenge and an opportunity for the region. The challenge refers to the regional authorities that undertake such responsibilities for first time. Even though the regional authorities are competent and have skilled personnel to respond to this challenge, failures or delays in planning might come up (Buyle-Bodin, Int. 2014; Gandon, Int. 2014). The opportunity is the possibility to define the goals according to the territory's needs and avoid the mismatches of the previous periods. By design the operational programs the region can direct the funding more effectively towards local priorities (Gandon, Int. 2014).

"That is a revolution for the French governance reality because the state used to be too centralized, but also it is a bit dangerous. This is a big change and I am not sure that we are ready. It is a big responsibility, if there are problems it will be very difficult to manage." (Gandon, Int. 2014)

During this design process the regional authorities have the leading role, a generally top-down approach is followed, but many of the stakeholders in the region express their opinion and contribute (Buyle-Bodin, Int. 2014). MIRIADE is a key actor in this, since the agency has the adequate knowledge and experience to stress the thematic that need more attention. The other stakeholders' are part of a network that cooperates with the authorities and their participation on the strategy's design plays a practical role connected to EU funding. Since, by taking part in the process the innovative actors ensure that the direction of the funding allocation will be aligned with their own goals (Gandon, Int. 2014).

"In strategy design there is cooperation with university departments, economic agencies and the authorities and cooperation is a key to succeed and become more competitive." (Lecoeur, Int. 2014)

"The strategy is the main element that directs funding and if the stakeholders ask for funding they have to be aligned with the strategy. That's why they take part in the priorities' setting. There is cooperation and we must work together. We work with university and MIRIADE mostly to design the strategy." (Gandon, Int. 2014)

Although the money deriving from European funds are not the primary source of funding for the region, they consist an important part of the regional budget (Gandon, Int. 2014). For the ongoing EU programming period, Basse –Normandie changes status in the cohesion policy funding allocation system. The region moved from the most developed regions category "competitiveness and employment regions" to the regions that are in a transition face, gaining access to more EU funds. It was one of the ten French regions where this change occurred; and that reflects the region's power and capacity to intervene on the negotiation process since it was more a political decision than an actual criteria based one (Gandon, Int. 2014; Buyle-Bodin, Int. 2014).

"This office was really involved in the discussion and lobbying procedures with EU and paved the way for this change. It was not a crisis effect. But it is based also in some facts; Basse-Normandy is not a wealth region but not a poor one too. So the region is in a middle situation. But obviously it was more a political choice." (Buyle-Bodin, Int. 2014)

"There was political intervention. The region lobbied successfully about that. The funding tools are not enough, there were not enough regional categories and it was not precise for Basse-Normandie to be in the developed regions. Now it is in a better position and can attract more funds." (Gandon, Int. 2014)

In Thessaly

Given the low participation of private firms in R&D and innovative activities in the region the main actors affecting the innovative environment are few in number and mostly public. The greater contribution is been made by the "University of Thessaly" and the "Technological Educational Institute". These institutions cover many research fields and have branches in the capitals of the four region's departments. There is also the "Institute of research and technology Thessaly", a research center part of the "National Center for Research and Technological Development". Beside the fact that employs a small number of researchers it presents significant research results. Furthermore, there are research structures set up by the ministry of agricultural development, but the last years due to funding problems they have been marginalized. (Tolias, Int. 2014) However, due to lack of central planning there are no intermediaries to support and link these actors (Kouretas, Int. 2014).

After the regionalization reform in 2011 the regions are responsible for producing local development strategies and policies. However the region is not yet able to design and produce comprehensive development proposals incorporating innovation as a key element. One reason is the financial aid through the cohesion fund in which has been given great importance. There is high dependence on the regional development planning by the EU since the whole design philosophy so far is based on the attraction of European funding (Tolias, Int. 2014). In addition, the regional authorities focus their attention on the funds absorption route and not the proper distribution process. Hence, the funds mismanagement does not lead to the creation of goodwill and a more sustainable development model for the region. (Kouretas, Int. 2014)

"The regionalization in theory can enhance the production of coherent development policies. It can enable the region in a process to do a stand-alone development design. But in this economic environment we need to take advantage of our advantages, to work on the disadvantages, to create our strategies and promote the region like running a private company. If you do not do it this way you will fail. And I am not optimistic at the moment". (Kouretas, Int. 2014)

Moreover, despite the regionalization process the state remains highly centralized and the region lacks the legislative capacity to make changes that will affect the general economic environment. That complicates the development planning process and reduces the expectations for successful implementation.

