Understanding the role of ideologically driven ideas in the definition of public policies: a case study of the Catalan National Agreement for Research and Innovation (CNARI)

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Abstract
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Understanding the role of ideologically driven ideas in the definition of public policies: a case study of the Catalan National Agreement for Research and Innovation (CNARI) March 2016

This dissertation explores the role of ideas, paradigms and ideology in the definition of public policies. To understand this issue, the thesis developed a conceptual framework and a set of propositions based on the academic literature related to the meaning of ideas and paradigm change in public policy, the impact of epistemic communities, the influence of legacies and the role of ideology from the perspective of the socio-cognitive school of Critical Discourse Analysis. In this dissertation ideology is understood as the ‘fundamental beliefs of a group and its members’ (Van Dijk, 2004: 6) that form the basis of social practices (Van Dijk, 2004: 9) whereas paradigms have been defined as ‘taken for granted world views (…) that constrain the range of policy choices’ (Campbell, 2002: 21) and in turn are bounded by ideology. The research examines the case of the Catalan National Agreement on Research and Innovation (CNARI) which was developed between 2007 and 2008. To capture and analyse this process of policy design the research uses qualitative methods that include face to face interviews, documentary research and coding of visual and textual data.

The findings suggest that the design of the CNARI was based on ideas that were firmly placed within a widely acknowledged overall paradigm in innovation policy that itself was shaped and limited by a dominant broader ideology. Factors influencing the role of these ideas included the fact that the underlying paradigm was widely shared across different political territories and levels within Europe, and that the ideas were propagated by two key international organisations (EU and OECD) as well as by a number of highly respected representatives of the international epistemic community, which served to re-enforce the overarching policy paradigm, introduced these policy ideas to the Catalan context, and supported their regional adaptation.

The dissertation identifies three proposals for future research: 1) an examination of the role of organisational structures in elaborating and implementing policy which does not involve civil servants, 2) an exploration of how a politician’s personal experience impacts the elaboration of a political programme, and 3) an analysis of the role of open and participatory processes to define policies.
I declare that that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Finally, I would like to express that this dissertation is not only a result of my interest in public policy and politics, it is also meant as my personal (though small) tribute to Catalonia and its people.
1 Introduction

1.1 Introduction to the research objectives

The political system and public policies are defined and influenced by ideologically driven ideas (termed ‘ideas’ from now on). In other words, without these types of ideas policies would not exist. The role of ideas in the development of public policy is essential to understanding how governments work and why policymakers defend one set of policies instead of another, or how politicians decide which policies are best for society or more attractive to the electorate (Edler, 2003). This research contributes to the academic discussion of the definition of public policy. It does this by focusing on how change in public policy is limited as a consequence of ideology (Campbell, 2002; Van Dijk, 1993, 1998); epistemic communities (Skowronek, 1982; Eisenhardt, 1989); and the interest of politicians in having their political agenda implemented (Hall, 1993).

Pursuing this objective, the dissertation examines these dynamics (the interrelation of ideology, epistemic communities and the implementation of political agendas) in the definition of recent innovation policy in Catalonia (2007-2008). Innovation policy is a recently developed public policy that has interdepartmental actions (Westmore, 2013: 10) and is closely related to contemporary discussions such as globalisation, competitiveness, economic production and growth (Mytelka and Farinelli, 2000), and holds a positive imaginary in the public mind (Howell, 2005: 1221-1223; Sum, 2009).

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1 This (the development of the Catalan National Agreement Research and Innovation – CNARI) is the latest exercise in innovation policy definition in Catalonia (as of 2010).
An examination of innovation policy is well suited to the task of understanding the role of ideologically driven ideas in the recent definition of public policies. Innovation policy is an area that feeds from market-oriented concepts (such as technological change), focuses on specialised skills that only a small part of the working population possess, and assumes that open markets, globalisation and international competition are beneficial.

Spatial or contextual conditions are crucial in the development of innovation processes and policy. A school of literature has identified the region as an important level for the development of economic growth, competitiveness and innovation (Asheim et al., 2003; Cooke, 2001; Morgan, 1997). Academics have identified cultural, physical, social, economic and political factors as crucial elements to a region’s receptiveness to the promotion of innovation (Doloreux and Parto, 2004; OECD, 2001). This spatial unit has been termed Regional System of Innovation (RSI’s) (Cooke and Morgan, 1998). Catalonia, like many other regions and countries, has been persuaded that innovation is the key instrument to increase its competitiveness. Catalonia is considered an RSI (Doloreux and Parto 2004) and is the territorial focus of my research.

The theoretical literature offers many models to account for the speed of policy and paradigm change. For instance, incrementalism (Braybrooke and Lindblom, 1963: 93); garbage can model (Cohen, March and Olsen, 1972); rational choice (Eisendhardt and Zbaracki, 1992: 17) and others. Hall (1993) identifies three modes of policy change, among which first order (satisfying) or minimal change is considered predominant in
public policy. Hall also alludes to the influence of actors, mainly civil servants, in the elaboration of policy (1983).

In this study I analyse the influence of international experts in paradigm and policy change that I assume are bounded by ideologically driven ideas (Meyer et al., 1997; Weir and Skocpol, 1983).

Van Dijk (1984, 1993, 1998), whose research and perspective has been a major influence on this dissertation, links limited change with the role of experts in innovation policy. Ideology is essential for the social practices of groups of people. These ‘social practices’ are shared by means of discourse, and shape the individual’s acquisition of knowledge (Van Dijk, 2004: 9). If discourse is created by an individual or group of individuals that use specialised language founded on a concrete knowledge, this discourse bears a strong influence on society (Bergeron and Kopp, 2002). This research attempts to shed some light on this area.

The key objective of the research is to understand and explain the role of ideas in the definition of new research and innovation policies in Catalonia between 2007 and 2008. The research is underpinned by questions and propositions that stem from initial reflections on the academic literature, the media, professional experience and informal conversations with policy makers. The questions and propositions structure this document and its conceptual framework. Both the research questions and the initial propositions are presented below.
The research questions focus on understanding how and why change or lack of change occurs in Catalan innovation policy, and what is the role of ideology and epistemic communities in establishing this change/lack of change.

The propositions provide preliminary answers to the research questions by identifying possible causes that influence change/lack of change in Catalan innovation policy, including the role of discourse in shaping policy definition, the types of actors that participate in the process and the political and ideological factors involved in policy definition.

1.2 Overview of the conceptual framework

The conceptual framework is formed by four elements: ideology, paradigm, policy and political strategies. It observes two elements that shape the policy definition process: limited degree of change as a consequence of the boundaries imposed by discursive frames that are driven by an immutable ideology that affects paradigm and policy change, and applicability by the regional authorities of the policies and concepts proposed by international epistemic communities who are, in turn, bounded by ideology. It identifies three actors: international epistemic communities (OECD, EU); local epistemic communities (local stakeholders, policymakers); and politicians. The framework structures these elements into three levels:

- an international level where international epistemic communities (Eisenhardt, 1989), as a consequence of their reputation and expert knowledge on a topic,
propose high level policies and modify existing paradigms (Bergeron and Kopp, 2002)

- a regional level where the local epistemic communities, who are experts and policymakers (like the international epistemic communities) adapt proposals formulated by the international level by participating in the dissemination of the international level paradigm and policy discourse, or by participating in the policy definition process

- a political level, where politicians are involved in defining a political agenda that can guarantee them political wins (Campbell, 1995), which means ensuring the policy is framed within the boundaries of an existing ideology (Van Dijk, 2006: 115; Eyre and Suchman, 1996); that it respects local realities and powers; and that it follows past experiences (DiMaggio and Powell, 1983; Greenwood and Hinings, 1996; R Scott, 2014; W Scott, 1987; Hall, 1983: 53).

An illustration of my conceptual framework can be found below:
1.3 Structure of the dissertation

I will attempt to guide the reader progressively from the key concepts which lay the foundations of innovation policy (mainly economic growth), through the academic literature that forms the conceptual framework, to the methodological approach applied, followed by analysis and conclusions.

The dissertation begins by identifying and explaining the research questions and propositions (Chapter 2). This is followed by a description of the context that includes the essential elements that surround innovation policy (Chapter 3), such as economic growth, RSI’s, research and innovation policies, and how all these elements have been ingrained historically in Catalonia since 1994.
The literature review (Chapter 4) includes all the relevant academic sources that have been looked at to help define the research questions and propositions, and that have been used to capture the current status of the theoretical positions in the fields of innovation policy and systems, policy and paradigm change, and the socio-cognitive approach to Critical Discourse Analysis (that offers key insights into the formation and dissemination of ideologically driven ideas through discourse).

Having captured the literature and research trends in the key conceptual areas that are central to my research, I present my conceptual framework (Chapter 5). Here I describe the four elements of my framework, and consider the impact of these four elements on the policy definition process and the actors in that process.

The conceptual framework is followed by a description of the methodological approach (Chapter 6) including an explanation of why I have used a case study as my research strategy, why I have centred my research on qualitative data and what tools I have selected to process and analyse this data. I close the methodological section by gathering all of these components into my final research design.

The key section of the study is the analysis of the process and content analysis (Chapter 7). This chapter is essential for two reasons. First of all, it helps the reader understand the narrative of the case study, not only because it presents in a linear form the key moments and actors involved in the CNARI, but also because it presents the sources of the case study from a historical perspective, including their ideological foundations and
how their recent evolution matches the Catalan policy process. The second reason
Chapter 7 is important is that it presents the results of the analysis of the content of the
sources from the point of view of the conceptual framework. The analysis was
performed by combining the results of the process tracing and the coding. The analysis
is considered in the light of both the research questions and the assumptions. This in
turn leads to the conclusions (Chapter 8) which summarises the main results, modifies
the conceptual framework, identifies the contributions to the literature, defines
implications for policy making and proposes ideas for future research.
Objective

The objective of this research is to understand and explain the role of ideas in the definition of new research and innovation policies in Catalonia between 2007 and 2008.

The research is driven by a number of questions and a set of starting propositions that emerge from initial observations made from reading academic literature; observing the media; my own professional experience; and informal conversations with policymakers. The questions and propositions structure this document and its conceptual framework. Both the questions and propositions that are listed below have been presented in the introductory chapter.

My research questions are:

- What are the role and impact of ideas and ideology in shaping or limiting change in regional research and innovation policy in Catalonia?
- What are the role of international epistemic communities in the elaboration of regional research and innovation policy in Catalonia?
- What is the direction and degree of research and innovation policy change in Catalonia in the period under study?
- What drives this change in Catalonia?

The thesis builds on a starting proposition, namely: ideas are important determinants of policy.

- Ideas shape policies through discourse.
• Actors actively engaged in the policy discourse can be found at all levels.

• The degree to which ideas influence policy change at the regional level is limited by pre-existing dominant ideologies and their persistence.

• Research and innovation policy is affected by other political factors at the regional level.
3 Contextualizing the research

3.1 Economic growth, competitiveness and innovation\(^2\): dominant narratives

Growth, competitiveness and innovation have ceased to be specialised economic terms. More and more they are used by the media and in casual conversations. The logic of ‘the more you grow, the more competitive you are’ and ‘the more you innovate the better you are doing’ has been adopted as positive by the media. An example of this can be found in any major newspaper, where many articles related to the economy from 2008 onwards make it to the front cover or to the general section. A search for the term ‘growth’ in the Catalan edition of \textit{El Pais}\(^3\) found an article using this term every day or two days between 2010 and 2013.

This thesis believes that the interest in economic growth and competitiveness has caught the general interest since the 2008 financial crisis. In Catalonia, most of the economic topics that make it to the front cover of newspapers are related to the growth forecast for Catalonia, Spain or Europe. Readers are given figures from national, regional and international authorities, and industrial associations or professional services within corporations (banks\(^4\), consulting firms\(^5\) etc.). These authorities assess whether growth is positive, or when it will start to be positive. Normally, growth data is measured against other similar regional, national or continental information. This puts a territory in

\(^2\) Innovation is considered by the Oslo Manual as: ‘The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations’ (OECD and Eurostat 2005: 46). This is the standard concept of innovation used by the Catalan government.

\(^3\) www.elpais.com


\(^5\) Example, Deloitte Research: http://dupress.com/collection/economic-outlooks/
competition against others. Inevitably, the term *performance* appears: how well do we perform in comparison to others? Performance is often demonstrated by indicators that rank a region, country or continent higher or lower in a table (*Innovation Union Scoreboard, the OECD Global Innovation Index*\(^6\)). The essential message transmitted by these rankings is that the better you perform in comparison to others and in relation to the selected indicators, the more competitive you are, and the higher your chances of growing are. Many of these indicators include performance (in the area of innovation or creation of technology, or scientific output) as key markers of global competitiveness and sustainable growth (Mytelka and Farinelli, 2000; Paasi (2005)).

The previous paragraph describes the way the media reproduces the repeated discourses of policymakers, academia and others (Callaghan and Schnell, 2001). The media disseminate news through a dominant narrative that the public assimilate and often perpetuate uncritically in their social interaction. The general public has come to assume that growth, competitiveness and innovation are positive assets that follow as a consequence of government action (Howell, 2005: 1221-1223; Sum, 2009: Mytelka, 1999).

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3.2 The importance of RSI’s, economic growth and global competitiveness

Some commentators have described the virtuous circle of growth, competitiveness and innovation from a spatial perspective (Asheim et al., 2003; Cooke, 2001; Morgan, 1997). Defenders of this approach identify the region (identified by some as the territorial dimension below the national and above the local) as the level possessing the right ingredients for the development of innovation-based growth and competitiveness (Doloreux and Parto, 2005; OECD, 2001). Academics have identified proximity (cultural, physical, social, economic and political) as a crucial element that makes the region suitable for the promotion of innovation. Cooke et al. (1997) regard RSI’s (Regional Systems of Innovation) as the mechanism by which a collective and interactive process can lead to the contextualized creation of knowledge. As a consequence of spatial proximity, regions have the capacity to support transformative processes in the economy, markets or production (internally and externally) by firms, other organisations and individuals.

Doloreux and Parto, in line with Cooke et al., identify four key actors/functions within RSI’s. They are:

- **Firms**, and actors within firms, economic agents that create and extend knowledge
- **Public organisations**, essential in facilitating the diffusion, transfer and use of knowledge and technology
Knowledge infrastructures which include physical and organisational structures to promote technology and knowledge diffusion (Technology Transfer Centers, University Research Centers etc.)

Policies that improve and assist the interaction of the three previous elements (Doloreux and Parto 2004)

The combination of these four elements can enable and support interactive learning, which Doloreux and Parto consider to be learning within a region. Doloreux and Parto suggest that interactive learning in the RSI’s needs to be aligned with the creation of knowledge as a structured process that includes sharing, proximity and common social and cultural traits and norms.

Cooke (2001) has observed that, before they came up with the concept of RSI’s, policymakers themselves at the regional level directly participated in the promotion of innovation. As a consequence of the discovery of the positive impacts of spatial proximity to innovation, growth and competitiveness, policymakers have understood that they are active participants in the global economy. As such, many regions have taken actions to strengthen the elements described by Doloreux and Parto and other authors. Plans, agreements, programmes, policies and laws have been developed by regional policymakers to seize this opportunity. This is the case with Catalonia (Malkin 2009; Coronado and Acosta 1999) and the National Agreement on Research and Innovation (CNARI), the focus of this dissertation.
3.3 European Union Regional Innovation Policies

The European Union (EU) has been an important, to not say crucial, actor in European regional development and a major force that has fostered regionally based innovation and research policies. As such, as it is claimed in the conceptual framework of this thesis, it is a major source of influence in regional innovation policy definition, particularly for Catalonia.

European research and innovation policy can be traced back to the 1970’s (Falk et al., 2008), where science and technology (though not in the frame of the European Community framework) coordination efforts between States took place with the COST initiative (Cooperation in the field of Science and Technical Research) or the ESPRIT programme in the early 1980’s (European Strategic Programme for Research and Development in Information Technology Programme). It was with the Single European Act that Science, Technology and Innovation (STI) policy became an established EU policy. It was at this time that multiannual framework programmes were put in place. STI policy became, progressively, more relevant as subsequent EU treaties were ratified by member states. This has led to an ambitious EU wide STI policy that has included initiatives such as the Lisbon Agenda (2000) or the establishment of a European Research Area (ERA).

While EU STI policy has acquired importance to tackle deficiencies in European competitiveness, it has also been a powerful tool in attempting to promote regional development and cohesion. Historically, the EU has promoted regional convergence by
financing infrastructures and human capital development through Structural Funds and the European Regional Development Fund. The EU has understood that another approach is necessary to further reduce economic disparity between regions (Leonardi, 2006). This new approach identifies the need to create new policies to foster growth dynamics by supporting businesses, research and innovation (De Bruijn and Lagendijk, 2005). This has put STI policy in line with the objectives of regional cohesion through the concept of regional innovation systems. As such, from the early 1990’s, the EU created numerous initiatives that have supported the concept of regional innovation system. These initiatives include: Regional Innovation Strategies (RIS), Regional Innovation and Technology Transfer Strategies (RITTS), Network of Innovation Regions in Europe (IRE) and the Transregional Innovation Projects (TRIPS). Additionally the European Regional Development Fund (ERDF) allocated funds towards regional innovation with programmes like PAXIS (Kaiser and Prange, 2005).

With the Lisbon Agenda, the approach of EU cohesion policy to achieve regional economic convergence did not forget about regional innovation systems (Wamser et al, 2013) and included the ‘regional dimension in the proposal for the European Research Area as well as in the sixth Framework Program’ (Kaiser and Prange, 2005: 249).

It is important to highlight that throughout this process Catalonia has actively taken the EU proposals on board, has sought to participate in these initiatives and has tailored their STI agenda accordingly. This is the case, for example, of the Catalan Innovation Plan (3rd Research and Innovation Plan), where it is stated that this Plan is drafted in
line with the RITTS strategy (DIUE, 2008; OCDE, 2010\(^3\)); the 2\(^{nd}\) Catalan Research Plan, that contains a specific program to promote international cooperation with other European Regions; or the Catalan Industrial Policy Plan of 2010-2020 (DIUE 2010’) that refers to the guidance offered by existing or developing EU wide initiatives. Though I acknowledge the importance of the EU actions mentioned in this chapter as relevant drivers for the progressive development of innovation policies in Catalonia, I will solely focus on the Aho Report and the EU’s Commission Communication laying out an Innovation Strategy for Europe as key EU sources of influence in the process to develop the CNARI.

3.4 Brief outline of research and innovation policies

The variety of sectors and actions that need to be addressed to promote innovation has led policymakers and academics to term the policies that promote innovation as a ‘policy mix’\(^8\). This means that to promote innovation you need transversal actions that tackle issues that range from financial support, to education, to changes in the regulatory framework of certain key elements such as intellectual property, and others. These actions are rarely planned as a coherent set and are born out of multiple actors and their objectives (Flanagan et al., 2011). The objectives of these actors are, on many occasions, not limited to the research and innovation areas but extend to other policy domains.

\(^7\) ‘this Plan (…) has been developed taking into account the Lisbon Strategy (…) and the concepts and priorities of the EU Strategy 2020 that is currently being designed’. (DIUE 2010: 21)

\(^8\) http://ec.europa.eu/research/policymix/page.cfm?Pageid=205
A sample of innovation policy levers currently being used by OECD members has recently been categorised by Westmore (2013: 10):

- Human capital: educational and training policies to ensure the capabilities for innovation
- Fiscal policies: R&D tax incentives financial policies: that involve direct government funding from grants, loans, loan guarantees or by facilitating the access to credit by firms that use R&D intensely
- Government funded research: where government identifies a need for innovation in infrastructure that will benefit society as a whole (e.g. faster access to the internet)
- Regulatory policies: such as patent protection (patent rights), intellectual property rights etc.
- Framework policies: policies to increase economic competitiveness and foster productivity (gearing of the market, reduction of product market regulation, reformulation and simplification of legislation around employment and immigration, more lenient bankrupt laws etc.)

A further list of policies and policy instruments that is used to support innovation has been compiled in the *Compendium for Innovation Policies* project\(^9\). These include:

- Cluster policies and ecosystems
- Fiscal incentives

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\(^9\) [http://innovation-policy.net/compendium/](http://innovation-policy.net/compendium/)
• Network policies and knowledge transfer mechanisms
• Human resources, migration and employment policies
• Entrepreneurship policies

Many such policies have been used by the Catalan government and are discussed in Section 3.5 of this chapter, summarising the recent evolution of the Catalan research and innovation policies.

3.5 Catalonia embracing the growth, competitiveness and innovation narrative

Innovation policies are linked to the economy and to economic growth. Catalonia, like many other territories, has adopted the idea of innovation as a key instrument to increase its competitiveness. The intention of Section 3.5 is to introduce the reader to the economic justification that led Catalonia to promote innovation. Following this objective, I will briefly describe the economic evolution of Catalonia from 1994 onwards and summarise the evolution of the policies or actions taken by the Catalan government to promote innovation.

3.5.1 Summary of post-1994 Catalan evolution towards a knowledge economy

Catalonia has evolved from being a manufacturing region that relied on the use of basic technology and intensive labour, into a knowledge economy with a highly educated and skilled workforce. The evolution from a manufacturing model that gives low returns to a knowledge based one started in 1994 and is still ongoing. In 1993 the Catalan
government, aware of the need to change its industrial model, started to adjust its policies towards a knowledge driven economy and produced its first *Research Plan*. This chapter includes an overview of the evolution of the Catalan economy from 1994, examining what ignited the adoption of policies to promote research and innovation by the Catalan government.

The Catalan economy has been undergoing structural change for the past twenty years. According to Alonso’s (2007) the primary elements that triggered the change from the Catalan labour intensive, productive model to a knowledge driven economy are:

- The transformation of the export sector through globalisation and the expansion of the European Union to the east
- The reorganisation of the manufacturing sector, and relocation of labour intensive manufacturing to territories with a lower waged workforce
- The fall of the construction sector (which meant that the skills of a large portion of the workforce became redundant)
- The new demographic composition and the arrival of low skilled immigrant workers from 1996 to 2006 as part of the Catalan economic boom in manufacturing and construction

The Catalan Economy has been transforming from a labour intensive model to an economy in need of highly qualified staff and advanced technology and high returns. Martinez-Giralt (2006: 115-145) confirms Alonso’s and the OECD’s (OECD^2 , 2010)
view that Catalonia’s previous low productivity and labour intensive production model has led to Catalonia’s productivity being below the OECD average. The Catalan economy had grown in the 90s but by the beginning of 2000 its productivity rate had dropped to 62% of the average of the EU (from 1995-2003). Martinez-Giralt (2006:116) says that if Catalonia focused on sustainable growth that it could lead to an increase of productivity for the region. The Chamber of Commerce of Barcelona (2006) suggests that Catalonia, to increase its internal growth and external competitiveness, should turn to a model that encourages the intensive use of technological and human capital.

Martinez-Giralt (2006) sees two main long term challenges that Catalonia needs to address: 1) low productivity in the workplace, and 2) the absence of foreign investment. He also anticipates two main factors likely to slow growth:

- Low internal investment in activities that give long term high returns and added value (for example advanced technology and biomedical research)
- Lack of structural change, lack of promotion of foreign investment relations and absence of new strategies for business growth

These factors have had an impact on the low use of new technologies and innovation to promote growth. The rationale explaining why these challenges exist is, according to Martinez-Giralt, that investment in Catalonia was somewhat high from 1995-2001, falling from 2001 onwards. From 1995-2001 investment was used to finance the

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10 http://www.cambraben.org/es/estudis/economics/memoria_economica_catalunya
increase of the workforce and supply of aged technologies, and not to create new products, skills or technology that would increase productivity and offer added value.

According to Martinez-Giralt the economic growth that Catalonia experienced from 1995-2003 may have caused a slowdown of technological change and stopped the economy from going through the structural change in production that is needed to be competitive externally. In relation to investments, from 1998 onwards the industrial sector ceased to be a net recipient of investment, and invested mostly abroad (both Catalonia and Spain) due to the loss of attractiveness of the labour intensive production model that relied on construction and manufacturing based on basic technology and low returns. In the long run, he concludes, investment in R&D, innovation\(^\text{11}\) and in human capital is crucial to improve productivity and solve the problems that derive from this. He uses data from the National Statistics Institute (INE) to prove that, though the increase in investment in this area is continuous, i.e. it does not drop, it is still low at 0.5-0.6% of total invoicing (from 1995-2003.)

Human capital, the second variable identified by Martinez-Giralt to accelerate productivity, improved from 1995-2001, with a reduction in the number of people with only basic (pre-secondary) education to 25%, and an increase in the number of people with higher education degrees (2006).

\(^{11}\) This includes the collaboration of Xavier Freixas, a Professor of the Universitat Pompeu Fabra who describes the role of Venture Capital firms, highlights the importance of risk, and describes the complexity of the collaboration between the financing agency and the entrepreneur.
3.5.2  Research and innovation policies in Catalonia

The Catalan government has initiated a series of actions to promote research and innovation. Overall, there have been five *Research and Innovation Plans* between 1993, the year of the approval of the first research plan of Catalonia, and 2010. The *Research and Innovation Plans* from 1993 to 2006 offered a strategic view of what the Catalan government’s priorities were in relation to research and innovation.