"The regionalization creates structures for designing regional policies like innovation. However, the major issue is that most of the things that affect the framework conditions are designed or implemented on national level." (Tolias, Int. 2014)

Furthermore, the production process of the RIS3 strategy has indicated communication problems among the actors. First of all there are internal problems since the actors designing the regional innovation strategy don't have direct feedback from the regional authorities that hold a passive role in the process (Tolias, Int. 2014). Communication shortage also exists in the external relations of the region, as there is no formal relationship with other state or European regions, and government agencies concerning innovation. This lack of communication stands as an obstacle in the development process and creates disharmony which is evident by the great contrast between the development objectives of country, the requirements of the local market and research efforts of universities (Tolias, Int. 2014).

"The communication is problematic. For example for the RIS3 design we talk directly with the Prefect and the managing authority but there are difficulties in the communication. They consider that the RIS3 is an obligation that must be done so the operational programme to be accepted by the DG Regio and unlock the European funds. It's like a duty and nothing more." (Tolias, Int. 2014)

Given the aforementioned circumstances and the fact that the governance structures of the region are relatively new (the region was established in 2011) a lack in capacity of the regional authorities to support innovation is recognized.

"The authorities realize that something must be done for the innovation in Thessaly but they cannot take initiatives. Nobody knows what goals ones need to set. They have a picture, they know that it's good but they don't operationalize this perception." (Tolias, Int. 2014)

"There people concerned about innovation but the point is that the authority must create an appropriate management unit to drive the processes." (Kouretas, Int. 2014)

The new RIS3 SmSp strategy is an opportunity for the region to change this behavior. The objectives and parameters of RIS3 connect funding with the results and the performance. That can lead to more reasonable investment plans, incorporating innovation and generating development results. Additionally, it contributes to the increase of local interests for innovation. It restores the debate around innovation in the region, moving it away from the academia or large businesses, to the local administration and small-medium size businesses that will be forced to take part in an alternative thinking process in order to gain access to funding.

"Now the new logic of RIS3 makes the authorities to think and to set quantitative targets. The RIS3 logic is an application of the north-European model in the Southern Europe particularities." (Tolias, Int. 2014)

General Socio-Economic Context

In Basse- Normandie

The economic crisis and the long lasting recovery process that continues until today, in conjunction with the characteristics of the area have been affecting the innovative environment in the region (OPBN, 2013). The financial crisis has left a vulnerable, fragile economic environment. The region's small and medium size enterprises hesitate to invest on research and innovative activities, unlike the public agencies that kept their funding level (Lecoeur, Int. 2014). Also in terms of human resources the companies' size do not allow them to offer competitive remuneration packages to attract talents from other parts of the country or the world, while there is demographic and youth emigration problem (Buyle-Bodin, Int. 2014).

"One of the main threats that the region faces is the migration of youth. The younger population, after completing their studies, moves to other areas, mainly Paris, causing the region to lose skilled and high quality manpower. In combination with the low access to higher education rate, undermines the region's long-term ability to be innovative." (Gandon, Int. 2014)

A drawback for the regional development planning is that most of the major industries operating in the region are offshoots of national or multinational companies, and do not have their headquarters in the region. As a result the region cannot directly affect their decisions making process and investment plans (BNRIS3, 2014). However in order to create alliances the region has developed an extensive network of cooperation with other regions. The poles of competitiveness and specialization constituted involve companies also from the neighboring regions. Through mainly European programs, many synergies have been established with various regions in Europe, enhancing the exchange of good practices (Gandon, Int. 2014).

"Basse-Normandy is an innovative region but it is a small region. Sometimes it is difficult to find the critical mass to develop innovative activities. So that's why we have links with other regions in France to cooperate. Like Brittany, Pays de la Loire, Upper-Normandy etc." (Buyle-Bodin, Int. 2014)

Special emphasis is placed on exploiting renewable energy sources and the development of the "Atlantic power cluster". It is a cluster promoting research and investments in marine renewable energy, where regions from five countries facing the Atlantic (France, Spain, UK and Ireland Portugal) take part. Nevertheless, there one can identify the boundaries of these networking systems. The regions and companies interact and cooperate but see each other as competitors. It is difficult to balance the relations of cooperation and competition and there is a mix in the communication among the actors with others being more open and others more secretive.

"With the other regions we are both partners and competitors. For example with Bretagne that we work together for marine renewable energy; on the one hand there are partnerships, the universities and testing

sites work together and from the other hand there is competition because we try to attract companies and investment and they try to do the same so…" (Buyle-Bodin, Int. 2014)

"We cooperate with other regions; we have partnerships for some projects with other regions in France and Europe. Of course, we cooperate up to a point but then there is competition." (Lecoeur, Int. 2014)

In Thessaly

The economic crisis has deeply affected the region. There was a sharp decline in employment, production and consumption and this aggravate the already negative environment for innovation. There was a low R&D expenditure rate that was further limited during the crisis (THRIS3, 2014). There is limited product-innovation performance and mostly all the efforts focus on non-technological, marketing innovation. This is mainly due to the region's economic structure, which is based in traditional economic sectors and the existing conservative, risk averse culture, formulated by the socio-demographic characteristics (Tolias, Int. 2014).

"The main challenge is to make innovation diffusion. In the region there is limited innovative culture and people have to be convinced to be more innovative and learn how and what to do. There is a very low percentage of the private sector that spends money on R&D." (Tolias, Int. 2014)

The innovative environment in the region is limited. There is a lack of innovative culture that can be seen in various actors in the area. The administrative authorities show no intention to implement institutional innovations; the university research is not being commercialized sufficiently; and the most economic actors in the area seek for readymade solutions to their problems.

"An obstacle is the local market attitude that does not want to by the know-how but readymade solutions." (Tolias, Int. 2014)

Furthermore, the region remains totally dependent on EU funds. The already limited national resources attributed to innovation have been further decreased during the economic recession. So the EU cohesion fund and the sectoral programs stand as the only resources. Thessaly belongs to the less developed regions group of the cohesion policy budget and the economic support for the forthcoming period will remain in high level. However a large part of the funds is still allocated at hard infrastructure works and there is not yet evidence of the percentage of the distribution that will be directed to support innovation.

"There are not other resources besides the EU funds. And even those for the new programming period are in stake." (Kouretas, Int. 2014)

A positive dynamic triggered by the crisis is the shift of the emigration flow. In the past the younger, more skilled and educated people left the region attracted by large urban centers. However now, there is a returning trend that partially revitalizes the local economy. This social group can constitute the basis which will support the development of innovation, as they are people more receptive to change.

"The crisis also created a positive impact, more and more young people come back to the region from Athens or Thessaloniki and start to revitalize the local economy especially on the primary sector. The problem in this sector is the large land owners that are usually old and it is not easy to change their attitude". (Tolias, Int. 2014)

Synopsis

The authorities in Basse-Normandy realized early enough that innovation can be a guide for the region's development policy. They have a systemic approach and exploit regional and European funds for the establishment of structures to support innovation. An integrated innovation strategy has been developed, establishing specific policies and fields of action. The regional government is interested in the innovation issue, has knowledge and ability to design innovation policies and plans. The additional responsibilities that have been assigned to the region for the design of the operational programme are seen as a challenge and opportunity simultaneously for more integrated development planning.

The design focuses on the exploitation of local advantages such as nuclear power and renewable energy and the primary sector's products. The problems faced are focused on the THM model operation and mainly on the transfer of research from universities to the market. The lack of data for innovation indicators and quantitative targets to evaluate the performance of these efforts is an obstacle that will be tackled through the RIS3 strategy initiatives. The inability to attract specialized labor force in the region, the youth migration and the aging population are the main identified threats for the region's capacity to innovate.

The crisis, despite worsening the economic environment, did not affect the design of innovation policies since the innovation support structures were created and staffed before the crisis, when the region continued to fund smoothly these structures, and research and development projects. The non public actors though, faced problems and reduced their investments in R&D, but did not change the positive attitude they had towards innovation.

In Thessaly there is an abnormal environment for innovation. Although the need for innovation is recognized in theory, stagnation is observed in the field. There are many problems, starting with the lack of formal and unified structures that could organize the various actors and reorganize the spatial and sectoral innovation priorities. In parallel a major problem perceived is the lack of innovation culture. This is observed in all the different tiers and actors' categories, from the regional government to the universities and individuals. This is evident in the way the past programs promoting innovation were handled; which remained virtually untapped and did not give the impetus to design and implement further actions.