3.5.2.1  Overview of Catalan research and innovation policies

In 1993 the first research plan for Catalonia was created (Busom, 2006: 152-162), followed by the 1999 plan for information systems, and in 2001 the first integrated view of research and innovation (third research plan and first innovation focused plan).

The focus of these plans evolved incrementally from actions targeting only academic research to cross-cutting actions that affect various policy sectors. A timeline of the evolution of research and innovation policies and competences together with the structure of *Research and Innovation Plans* can be seen below in Figure 1, in which the stars are the milestones that indicate the occurrence of an event or kick-off of a plan.
3.5.2.2 Early attempts

The *Catalan National Agreement on Research and Innovation* (DG CNARI 2008) was the result of thirty years of science, technology and research policy in Catalonia (OECD, 2010: 28). There are three levels of interventions (such as, for example, direct and indirect financial support to concrete projects, changes in the legal framework of the labour market etc.) in Catalonia in regards to research and innovation policy: actions derived from EU frameworks and policies, actions derived from the Spanish central
government, and actions defined by the Catalan Government. I will focus on the actions created by the Catalan Government.

The first group of policies (1980-1988) focused on academic research (OECD² 2010: 28; Busom, 2006). From 1992, the government of Catalonia increased its support for research, science and technology.

The Catalan government requested a complete transfer of powers from the Spanish national government in 1980 (Callejon et al., 2000) to manage all policy actions related to Research and Technology including finances, regulations and physical infrastructure of Public Research Centres and Universities situated in Catalonia. This was denied by the constitutional court. The Catalan government, as a countermeasure to this legal setback, increased the budget of the Interministerial Committee on Research and Technology (ICRT), which was the organisational unit within the Catalan government that managed the research and technology functions. The Catalan government, acknowledging that the ICRT needed a specific scope of work, and after identifying the need for an integrated framework to act on research, science and technology in the territory, tasked the ICRT with the definition and integration of all activity related to research, science and technology into the research plan of 1993-1996 (OECD², 2010: 29).
3.5.2.3 Research Plan of 1993-1996

The 1993-1996 Research Plan included recommended actions to assist existing, publicly funded research groups working on acquisition, maintenance of infrastructure, organisational expenses and other matters. This first Research Plan had more of a focus on supporting universities and public research centres than supporting the private sector. Its scope was directed to improve scientific output (OECD\(^2\), 2010:29).

3.5.2.4 Research Plan of 1997-2000

The second plan was designed to improve deficiencies identified in the previous plan (OECD\(^2\), 2010). One measure was the creation in 2001 of the *Agency for University Research* (AGAUR) to ensure better management of university grants and scholarships. Other organisations were created such as the *Technological and Innovation Support Centres* (*Xarxes d’Innovacio Technologica - XIT’s*). Investment in developing markets, demand or new technologies was still weak compared to investment in infrastructure or for research centres.

The 1997-2000 plan was structured into seven areas of action and two horizontal programmes. The first area was entitled *General Progress of Knowledge* and focused on promoting research in all of the fields of knowledge. The other six areas concentrated on specific topics aligned with the preferences set by the Catalan government and coinciding with functional areas of the economy such as health, natural resources, agriculture, public works and others.
3.5.2.5 Research and Innovation Plan of 2001-2004

The 2001-2004 Research and Innovation Plan (two separate documents that are treated here as one plan) mentions for the first time the concept of innovation. There is no change of scope in the research section in comparison to previous plans (OECD\(^2\), 2010: 30). The priorities of this plan push research in technological innovation to offer visible added value to the government’s investment (Busom, 2006: 12).

The document proposes an internationalisation of research (to support the participation of businesses in the Research & Development & Innovation activities, R&D&I) while promoting transference of technology and the employment of researchers by the private sector. The plan was developed by the DURSI\(^{12}\) and was divided into seven different areas, each one financed by an assigned department of the Catalan government. These areas are; food and agriculture sciences, culture and society, technological innovation, environment and natural resources, health and quality of life, information society, territory/city/mobility.

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\(^{12}\) DURSI is the Ministry of Universities, Research and Information Society of Catalonia. It was created in April 2000. Leading up to the development of the CNARI, in 2006 (13\(^{th}\) of May and 28\(^{th}\) of November), there were two ministerial reshuffles that affected DURSI. The second reshuffle created a new Ministry that took on the powers of the DURSI. The new Ministry was named DIUE (Department of Innovation, Universities and Enterprise). This new Ministry also absorbed the CIRIT.
The total budget for this plan was 130 Million Euros and the execution was coordinated by CIDEM\(^\text{13}\). Six programmes were designed, based on a benchmark of successful research and innovation plans in other countries (Ballart et al., 2008).

The 2001-2004 Plan was aligned with the industrial policy of the Catalan government. This *Research and Innovation Plan* was articulated into three pillars; to promote innovation, to assist in the transference of technology, and to encourage business development. A number of sectors were to receive preferential treatment; aerospace, pharma, chemical, technologically advanced food products and the development of machinery for renewable energies. Automotion, textile and consumer electronics were viewed as in need of transformation (Busom, 2006: 16).

The government of Catalonia developed two additional programmes: the programme for technological transfer and the programme to promote entrepreneurship.

The programme for technological transfer aimed to promote the integration of scientific and technological knowledge while increasing the quality of the technological management of businesses. In 2004 the *Network of Technological Centres* and the *Network for the Diffusion of Technology* were created and joined an existing group of networks (technology advisory, promotors of intellectual and industrial property etc.).

The programme to promote entrepreneurship financially was executed through the advisory services of the *Advisors for Research and Capital*, the *Network of Innovation*

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\(^{13}\) CIDEM was the *Centre for Innovation and Development of Enterprises*. It merged in 2010 with COPCA (a programme offering internationalisation services to Catalan businesses) to create a new agency named ACC10.
Capital, Concept Capital and Training for Entrepreneurship. These actions were coordinated together with the Catalan Agency of Investments (Busom, 2006: 18).

3.5.2.6 Research and Innovation Plan 2005-2008

The 2005-2008 Research and Innovation Plan represents the first real effort to offer a balanced approach to the demand (where the Government stimulated demand in the market place by purchasing innovative products and services that meet its needs) and supply sides of research and innovation (OECD, 2010: 30). It continued to acknowledge public research centres (e.g. universities) as key actors but also encompassed firms and potential users of the research or technology being developed by public research centres. It introduced special actions for technology transfer programmes while taking into account the financial support that companies relying on innovation require (OECD, 2010: 30). The plan was coordinated by CIRIT and was drafted together with the DURSI and the Department of Labour and Industry.

The Plan 2005-2008 incorporated actions from the previous plan (Busom, 2006: 162-171) to strengthen the link between research and innovation, while tailoring them to successful experiences of OECD and EU countries. It strengthened previous plans and defined a set of objectives and quantitative indicators. These included: increasing investment to 2.1% of investment for the GDP in 2008 (an increase of around 0.70% on the previous plan); increasing the proportion of innovative firms to 40% ; and using other indicators such as patents requested and commercial objectives to measure
progress. The total budget for the plan was 860 Million Euros, or 0.8% of the total budget of the Catalan Government.

3.5.2.7 CNARI

The CNARI is described as a long term compromise to lead Catalonia to the knowledge economy. It is a long term compromise because such a change in the culture and the economy of the Catalan population cannot be undertaken in a short space of time. On the contrary, it needs ‘a long term commitment’ (CNARI, 2008: 20).\footnote{Listed in the bibliography as: Dir. General pel Pacte Nacional de Recerca i Innovacio. (2008). Pacte Nacional de Recerca i Innovacio (CNARI), Generalitat de Catalunya, Barcelona}

The CNARI in itself does not include specific policy instruments but it sets the guiding principles and policy guidelines that have led research and innovation policy in Catalonia from 2008 to 2013. These principles and guidelines were operationalised by the Directorate General of the CNARI (DG CNARI) through three concrete initiatives; the reorganisation of the Catalan research and innovation governance system, the evaluation of the Catalan research and innovation system by the OECD, and the Research and Innovation Plan (PRI) of 2010 to 2013. Where in the first two initiatives the results were the merger of two agencies COPCA and CIDEM, who merged to become the agency (ACC10) tasked to support the internationalisation of Catalan businesses and the assessment of suggestions for improvement of the Catalan research and innovation systems by the OECD, the third laid out the concrete policy initiatives and proposals that were described at high level in the CNARI. These policy initiatives
are CNARI (2008: 34-82) and the *Plan for Research and Innovation* or PRI\textsuperscript{15} (2009: 45).

The table below explains the link between the policy statements and objectives included in the CNARI and the concrete actions and instruments found in the *Plan for Research and Innovation* (PRI).

\textsuperscript{15} Listed in the bibliography as: Dept. Innovacio, Universitats i Empresa. (2010). Pla de Recerca i Innovacio (Catalan National Agreement in Research and Innovation), Generalitat de Catalunya, Barcelona
<table>
<thead>
<tr>
<th>Policy Statement in the CNARI</th>
<th>Objective</th>
<th>Action</th>
<th>Example of instruments selected to implement policy</th>
</tr>
</thead>
</table>
| Improved capabilities: to possess the best scientific, creative, innovative and entrepreneurial talent | To possess the best scientific, creative, innovative and entrepreneurial talent to fulfil the needs of the research and innovation system | • Increase the creativity, innovation, science and entrepreneurship skills of students  
• Improve educational profiles that are strategic to Catalonia | Tailoring of the primary and secondary educational curriculum to promote research projects, interdisciplinarity, collaboration with universities, critical thinking, entrepreneurial skills, foreign languages, problem-solving abilities and improved knowledge of mathematics and scientific disciplines (PRI 2009: 47) |
| Encourage the creation and value of knowledge: to develop and maintain a high capability to generate and valuable knowledge | To intensively generate the creation of high quality and useful knowledge | • Strengthen public financial resources, management and international transfer capabilities  
• Improve the order, articulation and alignment of public research agents | Implementation of a new model to finance universities (based on the expenses that result from scientific activity) that is in line with the compromises established in the CNARI |