We assess that the economic crisis is an opportunity to reverse this environment. It contributes to a reversal of the demographic trends in the region. The young people returning to their place of origin are ready to take risks and try new ideas. The large industrial players, mainly in the metal industry and food processing,

move to the same direction. While it made the university to acquire a more active role, seeking opportunities and activating informal networks of people with skills and knowledge that are ready to contribute.

Hence, by making an estimate, we observe that we are in a time period where there is room for reversing this situation. In conjunction with the above, there is accumulation of experience after the first four years of the establishment of regional governance structure and increased responsibilities with regard to development planning; and the new SmSp logic imposed by the EU and the funding opportunities that are connected to the RIS3. These elements can be the basis for a regional innovation system and support the practical implementation of the objectives set by the region.

6. Discussion

Within the global economic environment of the increased competition among companies and states, innovation has been considered as an important factor contributing to value creation and growth. In the European Union various policies and actions have been developed over time to strengthen the innovation environment in the Union. From 2000 onwards, innovation has gained a central position in the development strategy of the EU while constantly earning larger share of the investment budget.

In this thesis we wondered whether innovation has earned a place among the local politics and we questioned the sustainability of the process and EU's contribution in the development of regional innovation strategies. Assuming that European regions have already been actively involved in a process of integrating innovation in their regional policies, we considered that the way in which each region faces innovation is different and depends on three main elements: the regional governance capacity, the political agenda and attitude towards innovation and the general socio-economic context.

This hypothesis has been confirmed on the two case studies that we worked on. A basic methodological choice that led us was to give special weight to the opinions of people involved in planning for innovation at the regional level, in order to understand what happens behind the image that can be created by formal plans and documents.

Hence, regarding the first research question, we observe that the theoretical debate on innovation has opened for the European regions, but the practical approach, policies and actions vary significantly. We noticed that the integration of innovation in regional policy can be actual or ostensible depending on many parameters in local level: The ability and willingness of the regional authorities; the power to negotiate, plan and be financially independent; the way of handling the European guidelines and actions; the behavior and attitude of individuals, private companies and the academic and research community towards innovation; as

well as changes in the economic environment that create social threats or opportunities transforming the territory's potential to innovate.

In Basse-Normandie we observe a match between theory and practice, in the planning processes, the difficulties and challenges faced, the targets' set etc. Furthermore, the way in which innovation is incorporated in regional policies and priorities, allows us to state that the region efforts to create an innovative environment moves into a sustainable direction.

In Thessaly there is a peculiar situation that prima facie can't be described as sustainable integration of innovation in regional policies. There is a denial towards innovation and a lack of basic elements. However the fact that there is a critical mass, that despite the objective difficulties, tries to change this environment and that these bottom-up processes find a response by the administration, is itself an innovation. Hence, if the proposed actions are implemented successfully, then a sustainable incorporation will be possible.

Concerning the second research question, the EU's role in the process of integrating innovation in the regions was examined. We note that the influence and dependence on the European Union is too big despite the different intensity in each case. In one case it is complementary and supportive in terms of finance and policy agenda formation. While in the other, is the driving force for turning the direction of the development planning towards innovation and the only substantial source of funding. The emergence of innovation as a central strategy of the EU consists in both cases an opportunity either for further development of the innovation system or for the creation of one.

Although a bigger sample of regions would be needed to reach to safe conclusions, we believe that the selected cases of study can be representative, reflecting the current situation in many regions across Europe, leaving aside regions that are in a special situation, like capital regions. The Basse-Normandie case is closer to the north European model and Thessaly to the south-eastern reality.

The convergence of these two patterns is desirable by the EU policy. Since we are in a transitional period between the development planning programs, the coming years will clarify the situation regarding the actual place of innovation in regional policy. Especially for the innovation lagging regions (like Thessaly) it will demonstrate if innovation will be integrated in their policies or it will be just used as a buzz word from the policy makers. In that case, these regions will continue to lose competitiveness and diverge no matter the extent of the EU support, leading to the consolidation of the two-speed Europe.

7. Conclusion

In the recent decades the discussion about innovation has become a global trend since innovation is regarded as a key element for development. The EU regional policy could not be out of this and in fact has made a turn towards innovation, which is now a top priority. At the same time, the institutional evolution of the regions emerged and now it's up to them to incorporate innovation in their development plans.