Support the influx, development and retention of talent  
Support the mobility of talent and ideas  
Consolidation and focussing of the ICREA programme to strengthen the participation of senior scientists (270 by 2013) and scientists from universities (160 by 2013). 40-60% of the programme will be dedicated to the areas of focus (PRI 2009: 48)
<table>
<thead>
<tr>
<th>Internationalise: think, be and do research and innovation globally</th>
<th>To obtain a wide base of innovative and international companies that are capable of transforming and creating sustained value</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Improve infrastructures and develop projects to support R&amp;D&amp;I</td>
<td>Increase of 6-7% of the total investments in infrastructure of the Spanish government in Catalonia directed to big and medium scientific and technological infrastructures</td>
</tr>
<tr>
<td>- Increase the capabilities of businesses to internationalise and to innovate</td>
<td>Renew the PIMESTIC programme to extend, promote and assess small and medium businesses in the use of ICT technology through ACC10</td>
</tr>
<tr>
<td>- Promote the intermediaries of innovation and knowledge intensive services</td>
<td>Increase and reinforce the services of ACC10 in regard to business strategy and management</td>
</tr>
<tr>
<td>- Promote technological R&amp;D&amp;I in businesses</td>
<td>Reinforce the role of the Technology Centres while enforcing a financial model based on objectives</td>
</tr>
<tr>
<td>- Access and adaptation to new markets</td>
<td>Reinforce the actions of TECNIO (an intermediary) in: supporting R&amp;D&amp;I projects that are jointly done by businesses and TECNIO centres</td>
</tr>
<tr>
<td>- Create and support business development and knowledge intensive activities</td>
<td>Reinforce the creation of NEBT by providing, through ACC10, advisory services in the creation of business plans, which support existing EBT in the elaboration of viability plans</td>
</tr>
<tr>
<td>- Attract and retain intensive R&amp;D&amp;I business activities</td>
<td>Organise, from 2011, training on innovation in public services (to be given by the School of Public Administration of the Catalan Government) for government executives and professionals</td>
</tr>
<tr>
<td></td>
<td>Promote, from 2011, an interdepartmental action to develop a strategy for innovation in public services</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Promote systematic innovation: transform systematic innovation as the basis of the productive activity and social and public action</th>
<th>To make public sector innovation a central contributor to progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Promote the capacity and innovative activities of public services</td>
<td>--</td>
</tr>
<tr>
<td>- Promote innovation in government departments</td>
<td>--</td>
</tr>
<tr>
<td>Socialise: transform Catalonia into a society immersed in science, technology and innovation</td>
<td>o Use public procurement, regulations and sector policies as instruments to create knowledge and innovation</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>o Socialise and increase the relevance of science and innovation</td>
<td>Promote the relevance of science and innovation through the Catalan Corporation of Audiovisual Media</td>
</tr>
<tr>
<td>o Develop a citizenry that is creative and innovative</td>
<td>Consolidate local systems of innovations and launch the territorial innovation system of southern Catalonia, extend this action initiative to the rest of Catalonia</td>
</tr>
<tr>
<td>To advance towards a society that is involved in transforming Catalonia scientifically, and towards innovation</td>
<td>o Enforce synergic actions between territorial agents in regard to innovation</td>
</tr>
<tr>
<td>To turn knowledge and innovation into a key element in the progress of Catalonia’s territories</td>
<td>o Implement the territorial dimension of the actions included in the PRI</td>
</tr>
<tr>
<td>Facilitate: adopt a governance system of research and innovation that is intelligent, efficient and effective</td>
<td></td>
</tr>
<tr>
<td>o Innovation and knowledge partnerships</td>
<td>Reinforce and continue supporting Anella as a space to share knowledge and to promote confidence in virtual interactions for existing and future communities of practice.</td>
</tr>
<tr>
<td>o Global presence and impact in R&amp;D&amp;I</td>
<td>Include the internationalisation of R&amp;D&amp;I to the functions of ACC1O’s network of Centres to Promote Business</td>
</tr>
<tr>
<td>To favour local and international interconnectivity and cooperation between R&amp;D&amp;I agents by forming global networks for co-creation and co-innovation of high value</td>
<td>o Implement the entities and instruments of the new governance model of the Catalan R&amp;D&amp;I</td>
</tr>
<tr>
<td>To develop a governance system of research and innovation that is efficient and effective</td>
<td>o Increase the capacity of the system to design, implement and evaluate R&amp;D&amp;I policies</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientate: focus and prioritise research and innovation</td>
<td>To make Catalonia stand out as a consequence of its ability to confront complex challenges and to focus on them from a research and innovation perspective</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Orientate R&amp;D&amp;I policies towards the challenges included in the PRI</td>
</tr>
<tr>
<td></td>
<td>Increase the capacity of the system to generate effective synergies to meet the challenges outlined in the PRI</td>
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<td>Increase the capacity of the system to generate effective synergies to meet the challenges outlined in the PRI</td>
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<tr>
<td></td>
<td>Increase the capacity of the system to generate effective synergies to meet the challenges outlined in the PRI</td>
</tr>
<tr>
<td>Invest: investing more and better in research and innovation in both public and private sectors</td>
<td>To mobilise more resources towards research and innovation and to use them efficiently</td>
</tr>
<tr>
<td></td>
<td>R&amp;D&amp;I as a structural and strategic policy for all governmental departments</td>
</tr>
<tr>
<td></td>
<td>Increase the efficiency in capturing financial resources to develop R&amp;D&amp;I policies</td>
</tr>
<tr>
<td></td>
<td>Access to investment from competitive resources from Spain and the EU</td>
</tr>
</tbody>
</table>

Table 1: List of policy statements, objectives, actions and instruments found in the CNARI and the PRI of 2010-2013
3.5.2.8 Comparison between research and innovation policies in Catalonia

Having described what policies and plans have been developed in Catalonia since 1993, I now look at policy differences between these plans and what changes they include. This is performed in the table (Table 2) below.

<table>
<thead>
<tr>
<th>Depts. involved</th>
<th>Budget</th>
<th>Key policies</th>
<th>Changes compared to the previous plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Plan 1993-1996</td>
<td>CIRIT</td>
<td>NA • Grants and scholarships to universities for research and other expenses</td>
<td>• First plan to be developed</td>
</tr>
<tr>
<td>Research Plan 1997 – 2000</td>
<td>CIRIT</td>
<td>NA • Grants and scholarships for academic research • Grants for the use of new technology • Comprehensive approach to the areas of research to be covered by the plan • Two transversal programmes</td>
<td>• Creation of an agency to centralise academic grants and scholarships (AGAUR) • Introduction of the idea of technology transfer • Introduction of mechanisms for evaluation • Creation of Technological and Innovation Support Centres</td>
</tr>
<tr>
<td>Research and Innovation Plan 2001-2004</td>
<td>Design: DURSI Execution: CIDEM</td>
<td>130 million Euros • Grants and scholarships for academic research • Grants for the use of new technology • Comprehensive approach to the areas of research to be covered by the plan • Promotion and communication • Preferential loans to finance spin-offs, entrepreneurship and knowledge/technological transfer • Free advisory services</td>
<td>• First reference to innovation • Introduction of the idea of benchmarking to prioritise programmes • Strong influence of IT • Use of the concept of knowledge transfer</td>
</tr>
<tr>
<td>Research and Innovation Plan 2005-2008</td>
<td>Design: DURSI Execution: CIDEM</td>
<td>860 million Euros • Grants and scholarships for academic research • Grants for the use of new technology • Comprehensive approach to the areas of research to be covered by the plan • Preferential loans to finance spin-offs, entrepreneurship and knowledge/technological transfer</td>
<td>• First attempt to include both demand and supply actions to innovation • Inclusion of quantitative indicators • Use of international best-practice and benchmark studies to establish priorities</td>
</tr>
<tr>
<td>CNARI</td>
<td>Design: DG CNARI Execution: DG CNARI</td>
<td>4.497 million euros Together with all of the policies included in the Research and Innovation Plan of 2005-2008, the CNARI included: • Focused approach to research and innovation policies • Objectives-based financial support • Increase in the tools to promote innovation by the Catalan Government • Reorganisation of R&amp;D&amp;I agencies • Redesign of primary, secondary, higher and postgraduate education</td>
<td>• Implementation of a financing model based on performance and alignment with the objectives of the CNARI • Inclusion of public procurement as a tool to promote innovation • Modification of primary, secondary, higher and postgraduate education curriculums to align with the skills identified as necessary in the CNARI (entrepreneurship, critical thinking etc.) • Promotion of innovation networks</td>
</tr>
</tbody>
</table>

Table 2: Summary of the Research and Innovation Plans from 1993-2008 (own elaboration from OECD data)
4 Literature

4.1 Introduction

This chapter describes the theory and propositions behind the conceptual model of this research. A systematic literature review\textsuperscript{16} related to public policy, discourse studies, public planning and public management was conducted (JSTOR, EconLit, Web of Science and SSRN). Those selected to inform this thesis were the ones aligned with the area being studied and the conceptual framework being applied to it. This resulted in two main conceptual blocks:

1. literature related to the policy making process and the influence of ideas in policy development
2. literature related to Discourse Analysis

1. The section dedicated to policy making (4.2) will explain the theories behind the concept of paradigm (4.2.1), paradigm change (4.2.3) and the impact of this on public policy (4.2.2).

2. The third conceptual block is the sociocognitive approach to critical discourse studies. A general view of Critical Discourse Analysis (CDA) can be found in Chapter 4.3.1). Then in Chapter 4.3.2, the concept of ideology is analysed in detail.

\textsuperscript{16} For a complete list of journals and books please refer to references at the end of this document.
4.2 Literature related to the policy making process: paradigm and change

A key pillar of the conceptual framework is the concept of paradigm.

I understand paradigm as ‘taken for granted world views’ (Campbell, 2002: 21). This section will describe a number of elements that are essential to understanding what constitutes a paradigm, including; organisational factors in changing paradigms, and the role of paradigms in public policy.

4.2.1 Paradigms and public policy

To understand correctly the relation between policy and paradigm we need to clarify what we understand by paradigm and how this term relates to public policy. This dissertation adopts Campbell’s definition of paradigm as ‘taken for granted world views of policy makers’ that ‘constrain the range of policy choices’ (2002: 21). Campbell adds that the literature does not explain how new policy paradigms emerge (Blyth, 1997).

Some authors suggest that paradigm change arises when crisis occurs which the current paradigm does not offer solutions to existing issues (Dobbin, 1993; Hall, 1993; Hay, 1996). These interpretations of change do not explain how a new paradigm is created, but how an old paradigm is modified. These interpretations of change also apply to public policy.

17 Contrary to this statement, the literature related to paradigm change in science is abundant (Kuhn’s work is a clear example).
4.2.2 Defining radical change in institutions

We now turn to the literature on radical change in paradigms and how it takes place. This will provide valuable input to the conceptual framework.

Kezar (2005: 636) has defined radical institutional/organizational change (with reference to Greenwood and Hinings, 1996) as ‘breaking from an existing thinking and then entirely transforming of organizing principles and structures’. Nadler (1998) considers wider change is dependent on shifts in thinking that affect organisational structure, organisational culture and strategic visions.

When assessing the consequences of change in institutional paradigms, these usually refer to long as well as short term outcomes, and the level of impact these changes have on the institution.

There are various schools of thought that question the scarcity of radical change. These are cultural theorists and new institutionalism and contemporary change strategists.

Cultural theorists conceive radical change as scarce, and when it does occur, mainly ill placed. Change includes the attempt to modify values, habits and beliefs - things which tend not to be dropped very easily within an organisation (Schein, 1985). History forms tradition and values within a structure to reflect those who are in it. For this reason, change tends to be evolutionary and not radical.
New institutionalism sees radical change as rare due to the power of institutions as expressed through their culture, structure and practice (DiMaggio and Powell, 1983; Greenwood and Hinings, 1996; Scott 2014).

4.2.3 Defining paradigm change

I now explore how paradigm change can take place.

The first step is to understand how paradigms are assimilated. Taking Heclo’s (2011) work, we understand the assimilation and creation of paradigms as a learning process tailored to past events or influenced by expert knowledge. Various researchers take this approach. They can be divided into two groups; those who focus on paradigm assimilation through experience, and those who believe that expertise is necessary to process paradigms.

- Weir and Skocpol (1983) consider that issues are framed by ‘legacies’ and not by rationalisation or the study of a particular problem. In this view policy makers do not follow a scientific approach when they assess problems, nor do they come up with perfect (self-interest driven) solutions (Simon, 1955).

- Eisenhardt (1989) points out that experts in the public policy arena (mainly advisors, professors or government employees) are considered to be the key drivers that shape paradigm creation. These experts are a relevant element in the conceptual framework where they are termed as Epistemic Communities (Haas, 1992).
If both past actions and expertise are key elements in paradigm creation and assimilation, how is a paradigm changed? Hall (1993) is our main reference in this discussion. He has analysed types of paradigm change in the policy process (a modification of the taken-for-granted views). In his historical analysis of change in public policy in Britain, he has identified three orders of change:

- First order: change of **policy itself**. Hall conceives this as ‘satisfying’, where a change of policy is only cosmetic and it is not significant (it does not have relevant impacts). He says that the policy process will be analytical, based on the tools available, but that many policymakers lack the knowledge and ability to use these tools. Due to their experience and expert knowledge, the role of civil servants as the key figures shaping policy becomes predominant. They have status and power institutionally, but lack knowledge and credibility as experts.

- Second order: change of **policy objectives**.

- Third order: change of **policy vision**. This is the broadest of the three. He gives as an example the change of vision from Keynesianism to monetarism.

Hall considers that the first two orders of change are driven by intraorganisational influence. The third order change, on the other hand, involves a wide set of external participants breaking with the statist vision of change from the inside. In his empirical case he identifies three external forces that drive change: media, research institutes and financial brokerage houses.
The third order of paradigm change proposed by Hall takes place as a consequence of the discrediting of old paradigms because they are considered to have failed. This leads to the replacement of the old paradigm by a new one.

In terms of change, or difficulties with promoting change through the existing system, Hall (1983) has studied from an organisational perspective what he terms the politics-administration nexus, or the relations between civil servants and elected leaders. This nexus drives first and second order change. Hall observes limited innovation in government as a result of the relationships (nexus) between civil servants and politicians. He identifies four dimensions of this relationship:

- Association of the nexus to the chief executive
- Association of the nexus to interministerial coordination
- Association of the nexus with departmental innovation
- The character of the higher civil service

Hall also believes that each administrative department is a small government in itself. He claims that governments are fragmented and policies are made when a portion of those involved in the process of policy creation think it is necessary. Hierarchical governmental organisations disperse power between groups of people. Real power, he thinks, is based mainly on the advice of civil servants, and civil servants do not propose changes that will reduce their influence in the policy making process. Hall also alludes to the principal-agent theory, pointing out that innovation in policy making in government is proportional to the information and expertise that the policymaker receives or possesses. If information is retrieved or partially disseminated with the purpose of maintaining the status-quo, it can deter or put barriers in the way of...
innovation. In order to avoid these obstacles to the flow of innovation, cooperation between civil servants and elected members in government is crucial. Hall highlights that any policy not enforced or formulated adequately by both sides tends to fail.

Bergeron and Kopp (2002) enriched Hall’s findings by studying French drug and health policy. Their objective was to observe why and how the view of a minority can impact and change a paradigm that is supported by a majority of the population. A conclusion of their study is that a minority of experts with shared common norms and ideas can have a powerful influence on a wider spectrum of people as a consequence of their expertise. Bergeron and Kopp suggest that the beliefs defended by a minority group can be spread throughout society. This means that a minority extend their findings or beliefs to a large portion of society who then interiorise them, using a set of processes (rationalising a mixture of cognitive, normative and social contexts) that form an idea which is supported by a majority of the population.

4.2.4 Paradigm change in innovation policy: Academic theory and ideas as elements of change

I have reviewed previously in this section what is paradigm change, what hampers this change (Schein, 1985; Di Maggio and Powell, 1983) or what influences paradigm creation in public policy (Hall, 1993). I have identified habits and beliefs as obstacles of change and how this can affect policy development. I will now address the role of ideas as elements of change (Schmidt, 2010) in innovation policy. I have identified three groups of literature that address this relationship (ideas-policy change): Mytelka (2001) and Mytelka and Smith’s (2001) description of how a change in economic theory
created the concept of innovation that was adopted by international organisations; how the OECD, based on this change of view on economic theory, defined their science policy vision as described by Henriques and Laredo (2012) and how they adopted the now commonly accepted systems approach to innovation based on Godin’s (2007) research; finally, I will explore Edler’s (2003, 2002) study of how the dynamics of ideational development had an impact on European R&D policy.

I have spoken before of paradigm change as something that rarely takes place and that it is bounded by legacies (Weir and Skopcol, 1983) or shaped by experts (Eisenhardt 1989; Haas, 1992). In regards to the impact of experts over the policy process, and as will be seen in chapter 5, I point out in my conceptual framework that policy definition is greatly influenced by Epistemic Communities.\(^\text{18}\) If we take a look into the role of experts in policy definition we see that the role of academics or Epistemic Communities (Mytelka and Smith, 2002 use the term ‘social scientists’) has been crucial in the development of public policy, and very specially in the elaboration and development of innovation policy as a policy sector in itself.

The importance of theory developed by Epistemic Communities has marked the evolution of innovation policy making from the 1970’s until today (Bartzokas, 2001). The lack of appropriate answers by the then dominant neo-classical economic views to the problems that arouse from the economic crisis of the 70’s (Mytelka and Smith, 2002: 1469) led to the elaboration of an alternative theory labelled as ‘new innovation paradigm’ (Mytelka and Smith, 2002: 1469) and is built upon a string of economic

\(^{18}\) The research defines Epistemic Communities as experts in a particular topic whose opinion is considered legitimate and valid by the general public as a consequence of their reputation as academics, practitioners or individuals that represent a reputable brand (mainly research or consulting firms such as Mckinsey, PwC etc.)
theories that started off with Rosenberg’s Perspectives on Technology (1976), Nelson and Winter’s Evolutionary Theory of Economic Change (1982), followed by Lundvall’s systems of innovation (1992) and others. The ‘new innovation paradigm’ was developed through the cooperation of ‘academia and organisations’ (Mytelka and Smith 2002: 1469). The OECD and the European Commission are identified as two of the organisations that participated in the elaboration of innovation theory in advanced nations (Mytelka and Smith 2002) and are included in my case study of Catalonia.

I will use Godin’s (2007) work to explain how, having accepted the ‘new innovation paradigm’ (Mytelka and Smith 2002: 1473), the OECD adopted and developed the concept of innovation systems. Following this, I will use Edler’s (Edler 2002, 2003) work to understand the evolution of the R&D policy from the perspective of the European Union.

Both Godin (2007) and Henriques et al (2012) consider the OECD as a pioneer in science and technology policies by acting as a policy initiator that has had an impact on national science, technology, research and innovation policies. Godin (2007) refers to the work performed by the OECD as a key source in the creation of the concept of National Innovation Systems. Godin points to the OECD’s work in the 1960’s and in the 1990’s¹⁹ (Godin, 2006) as a source of influence on Lundvall’s (1992) and Nelsons (1993) work. Of special relevance to this research is the OECD’s impact on ‘the development of science policy in Member countries’ (Godin, 2007: 12; Salomon, 2000).

All in all, Godin suggests that the todays understanding of Innovation Systems, was, to

a high degree, developed and transferred to national policy circles by and within the OECD. Henriques and Laredo (2013) have a similar view on the role of the OECD as a policy innovator in the science and technology filed that that covers a policy gap (Mytelka and Smith 2002). They also point out that not only is the OECD a policy innovator, but its proposals (what they term the ‘OECD model of science policy-making’, Henriques and Laredo, 2013: 801) have been to a high extent transferred to and implemented by, national governments through methods of horizontal coordination between different ministries and expert advice on prioritizing, budgeting and planning at the national level.

Edler’s (2002) study of the European Commission’s BRITE initiative sheds some light as to how these ideational processes took place in Europe. The author suggests that, in order to succeed in modifying or creating new policy concepts that are assumed by government and applied, there needs to be a creation of new ideas that leads to a change of policy paradigm that is generally accepted in Europe and where the European Commission validates it by linking the new paradigm to the cause of European Integration. Edler (2002) points out that a key actor in the definition and acceptance of the new policy paradigm was the OECD. He also points out that other dynamics took place to make the new paradigm hold, such as the successful conversion of a concept of economic theory into a practical idea that can be turned into an implementable policy, or the involvement of political actors after the idea had been sanctioned by the scientific community or industry.

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20 Hernandez and Laredo (2013: 814): ‘linked to two intertwined mechanisms: periodic (mostly annual) reviews on the situation of a country performed by the secretariat, and the organisation of a forum enabling national administrators of the member countries to look at one another and to exchange’.
To sum up, this chapter has presented the role of the OECD in setting the basis for the elaboration of a new economic theory by Epistemic Communities, for transforming this theory into a new policy concept (innovation) that is accepted by the public policy community and implementable by national governments. We have also seen a similar dynamic at the European level, where ideas initially formulated in the OECD level have been transferred to the European level, adapted to suit the objectives of the European Community, and adopted by the member states. Both the OECD and the European Community are included in my conceptual framework as powerful sources of ideational influence over Catalan innovation policy definition.

4.3 Literature related to Critical Discourse Analysis: ideology, knowledge and discourse

4.3.1 Introduction to discourse studies and critical discourse studies

Discourse allows people to understand each other. People use language to express ideas and thoughts but they may communicate in many non-verbal ways.

There are two academic schools that study discourse: those who study discourse as a linguistic phenomenon, and those who analyse discourse from a critical perspective by identifying power relations, gender biases etc. The latter school is called Critical Discourse Studies and is based on the work of postmodernist thinkers such as Foucault (1995) and Derrida (1998). It is this school of thought that is used in this dissertation.
Fairclough et al.’s suggest that discourses are a major part of how we interpret society, and act and organise ourselves. Fairclough et al. state that there is a ‘shift towards an ‘information society’ or a ‘knowledge society’ which is leading to an increasing level of reflexivity in social life, and discourse-led social life (2004: 2).

Forchtner (2011) says that Critical Discourse Studies users/academics have a common focus but differ in other aspects. The common focus is a discourse that assumes meaning-making through (written/spoken) language, bodily expressions or sound. Schools of Critical Discourse Studies range from a more historical or sociological approach to, for example, Wodak’s Discourse Historical Approach (Wodak, 2001); the Foucauldian approach (Jager, 2001), the sociocognitive approach (Van Dijk, 1984, 1993, 1998) etc.

As will be seen below, the dissertation draws on the sociocognitive approach to Critical Discourse Analysis (mainly Van Dijk’s work) since it integrates (see 4.3.2) Discourse Studies with politics, ideology and knowledge, factors that are considered essential in the definition of public policies by the Conceptual Framework.

4.3.2 The connection between ideology, knowledge and public policy

Out of all of the forms of Critical Discourse Studies, and considering the vast number of areas of research that can be or have been analysed critically through discourse, this dissertation will focus on two core elements: ideology and knowledge. The relationship between public policy and discourse is that discourse is the medium through which
ideology is mainstreamed into governmental action, with the support of knowledge, the element that structures the justification for selecting a policy (Schmidt, 2008).

Van Dijk has developed a relationship between ideology and knowledge in public policy, and his interpretation underpins the version of discourse used in the conceptual framework of this study.

Van Dijk (1998, 2004, 2006) defines ideology as ‘the fundamental beliefs of a group and its members’ (2004: 6). Ideology is irrational and intuitive, knowledge is rational and justified. Ideologies exist as ideas and beliefs that serve groups as they seek to understand or explain what takes place in the world (Van Dijk, 2006: 115). Ideology forms the basis for the social practices of groups of people. These ‘social practices’ or behaviours, are transmitted through language/discourse, and have an influence on how individuals acquire knowledge (Van Dijk, 2004: 9). Ideologies are beliefs that are assumed true by a group of people - social representations that constitute fundamental reasons for the existence and continuity of the group. Ideologies, generally, refer to high level issues that are political and relevant for the group and the survival of their set of beliefs. Van Dijk names these beliefs as axiomatic or fundamental. The creation, comprehension and expansion of ideology has two elements: cognitive and societal (Van Dijk, 2004: 9).

**Cognitive elements**

According to Van Dijk, fundamental beliefs form part of what is termed *Long Term Memory* which encompasses:
• Episodic memories: based on personal experience. Ideology is not included here since these memories are not socially shared.

• Sociocultural knowledge: which allows individuals to understand each other. It is in this way that individuals share knowledge that helps explain the world. Ideology is typically located in this type of long term memory. It is in this category where values are embedded in the group – beliefs that something is good or bad, and therefore should be allowed/compensated for/prohibited. Examples of sociocultural knowledge groups are neoliberalism, social democracy and fascism.

• Common ground (Van Dijk, 2004: 13): covers beliefs that individuals assume are known by other individuals in their common or ‘daily lives’. Common ground beliefs are shared by a larger group than sociocultural knowledge and they pose no conflict or opposition (the we-them dichotomy). As quoted by Van Dijk ‘Common Ground beliefs feature norms and values, which precisely form the evaluation criteria for what members of a culture hold to be good or bad, and what should (not) be done’ (2003: 5). Examples of common ground groups are western-christian civilization, and Islamic civilization.

• Opinions and attitudes (Van Dijk, 2004: 13): the non-common, not certain, or controversial views that individuals, within a group, have. They are not assumed as true, and are contested. These can be flexibly integrated into ideologies when the framework of those ideologies is threatened by events.

Ideologies are structured into propositions or, as Van Dijk terms them ‘clusters of beliefs in social memory’ (2004: 16). These clusters of beliefs are concepts that express a complete idea/thought in the shape of simple forms/clauses. Ideology constructs a
complete vision of reality, or of the world, through easily structured categories (Van Dijk, 2004: 17; 2006: 124). Van Dijk asks:

- Who forms part of this ideological group?
- What is the individual meant to do in this group?
- What are the group’s aims?
- What are the values?
- How are the individual and the group supposed to relate internally and to others?
- Who can dispose of the group’s resources?

The homogeneity of the application of ideologies is a different matter. Ideologies offer a grand explanation of the world which tends to be abstract, not concrete, in order to adapt to all circumstances and to reduce the risk of being considered false. This level of abstraction can accommodate different understandings or perceptions of what the belief/idea means or tries to explain. Social practices based on the interpretation of the belief can divide groups (for a visual explanation see Figure 2).
Knowledge derives from the application of the scientific method. Knowledge is considered by Van Dijk as free from ideology, though in reality, the difference between knowledge and ideology is more blurred.

*Societal elements*

Ideologies are essentially a social event (Van Dijk, 2004: 30) where a group of individuals share a set of beliefs, or have something in common. The rise of ideology is also a societal event, when people understand and share a newly assembled collection of beliefs. These beliefs determine ways of acting every day. Van Dijk (2004:32) calls this political level, the effects of ideology on the individual’s actions. At the political level.
Van Dijk (2004: 34) studies the role and impact of ideology on groups. This dissertation uses the ‘membership’ definition of groups (2004: 34), that is, a collectivity of people that have a common ideology. Ideologically driven groups tend to be organised and this organisation can also include daily practices or habits.