In this thesis we investigated the parallel relationships created between innovation, the EU and its regions and questioned both the way innovation is being integrated in regional policies and the EU's role in this process. We observed that the regions identify innovation as one of their main priorities. This behavior is widespread no matter the context (national, economic, social etc.) or the reason towards this attitude (EU or own initiative). That suggests that in Europe, the knowledge based economy concept is fully adopted and the neoliberal approach to development, where national and EU economies are integrated into the world economy, creating links and constant competitiveness, prevails. As a consequence, the regions, as territorial and administrative entities, become part of this situation. Even the ones that seemingly are not involved in this reality; it is due to practical reasons (lack of autonomy, resources and capacity) and not due to ideological or alternative development strategies.

The regions' fate is to follow this constant competition's developmental model and through the pursuit of means, such as investing in innovation, to promote regional growth. Therefore, the way and the speed (in reality, not in a programmatic level) by which innovation is incorporated in regional policies, will play a key role in the position the region will occupy in the global competition. The following years the regional authorities and institutions will test the limits of their regional development models and what investing and planning for innovation will offer them. The EU provides them a tool and guidelines via the SmSp strategy. The exploitation of this, except from an opportunity for guidance, especially for the least innovative regions, is a necessity to access the European funds. The current decade EU makes a great investment in innovation and the overall success of this process will determine much about the future of the European economy and EU cohesion policy. A possible second major targets' deviation in 2020, after the last decade's one, will trigger developments.

The regional development planning usually coincides with the EU's one. Hence, at this point a series of questions may arise concerning the European regional policy and the regions themselves. Can innovation be the solution to Europe's major problems (unemployment, recession etc.)? Are the 2020 strategy goals achievable? Can the cohesion and innovation objectives be compatible or intra-European competition will intensify the disparities? Is the emphasis on innovation enough, to curb the constantly growing competition from the emerging economies? And finally, can this innovation hunting lead to real growth for regions? Maybe there are too many resources devoted to innovation, leaving traditional development models aside

while for some types of regions it would be better to avoid such behavior.

This research is a contribution to this debate by answering and asking questions. These questions will be answered the following years by the reality. Within this, it would be interesting at the end of the next programming period to return to the cases studied, to observe their progress and look at the performance of their policies and strategies. And this time, it could be done both in qualitative and quantitative level, since a series of quantitative targets are set by the regions considering EU's 2020 goals.

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Appendix

1. Innovation indicators used by EU

The EU developed an indicator system to measure innovation performance based on three main types of indicators and 8 innovation dimensions. The three types, enablers, firm activities and outputs concerns innovation drivers of the external environment, innovation efforts of firms and the final outcomes of the innovation process respectively. The sources of data for the indicators calculations acquired by the following agencies and organizations: Eurostat, Office for Harmonization in the Internal Market, United Nations Comtrade database, Eurostat Community Innovation Survey (CIS), OECD, CWTS Journal Indicators (Thomson Reuters), Science-Metrix (Scopus).

Table 4: Types of Innovation Indicators used by EU
Source: Innovation Union Scoreboard 2014, Authors' elaboration

Types of Innovation Indicators used by EU							
Enablers			**Firm Activities**			**Outputs**	
Innovation Dimensions							
Human resources	**Open, excellent & attractive research systems**	**Finance and support**	**Firm investments**	**Linkages & entrepreneurship**	**Intellectual Assets**	**Innovators**	**Economic effects**
New doctorate graduates	International scientific co-publications	R&D expenditure in the public sector	R&D expenditure in the business sector	SMEs innovating in-house	PCT patent applications	SMEs introducing product or process innovations	Employment in knowledge-intensive activities
Population completed tertiary education	Scientific publications among top 10% most cited	Venture capital investments	Non-R&D innovation expenditure	Innovative SMEs collaborating with others	PCT patent applications in societal challenges	SMEs introducing marketing/organisational innovations	Contribution MHT product exports to trade balance
Youth with upper secondary level education	Non-EU doctorate students			Public-private co-publications	Community trademarks	Fast-growing innovative firms	Knowledge-intensive services exports
					Community designs		Sales of new to market and new to firm innovations
							License and patent revenues from abroad

2. Regional innovation patterns in EU

The map produced by the ESPON KIT project identifies the variety of innovation patterns across the union stressing their different characteristics without stating if there is a preferable one.

As noted in the (ESPON 2012) the patterns identified are:

- 'European science-based area' describes regions, which are strong in producing knowledge and innovation in the field of general purpose technology. They have high R&D endowment and science-based local knowledge, and a high degree of knowledge coming from regions with a similar knowledge base. These regions are mostly located in Germany, with the addition of Vienna, Brussels, and Southern Denmark;
- 'Applied science area' comprises regions which are strong in knowledge production, R&D and applied science, with a high degree of knowledge coming from regions with a similar knowledge base. This type of regions is mostly located in central and northern Europe, namely in Austria, Belgium, Luxembourg, Switzerland, Germany, Estonia and some capital regions in other countries;
- 'Smart technological application area' characterises regions with both high product innovation rates and creativity, which helps to translate external basic science and applied science knowledge into innovation. They have a limited degree of local applied science and R&D endowment. This group includes mostly agglomerations in EU15, such as the Northern parts of Spain, Northern Italy, the French Alpine regions, the Netherlands, Czech Republic, Sweden and the UK;
- 'Smart and creative diversification area' describes regions with low degrees of local diversified applied knowledge and internal innovation capacity. At the same time, they have high degrees of local skills, creativity and entrepreneurship, also drawing external knowledge. These regions are mainly located in Mediterranean countries, but also in Eastern Europe, including Slovakia, Slovenia, Poland and Czech Republic;
- 'Imitation area' comprises regions with low knowledge and innovation intensity, entrepreneurship, and creativity. However, they have high attractiveness and innovation potentials. Most of these regions are located in newer EU Member States, such as Bulgaria, Hungary, Latvia, Malta, but also in several regions of Italy, Poland, Romania, and Slovakia

3. Questionnaire layout

The purpose of this questionnaire was to be used as a guide during the interviews. The questionnaire is aligned with the five main pillars recognized during the first part of the thesis, as the elements that affect the process of incorporation innovation in regional priorities (see table1). The structure was not strictly followed during the interviews process, but in the flow of speech of the interviewees, most of these questions were answered. Parts of the interviewees' answers were transcripted and directly shown on the cases of study analysis. This technique used to directly support the analysis and give to the reader the opportunity to first hand understand the actors' interviewed opinion and the current situation. The full interviews transcripts are available on the CD attached to this thesis.

Identifying the priorities of the region

- Is innovation a top priority for the region?
- Do you consider that the region is an innovative region?
- In which types of innovation is the region specialized?
- Which are considered to be the strengths of the region that should be developed?
- Are you satisfied with the innovative performance of the region so far?
- The economic crisis has strengthened or weakened the interest of the region for innovation?

Planning

- Is there strategic planning at the district regional level for innovation? (Since when, what kind, etc.)
- Is the regions autonomous in the planning or affected (and to what extent) by the European Union and the national innovation system?
- Is there mechanism for collecting data connected to innovation indicators?
- How "informed" are the regional actors for the effects of innovation on economic growth?

Governance

- Which are the actors dealing with innovation in the region (public, private, universities, etc.)?
- Is there cooperation between them?
- Is there cooperation between different levels of government in innovation? (Local, national, European)
- Are there synergies between public and private sector in the region for innovation?
- Are there procedures for the participation of private actors (business) or citizens in the decision-making process for innovation policies?
- Is there any strategic cooperation with other regions within and outside the country? Do you consider them partners or competitors?
- Do you consider that the Regionalization process contribute to the development of more coherent policies for the development of the region?

Management

- Which are the main problems that the region faces and serve as barriers to the development of innovative policies?
- Are there sufficient resources (administrative financial, etc.), in order to: a) develop innovation policies b) to implement them?
- Are there systems that take advantage of the knowledge produced in the region creating surplus value?
- Are there systems to monitor international developments and inform local agencies for investment opportunities and ways to benefit from new technology and know-how?

EU influence

- How important is the EU funding for innovation and research, disbursed through ERDF and other sources to the region?
- The involvement of local authorities in the design of operational programs benefited the region or caused problems?
- Which are the challenges set by the SmSp regional innovation strategy?
- How aware are the actors in the region for the availability of EU funds and how ready are they to absorb them?

4. Countries' statistical symbols used at the graphs

Austria (AT), Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Croatia (HR), Cyprus (CY), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), the Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Spain (ES), Sweden (SE), Slovak Republic (SK), Slovenia (SI), the United Kingdom (UK).