Institutions and political debate also spread ideology. Ideologies are communicated and taught mainly through institutions such as schools, universities, the mass media, the church and others. The discourse within institutions is considered to be public discourse (2004: 34) and can include written, verbal and non-verbal acts (style of communication, methods for collecting information, networking, internal organisation etc.). Whereas, at the cognitive level, ideologies exist to assist the individual to ‘organise social representations’ (Van Dijk, 2004: 35) at the group level, ideologies are defined by ‘power and dominance’.

The ideologies of powerful groups become dominant and they become legitimised forms of thinking. Legitimisation, or acquisition of dominance, is expressed within the group by regulation and distribution of resources (not only monetary, but also property, jobs etc.) towards the dominant group.

Van Dijk points out that specialised knowledge is understood through specialised discourse (2003: 30). A person expressing ‘expertise’ on a particular topic uses different rules (grammatical, meanings etc.) to form their specialised discourse and distinguish it from their discourse when communicating non-expert concepts. He also distinguishes two sequences; 1) the internal composition of the specified knowledge issue/point, and
2) how this is communicated. In his view the internal management of specialised knowledge can be hierarchical or networked or both, whereas when this ‘expertise’ is turned into discourse, it tends to be linear or sequential. Users of discourse can also take a real case or example and use it as a descriptive comparative method to try and convey expertise.

The broader literature review indicates how ideology and knowledge can influence (through discourse) policy formulation and change in government (Hall, 1983; Bergeron and Kop, 2002). Van Dijk (2003, 2004, 2006) suggests that ideas are beliefs that the individual or groups of individuals believe to be true and are transmitted within groups of individuals by means of discourse. The role of knowledge is to justify the beliefs shared by groups of individuals as true. In essence, Van Dijk defines ideas (Van Dijk uses the term ideology), beliefs and knowledge as follows:\(^21\):

- Among many other things, ideologies are systems of beliefs.
- These systems of beliefs are shared by members of a social group.
- Groups also share other beliefs and attitudes.
- Groups not only have their own ideologically based ‘knowledge’ but also share in more general, consensual, culturally shared knowledge.
- This shared knowledge may be seen as the foundation of all cognition, across and between different groups, and thus also occurs within different ideologies.
- Groups select some of these cultural values and organise them in their own ideologies, e.g., freedom, equality, justice or objectivity.

\(^{21}\) www.discourses.org/.../Political%20Discourse%20and%20Ideology.pdf
• Ideologies and the social representations organised by them control the social practices of actors as group members

5 The conceptual framework

5.1 Introduction

The objective of this research is to explain the role of ideas and the direction and degree of change in the definition of new research and innovation policies in Catalonia between 2007 and 2008 by tracking:

• The elements of change in Catalonia: ideology, paradigm, policy and political strategy
• The impact of ideas and ideology in shaping change in regional research and innovation policy in Catalonia
• The role of epistemic communities in regional research and innovation policy in Catalonia

A number of propositions have been identified that shape my conceptual framework. These propositions are:

• Ideas are important determinants of policy.
• Ideas shape policies through discourse.

It has been mentioned in Chapter 1 that the propositions derive from the academic literature; observing the media; my own professional experience; and informal conversations with policy makers.
• Actors that transmit ideas on research and innovation can be found at different levels in the development of research and innovation policies.

• The degree to which ideas influence policy change is limited by pre-existing dominant ideologies and their persistency.

• The final nature of research and innovation policy will be affected by a range of other political factors at the regional level.

Using a set of appropriate methods (Chapter 6) my conceptual framework will is to offer an empirical model that explains change in Catalan innovation policies from 2007-2008. The validity of the conceptual framework is assessed in Chapter 7 (analysis).

In sum, the remainder of chapter 5 will outline the conceptual framework by focusing on:

• The elements (ideology, paradigm, policy and political strategy) that form the discourse through which public policy is defined (Section 5.2)

• The impacts that these variables have over policy definition (Section 5.3).

• The actors that are involved in policy definition (Section 5.4)

• The structure of my conceptual model (Section 5.5)

5.2 Elements of the conceptual framework based on the existing literature

I have identified four key elements that form the discursive dimension of the policy definition process: ideology, paradigm, policy and political strategies. These elements are an assembly of the literature and, to a lesser extent, personal observations of how
policy and public sector strategies are defined. The initial conclusion was that politicians and policy makers had similar opinions and views in regards to most policy issues related to technology and modernization.

Having observed this I decided to understand if this was a happy coincidence or if it could be considered a true conversion of views. As such I performed a review of the academic literature that could explain this situation. In my literature review (for further details please refer to chapter 4) I found several authors that, when combined, offered a comprehensive view of how ideas used in policy definition tend to derive from a common source that leads to homogenizing and standardizing effects. The first school of literature that best captured the dynamic of shared values and ideas that I saw in Catalan policy makers was Van Dijk’s sociocognitive approach of Critical Discourse Analysis. Van Dijk’s (2003, 2004, 2006) explanation of how ideology, by means of discourse, leads to common acceptable social behaviors of individuals that are clustered in a group meant that ideology could be one of the key elements of the conceptual framework that I was building. Ideology is understood by Van Dijk (2003) as an accepted discursive frame by a whole group. Van Dijk’s concept of ideology fitted in with my initial observations, where policy makers structure their discourse in accordance to a particular ideological frame. But it did not help explain the whole situation. Van Dijk suggests that ideology bounds a group of people (the Catalan people, or the European people), whereas I had observed a trend of common ideas within a subgroup around a specific issue area (those involved in Catalan policy definition). Van Dijk (2006), Hall (1996), Haas (1992), Campbell (2002) and Mytelka and Smith (2002) provided a plausible explanation on how this particular subgroup of individuals (policy makers and politicians) shared a common view on a particular topic
when in theory their political positioning was so different. Their input helped build the conceptual framework. This was the concept of paradigm definition or paradigm change as a result of the ownership of specialized discourse or knowledge by a limited group that are termed as epistemic communities (Hass 1992) or specialists which is the second element of the conceptual framework. Specialists are backed by the idea of legitimacy (Bergeron and Kopp 2002) due to their monopoly and discursive control on a concrete issue (Van Dijk 2006). As a consequence, non-specialists will accept their explanations. Specialists can diverge in their views, which in itself entails conflicting views and leads to construct different discursive frames to the same issue, which in turn leads policy makers and politicians to defend one position or the other. On the contrary, and as was the case of my observation, if specialists have one view on an issue, hence one discursive frame, politicians and policy makers will defend the same reasoning and will express it through a similar discourse.

I assumed, after reviewing Hall (1996) and Van Dijk (2006), that the dynamics of discursive convergence applies to the third element of the conceptual framework; public policy, where ideology establishes the boundaries that limit discursive frames, where paradigms are defined by a small group of specialists, and where policy is developed by individuals that are influenced in one way or another by both ideology and paradigms.

Finally, the introduction of political strategies (the forth element) is the only element of the conceptual framework that does not derive from the academic literature. Political strategies were brought into the conceptual framework as a consequence of my interviews with politicians that were key stakeholders of the case study that is analyzed in this research. I had initially not identified this element, but the transcripts of the
interviews highlighted an important factor which is the political relevance of policy initiatives and how political objectives also have an impact on the design of a policy definition process. Political strategies could not be left out despite it being a category that does not fall into the ontological levels of the first three elements.

Once having gathered the academic references pointed out above into my conceptual framework I have designed the conceptual framework in the form of a unpredictable process where politicians initiate a process to set political agendas and to have policy initiatives approved (Maddock, 2002) and where these policy initiatives are framed by non-political policymakers. All this happens within the boundaries of a dominant ideology, for example, neo-liberal economics, privatisation etc. Thus, policy initiatives tend to follow the modification of an existing paradigm, and often the transformation of citizen, business and government relationships. There is, however, a feedback loop in this process whereby ideas for policy inform existing paradigms and can, rarely, modify them. It is also possible, but rarer, to have an interaction back up from the policy or paradigm level to the ideology and to a modification of the ideology. In principle the ideational flow can go both ways.

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23 "Institutional leaders within governments or regional governments usually have more power to set agendas or resist change than those in local or regional communities' (Maddock, 2002: 39)
In figure 3, at the category of ideas, the highest level (ideology) sets the limits within which paradigms and policy ideas develop and are modified. The lower the level, the more detailed and more specific the knowledge of the actor participating in it. Further detail on the distribution of the four elements of my conceptual framework can be seen below:

- The highest level is *ideology*. Ideology is considered as the basic framework that forms a group’s understanding of the world. It offers high level explanations of the events and realities that surround us. Ideology is the filter of our knowledge. Ideology is rarely questioned, most of the times it is assumed to be true. From a policy definition perspective, it constitutes the base from which the actors involved in the process start finding explanations, or solutions, to emerging problems. Ideology is expressed in global terms, with generalisations and a lack of detail.

- The mid level of discourse is *paradigm*. Paradigm follows ideology and is linked to a more specific, though still high level description of, or answers to, issues or topics. When a problem is identified, ideology offers the explanation offered at
the international level, sets the boundaries, and the paradigm offers a more
detailed description of the justification within these boundaries.

- The lowest level of influence is *policy*. Policy can be considered as the most
technical of the three levels. It is a concrete expression of the paradigm. It details
the solution that fits to the existing and dominant paradigm and is perceived by
decision makers to solve a defined problem by using existing or new tools.

I have identified and termed a fourth element of policy definition as political strategy. It
entails the use of a policy initiative not only because it is considered right, but as a
means to fulfill a political agenda.

For each of the three bullet pointed elements listed above there is, according to Van
Dijk (2004), a variable that affects the policy definition process. These variables are:

- *Knowledge*, which has an influence at the level of the policy process.

  Knowledge can be considered to be the ability of a group or individual to
  interconnect and make sense of information gained through perception or
  interaction. Van Dijk defines knowledge as ‘scripts or other schematic structures
  stored in Long Term Memory’ (2003: 23) as a result of education and ability.
  Knowledge includes abilities or skills gained through education and experience.
  Knowledge can be categorised as follows:

  - Ideological level knowledge is the common knowledge acquired by a
    group, the content and structure of which is known by all of the members
    of the group. It is widely shared and is considerably robust against
    contestation. Van Dijk terms this sociocultural knowledge (2003).
5.3 Impacts of policy definition process: change and applicability

There are various types of impacts arising from the policy definition process outlined above. I will focus on two. These are, degree of change of existing policies\footnote{For example, the increase of income tax by a new government as a distributionist policy.} and
homogeneity/applicability of the modified discourse in different geographical areas.

A summary of possible impacts which I will look at can be seen below:

- At the ideological level there is little probability or significant change as a consequence of the limited period of time being analysed in the case study (two years). It is important to note that discourses at the ideological level are considered true and accepted as this by the group, making it a discourse that tends to stability, though it can change given the right circumstances.
- At the paradigm level the discourse allows some flexibility. This flexibility is limited and does not affect the core meaning of discourse being modified. Hall (1993) considers this as a tailored first order change. The nearer a paradigm is to the core of an ideology, the more likely it is to be applicable and thus accepted by a wide portion, if not all, of the population belonging to a group with shared ideology.
- At the policy level there can be first order change (Hall, 1993, also terms this as satisfying) since the number of options that can be derived from previous policies are limited.

5.4 The communities: actors involved in policy definition

Those participating in the policy definition process are the agents of change or actors. They play a role in the process, they hold responsibilities and accountabilities and they drive it or at least participate in it. There are different kinds of actors including ‘experts’, politicians, policy makers, and other stakeholders with interests in the policy.

25 For example, the flexibilisation of the labour market is a general tendency in Europe.
and affected by it. They can each play more or less active roles. The roles they play are
determined by their power, competencies, capacities and skills, and by the way they are
able to influence or take advantage of the dominant discourse.

The three main groups of actors that define policy are; epistemic communities,
politicians and policymakers. The epistemic communities (Skowronek, 1982) include a
group of wider stakeholders at different levels that are experts in a topic, and:

- Have control and ‘own’ the knowledge needed to influence policy definition.
- Participate in or have influence over the policy definition process.

Both of these types of activity can make the actors within epistemic communities a
major force in influencing and initiating policy definition.

Politicians have a number of roles, both active and passive, in the policy making cycle.
They can dismiss a policy proposal, they can approve a policy proposal and they can
(due to political, ethical or personal motivations) initiate the action to create a new
policy. They can engage in various ways with other actors, for example, seeking advice
from local epistemic communities and making decisions based on their input. In cases
where the politician initiates a policy proposal, this proposal can be raised by them as a
consequence of political motives and/or influence from the international epistemic
community, or a moral stand in favor of a particular situation or issue that is perceived
to cause, for example, inequality. Most often politicians tend to be guided by their
expectations as to what increases the likelihood of political success and their capacity to
understand the issue and deal with it. If there is no particular political advantage to be
gained, or if they do not understand the essentials of a policy proposal and issue, the odds are that the policy proposal will not be pursued.

As for policymakers, they are the link between the politician and the epistemic communities. Policymakers have, generally, a specialised knowledge of a topic and tends to be a member of the local epistemic community. The policymaker belongs to the local epistemic community group and can draw in detail the grand picture that the politician describes more loosely.

5.5 Structure of and actors in the conceptual framework

I have utilised three types of actors to suit my research interests:

1) the international epistemic communities
2) the local epistemic communities, including policymakers
3) politicians, who are in turn the decision makers in this process.

Both epistemic communities contribute to the knowledge base that underpins policy and influences politicians.

The level (international/regional/political) assigned to each of these actors can be seen below:

- International epistemic communities represent the international level. They are considered reputable and knowledgeable in their area of expertise at an international level. In this thesis, the fact that they belong or develop their
discourse within, or supported by, an international organisation (the OCDE and the EU) that has a reputation for offering viable and attractive policy alternatives makes them a source of influence (Henriques and Laredo, 2013; Mytelka and Smith, 2002; Edler, 2002) in the amendment of paradigms and policies in Catalonia.

- Local epistemic communities are present at the regional level. They include non-governmental experts and policymakers that adapt the proposals formulated at the international level to the local reality. The regional level is formed all of the individuals that participate in the process to define a policy (except the final decision makers who belong to the political level). They adapt the paradigm based on the needs of the local territory by developing output that justifies their position, disseminating their proposed alternatives through activism, participating in the policy definition process through the role of the policy maker, as advisors etc.

- The political level is assigned to politicians and it includes two parts; policy initiation, that is defining a new policy which fits the politician’s political agenda, and policy elaboration, that is policy definition processes which ensure that new policy does not contradict existing ideology, is respectful to local realities and feeds off past policy efforts.

For an overview of the conceptual framework please take a look at Figure 4 (below).

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26 It must be noted that new policies can be developed within an existing paradigm. This situation, though, is not the object of my research.
Figure 4: Visual overview of the relationship between the conceptual framework and the propositions (the arrows indicate the direction of discursive influence).

6 Methodological approach

6.1 Introduction

This chapter describes my research strategy and methodological tools, and how I have implemented them. It also sets out the sources that I have used to answer my research objectives and to fulfil the objectives.

This research seeks to explore and interpret the dynamics of an event (discursive influences in the development of innovation policy in Catalonia) within a limited scope that can be extended to more longitudinal or quantitatively significant analysis in the future. Due to the nature of the questions and objectives of the research, and taking into account the constraints (access to sources and resources available) involved in
undertaking a detailed qualitative study of an event such as policy definition, I have chosen to do a case study of Catalonia’s innovation policies from 2007 to 2008. The tools used to explore the case study are qualitative and include process mapping, coding, interviews and documentary reviews. Some of these tools complement each other. It would not be possible to track the policy process, for example, without also conducting interviews or reviewing documents.

The reasons for using a case study as a research strategy are twofold. On the one hand, the questions that the research is trying to answer - such as how a new innovation policy emerges, what the channels of influence exist between the levels involved in defining a new policy, what the impact of ideas is - all imply qualitative sources, and strategy and methods need to accommodate this. On the other hand, the characteristics of the research objectives are limited to a specific context (the policy definition process) within a particular space and time (Catalonia from 2007 to 2008) and involve a limited number of actors. As has been mentioned before, a single case study can draw a detailed picture of this real life situation that can answer the questions and observe if the conceptual framework explains or not the change in an instance of Catalan innovation policy. Further research proposals exploring in further detail this instance can be found in chapter 8.4 of this thesis.

There are primary and secondary sources for the case study. Primary sources are direct information from participating actors. Secondary sources are mainly policy and working documents which were part of the process of defining Catalan research and innovation policy, policy documents from the OECD and European Commission, and other
analytical documents used to contextualize the case. A list of secondary sources can be found in the Annex (Section 9).

The tools used to capture and analyse the data used in the analysis are coding, interviews and documentary research. The interviews, minutes of the Catalan Parliament, and the video footage of press conferences capture data and either complement or refute the information obtained from textual coding. The interviews contain important input, not found in the secondary sources, relevant to the research questions and which aided in developing and adding detail to the process followed to develop the CNARI. Documents that were used in or describe the development of the CNARI were studied. Most of these documents are work documents (reports of workshops, transcripts of interviews etc.) that were developed by the team that created the CNARI.

A key method used to analyse the data captured both by the interviews and document research is textual coding. Textual coding allows the researcher to organise into logical blocks the raw text communicated by both primary and secondary sources that are identified in Chapter 7.2.3. It is a tool used to make sense of messages across multiple sources and to observe if there is a repetitive pattern of communication that shows, or not, if there is a dominant discourse as declared in the conceptual framework. Textual coding, though, does not give a complete picture of why a message is communicated, or how a discourse is adopted and communicated. Textual coding needs to be complemented by other methods that are able to capture the actors’ intentions when forming and communicating a particular discourse. In this research the tool selected to complement textual coding is interviews.
Further detail on these methodological elements and how they apply to the case study can be seen below.

6.2 Research strategy: case study

A research strategy is a ‘way of collecting and analysing empirical evidence, following its own logic’ (Yin, 1994: 4). Following this definition of research strategy, Yin identifies five types of research strategies in social sciences; experiments, surveys, archival analysis, histories and case studies. He goes on to state that the right selection of a research strategy will depend on:

- The type of research questions posed.
- The extent of control an investigator has over actual behavioural events.
- The degree of focus on contemporary as opposed to historical events. (Yin, 1994: 4).

In using a case study, Yin points out that the research question will tend to focus on ‘how’ and ‘why’ since they are normally exploratory questions. As for the second and third element that a strategy will depend on, ‘the extent of control an investigator has over actual behavioural events’ and ‘the degree of focus on contemporary as opposed to historical events’ (Yin 1994: 13), Yin believes that for a case study to be a viable research strategy it needs to explore events that are contemporary. Case studies, like histories, rely on primary and secondary documentation, but due to the contemporary focus of case studies, it is possible to include two sources of information not available for histories - direct observation and interviewing.
The formation of the CNARI is a recent event, sources are plentiful and some data has been extracted from face to face interviews and transcripts from interviews and focus groups conducted while it was developing.

6.3 Methodological tools

A case study is an exploratory research strategy that offers the researcher the possibility of selecting several methods and techniques. As a consequence of its exploratory nature, it has the intention of revealing dynamics, hence the methods and techniques available are mainly qualitative. According to Flick (2008), research is qualitative if it is ‘intended to approach the world out there (…) and to understand, describe and (…) explain social phenomena from the inside (…) by analysing experience of individuals or groups (…) interactions and communications in the making (…) based on observing or recording practices of interacting and communicating (…) By analysing documents (texts, images, film or music) or similar traces of experiences and interactions’ (2008: ix).

Flick’s definition is aligned with the nature of this thesis which explores - by capturing the views of actors who participated in this event, analysing documentation and observing all media and records that were identified as relevant - how and why change happened in Catalan innovation policy (a social phenomenon) in 2007/2008. I look at the use of written and oral data from different sources and observe if they show a reiterative use of common concepts, if they convey analogous messages, if a particular understanding of the context is prevalent and if there is a consistent pattern of semantic
similarities in order to support the interpretation of the development of innovation policy in Catalonia from the perspective of the conceptual framework that has been presented in chapter 5. Following this objective, the qualitative tools selected for the case study are:

- Coding of textual, oral and visual data. Coding is used to observe if there is a consistent discourse across all the sources identified in the case study. In this research coding puts qualitative data into a logical structure and observes if the message is continuous and consistent. The coding scheme is modified or adapted as the text is analysed (Hsieh and Shannon, 2005).
- Interviews. The purpose of my face to face interviews was to get individual perspectives, additional data on the Catalan policy process, additional codes to trace discursive consistency between actors, and to validate or not the propositions that form the conceptual framework.

The methodology had two stages, first description and tracing of the process; second, analysis and conclusions.

- **Process tracing.** The first building block of the case study recreated the discourse justifying the creation and content of the CNARI. This was done by conducting interviews and reviewing the CNARI creation process documents.
- **Analysis and conclusions.** Having described the process that created the CNARI, I coded textual data from primary and secondary sources to show whether the discourse was continuous and aligned through all of the sources. This was done for each of the three levels of the preliminary conceptual framework (international, regional and political) and was complemented by
additional information obtained from the interviews (additional information on how textual coding is used in my research can be found below).

Coding of textual, visual and oral data was a key process that took place mainly in the analytical section of the second phase of the research and was based on Zhang and Wildemuth (2009). The complete list of codes can be found in Annex 6.

1. Data preparation. Due to the different genres of sources used in this dissertation (from interview transcripts to policy and academic documents) the research has focused on sources identified while conducting the process tracing exercise, and literature captured using three academic literature search tools. I filtered sources based on how well they meet the scope and focus of the case to be studied.

2. Unit of analysis. I have focused on two analytical blocks: 1) the process of development of the CNARI and 2) the end product, the CNARI itself. The dissertation did not concentrate only on words, phrases or specific syntactic structures, it also focused on textual and oral data which had been used to develop, transmit and justify ideas and their adaptation or replication through the three levels of analysis (see Section 7.3).

3. Categories and coding schemes. The categories and coding schemes were elaborated, in the first instance, at the international level (these categories can be found in Annex 7: Textual codes). My conceptual framework implies that international epistemic communities establish discursive frames that lower levels of governance then use to define policy. Hence, the categories used at the international level are adapted by the regional and political levels. The steps to develop coding schemes throughout all three levels are as follows. Sources at the international level were given multiple readings that included highlighting, and
text or oral data selection (termed codes) with the objective of seeking consistency of messages. This process continued until the results of the new coding exercise coincided with the previous one.

4. Coding of the regional and political sources, analysis and conclusions. Based on the categories defined at the international level, the regional and political codes that matched these categories were grouped together with the international codes. Interpretation of the pattern obtained from coding all of the sources, including the interviews, drove my analysis. The criteria used to determine if the regional and political level codes were in line with the international level codes were; consistency of the message across levels; replication of interpretation (the same interpretation when revisited as when first coded); study of the overall coding results of a source to observe if its overall discursive frame yields a consistent sequence of codes that correspond to the international level discourse.

Figure 5: How sources are turned into categories and codes
6.4 Sources and types of data

The data used in the case study is qualitative and was extracted from a variety of sources. These sources are:

- Interviews: six face to face interviews were conducted with the main agents of the development of the CNARI. The interviewees were selected based on their role in the process. I chose to interview the key figures that had full exposure to the development of the CNARI and participated actively through the whole or most of the exercise. I discarded to interview those that had limited participation (most of them restricted to a one time consultation) since it was operationally too complex to undertake (more than 500 individuals were consulted) and their views and inputs had already been captured in some of the documentation that is used in this research.

<table>
<thead>
<tr>
<th>Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>President of the Catalan Government</td>
</tr>
<tr>
<td>Minister of the CNARI</td>
</tr>
<tr>
<td>Director of the Directorate General of the CNARI</td>
</tr>
<tr>
<td>Co-President of the Permanent Committee of Experts of the CNARI</td>
</tr>
<tr>
<td>International Expert/Consultant involved in the development of the CNARI</td>
</tr>
<tr>
<td>Member of the Permanent Committee of Experts of the CNARI</td>
</tr>
</tbody>
</table>

Table 3: List of interviewees

- Texts. Two main group of textual sources are included in this research. Texts that originated in the international level and texts that originated in the regional
level. The whole process of the development of the CNARI can be traced through the documents that were used to develop the final agreement. A complete list of the documents used for both the international and regional level texts can be found in Chapter 7.2.3, 7.2.4 and 7.2.5.

- Transcripts from interviews and findings from workshops. As part of the process for the development of the CNARI, 116 interviews with Catalan individuals related to Research and Innovation (university professors, directors of research centres, businessmen/women etc.) were conducted by a subcontractor of the Directorate General of the (DG) CNARI and a number of workshops that captured the views of 398 individuals were undertaken (for more information please refer to Annex 6). The transcripts of these interviews can be found in the ‘Pacte Nacional per a la Recerca I la Innovacio: Entrevistes, Departament d’Innovacio, Universitats I Empresa, Barcelona, 2008’ (DG CNARI 2008) and the findings of the workshops can be found in ‘Pacte Nacional per a la Recerca I la Innovacio: Taules de treball, Departament d’Innovacio, Universitats I Empresa, Barcelona, 2008’ (DG CNARI 2008) The transcripts of the interviews are a validating element of my research for the following reasons (they served as cross-reference with the data obtained from the face to face interviews):
  - They include a sample of the views of the actors belonging to the local epistemic communities.
  - The interviews were structured, which allows categorization and simplification.
  - The questions that were asked are relevant to my research questions and objectives (especially questions 1 to 8) which were:
### Interview questions

| 1. | From a SWOT analysis on the research and innovation system in Catalonia provided to the interviewee, he/she is asked to express an opinion and suggest changes to the SWOT analysis. |
| 2. | The interviewee is requested to identify key points and a hierarchy of priorities for research and innovation in Catalonia. |
| 3. | The interviewee is requested to identify types of initiatives that need to be taken to promote innovation in Catalonia. |
| 4. | The interviewee is requested to identify types of initiatives that need to be taken to promote research in Catalonia. |
| 5. | The interviewee is requested to identify how knowledge generation can increase innovation. |
| 6. | The interviewee is requested to value the state of innovation in their sector. |
| 7. | The interviewee is requested to identify the priorities for the research and innovation system in their sector. |
| 8. | The interviewee is requested to describe what he considers is the best model for research and innovation for Catalonia. |

Table 4: List of questions asked by the DG CNARI in the Process to develop the CNARI

- Visual sources and transcripts of parliamentary interventions. To understand the discourse of the Minister of the DIUE I used transcripts of his contributions in the Catalan Parliament presenting or defending the CNARI, and videos of a number of press conferences and presentations of the CNARI. Further details of these can be found in Chapter 7.2.3.
6.5 Final research design

An overview of the research design based on the descriptions found in Chapter 6 can be seen in Figure 6 (below).

Figure 6: Visual image of the final research design
7 Analysis

7.1 Introduction

When Jose Montilla was elected President of Catalonia in 2006, he had a list of priority actions that derived from his electoral programme. One of them was, as a consequence of his previous experience as Minister of Industry and Innovation in Spain, responsibility for innovation and research policy. True to his word, and as the Catalan Research and Innovation Plan 2005-2008 was coming to an end in 2007, he tasked Mr Biosca, appointed as Minister of the newly created Ministry of Business, Universities, Industry and Innovation (DIUE), to work on the design of a new research and innovation policy. President Montilla said that the new policy should reflect more than a simple plan, that it should define a shared long term vision to tackle the challenges that Catalonia had to meet in order to succeed in a globalised and competitive world. Both the Minister of the DIUE and the President agreed that it should be an Agreement. The process of developing CNARI had begun.

The CNARI was the logical continuation of the effort invested over the past 15 years in assisting and promoting research and, to a lesser degree, innovation in Catalonia. This time, though, it was going to be led by social and political consensus, due to the foreseen relevance and widespread impact of the initiative on the Catalan economy, with the inclusion of members of Catalan civil society who had a vested interest in research and innovation. This would be done through a (Catalan) National Agreement for Research and Innovation (CNARI). The agreement highlights the relevance given to
the concept of innovation. It was considered not only a governmental proposal but also a national\(^\text{27}\) necessity and required the effort of the whole of Catalonia.

The CNARI was launched bearing the sense of national urgency for one highly prioritised target: sustainable economic growth and increased competitiveness through innovation. The CNARI constituted the baseline on which the 2008-2013 *Research and Innovation Plan* would be founded. It was created by building on the propositions (the necessity of innovation for economic growth), techniques (benchmarking, best-practices and evaluation of previous actions) and actions of previous plans, and it was directed to obtain a consensus agreed view on how and why research and innovation needed to be promoted in Catalonia. The result was a moderately new policy that included novelties including but not limited to; the merger of two public agencies (called Accio) that would support the internationalisation of Catalan businesses; the creation of a committee of experts (named CCRI) that would periodically advise the Catalan government in topics related to research and innovation; and an increase in investment in innovation and research from 1.67% of the GDP in 2007 to 3% in 2017.

The present chapter explains how the CNARI was produced, who participated in this development, what tools or sources were used in the process or influenced it, and what was the content of these sources. Chapter 7 is a key chapter for two reasons. First, it helps the reader understand the narrative of the case study, not only because it contextualises in a linear form the key moments and actors involved in the CNARI, but also because it presents the sources from a historical perspective including their ideological foundations and how their recent evolution matches the Catalan policy.

\(^{27}\) Throughout this dissertation Spain is referred to as a state, Catalan as a nation.
process (Chapter 7.2). Second, it presents the analysis of the content of the sources from the point of view of the conceptual framework (Chapter 7.3). The analysis performed by combining the results of the process tracing and the coding is undertaken in Chapter 7.4. The comparison of the analysis in relation to the research questions and the propositions are presented in Chapters 7.5 and 7.6 respectively.

7.2 The process of developing the CNARI

7.2.1 The actor landscape

This chapter introduces the actors that participated in or influenced the process to develop the CNARI, and discusses their roles in this process. The actors have been grouped in three categories:

1. At the international level:
   
   o The Organisation for Economic Cooperation and Development (OECD), creators of the innovation strategy that will be described further on, and firm defenders of the concept ‘the knowledge economy’ as the future of economic development.

   o The European Union (EU), a crucial actor at the international level in the definition of the CNARI. The EU exercises influence through: the Lisbon Agenda, in terms of principles that EU member countries should target; the General Directorate of Enterprise and Industry, with tools such as their Framework Programmes and Innovation Scoreboard; other instruments such as ‘White Books’, international conferences etc. to
influence the understanding of the role of research and innovation in EU territories.

2. At the regional level:

   o Members of an *International Advisory Panel* (for further information on who formed part of the International Advisory Panel please see Chapter 9.6) that customised ideas of how innovation and research should be managed within the Catalan context. They fall into the international and local epistemic community group. Their role in the development of the CNARI is mainly as a local epistemic community. The Minister of the CNARI and the DG of the CNARI declared that these experts were included in the process as a means of legitimising the policy definition process.

   o Members of the *Permanent Committee of Experts* of the CNARI, who belong to either the academic or business sectors and are based in Catalonia.

   o Individuals identified, interviewed or included in the DG CNARI workshops.

   o The Government of Catalonia, mainly through the Directorate General of CNARI created in the Ministry of DIUE. The definition of the *Catalan National Agreement for Research and Innovation* was driven by this Directorate General.

   o Individuals, academic institutions and think tanks with diverse views, who were involved in the CNARI development process. This dissertation, after reviewing numerous sources from this eclectic group, selected:
- Actors that participated in the elaboration of the *Catalan National Pact for Research and Innovation*. The sources from this group include transcripts from interviews where they express their views in regard to what the CNARI should include.
- Think tanks who produced relevant documents and in so doing cooperated with other actors belonging to the previous group

3. At the political level. If the previous two groups of actors were groups of individuals located either at the international or regional level, at the political level the dissertation has selected one group of actors: politicians. It is they who launch the process, receive the information through discursive frames formed at the international and regional level, and convert this policy discourse to a politically viable option. The case study includes the former Minister of Universities, Research, Innovation and Information Technology and the former President of the Catalan Government.

7.2.2 The development of the CNARI: process tracing

The first record that exists of the CNARI demonstrates the relevance research and innovation had in the political agenda in 2006. This record is the acceptance speech of the newly elected *President of Catalonia*, and former *Minister of Industry and Innovation* in Spain, Jose Montilla. The speech was given at the plenary session of the Catalan Parliament (Barcelona) on the 23rd of November 2006. In his speech President Montilla stated “We will push for the signature of the *National Agreement on Research*, we will make a big financial effort in research and the development of innovation to
reach the European average.” The focus on consensus building in key topics is a major part of President Montilla’s acceptance speech. Consensus needed to be built in certain key areas, he said, and had to be excluded from the typical four year political cycle. The strategic areas were immigration, housing, education and research and innovation. Out of these three areas, only research and innovation was signed off by all of the stakeholders that were invited to participate in the agreement. The process that kicked off with this political objective is described in this chapter.

As a consequence of this commitment, in 2006, the Catalan government created a Ministry with functions in the areas of universities, research, innovation, trade, SME’s, industry and internationalisation. The Ministry was named DIUE and was tasked with the development of the CNARI. The creation of the Ministry of DIUE was considered to be a strategic step by the President to move Catalonia from an industrial productive model towards a knowledge based economy. This, it was thought, could only be addressed by system wide actions. The functions allocated to the Ministry of DIUE were meant to address this change, provide more consistency to the actions. The person selected to lead this Ministry was Mr Josep Huguet I Biosca. He was sworn in on the 28th of November of 2006.

Five months after Mr Huguet was named Minister of DIUE, Jordi Cartanya, former Chief of Staff of the President of Rovira Virgili University of Tarragona and former co-author of the Strategic Plan for Research at this same university, was appointed to

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28 Page 18. Transcript can be found in www.parlament.cat - Sessió núm. 2.1 / Ple del Parlament / 23 de novembre de 2006

29 Decree 421/2006 of the 28th of November

30 Decree 423/2006 of the 28th of November
manage the initial planning of the CNARI. Mr Huguet’s instructions to Jordi Cartanya highlighted the need to include all Catalan stakeholders involved in research and innovation and to focus on consensus building. Within two weeks Jordi Cartanya presented the proposal to create the CNARI to Mr Huguet who, in turn, presented it to the Executive Council of the Catalan Government where it was approved unanimously.\textsuperscript{31}

The proposal to create the CNARI that was approved at the Executive Council of the Catalan Government was divided into three parts:

1. Development of a Base Document: the Base document would be created with input (obtained through interviews and workshops) from a selection of relevant actors (academics, researchers, business men/women and people related to industrial associations or workers unions) in the fields of research and innovation; input from a selection of reputable international experts that could provide the process the necessary aura of expert knowledge from the perspective of an outsider; and input from local experts, who would define the policies from a local perspective. The Base Document would be the basis for discussion with the social and political actors later identified as signatories of the final document of the CNARI (which included the leaders of all the political parties represented in the Catalan Parliament, presidents of all of the Catalan universities, and heads of the industrial associations and workers unions in Catalonia).

\textsuperscript{31} The Executive Council is equivalent to the more common Council of Ministers, a forum where ministers and president or prime minister vote to approve or reject all major actions to be executed by the government.
2. Approving the agreement. This phase would be made up of mostly bilateral negotiations between DG CNARI and advisors of the signatories on the one hand, and on the other a number of stakeholders or signatories that were previously identified by Mr Huguet and the President of the Catalan Government. The text of the Base Document would be modified according to the requirements of the signatories (in the end there were no major modifications to the Base Document). Once the text of the document of the agreement was finalised, it would then be signed by the stakeholders in a publicised event.

3. Implementing the CNARI. Once the final document was agreed, an implementation roadmap was designed. This is beyond of the scope of this research.

After the approval by the Executive Council, a new unit, referred to as the Directorate General of the CNARI (DG CNARI), was created within the Ministry of DIUE to drive forward the implementation of the plan. It was decided by Mr Huguet and Jordi Cartanya, that this structure would be lean (small), independent, and staffed by resources from outside the Public Administration.

Mr Huguet named Jordi Cartanya as General Director of the DG CNARI. This gave Jordi Cartanya the structural power to interact with Director Generals of other ministries.

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32 Note from the Jordi Cartanya interview: ‘This initially caused some tension within the civil servants of the Ministry who were suspicious over the lack of clarity of what were the roles and responsibilities of the DG CNARI’.

33 In the Catalan Public Administration the top hierarchical levels tend to follow the following structure:
Directors General (from the Departments of Culture, Health, Public Works, Education and Economy\textsuperscript{34}) were identified by both Mr Huguet and Jordi Cartanya as the relevant stakeholders in government. Secretary Generals were considered too high a level to be involved in the development of the CNARI, and anything below a Director General was considered to be not near enough to decision making power, thereby slowing the progress of the CNARI. Once the DG CNARI was approved, Jordi Cartanya set up a structure that would support him in the development of the agreement. He recruited two resources and contracted the services of an external firm to assist in providing manpower and methodologies for the workshops and interviews that were included in the approach to develop the first phase of the CNARI.

There were two advisory units to support the DG CNARI: the Permanent Committee of Experts\textsuperscript{35}, formed by local experts to act in an advisory role throughout the development of the first phase; and the International Advisory Panel, composed of high level international academics who held a one day workshop on the final version of the Base Document and who, according to Mr Huguet, served to “legitimise the process”. Both Mr Huguet and Jordi Cartanya declared that the international experts were brought in to complement the input provided by local actors.

\textsuperscript{34} These Departments were identified by Jordi Cartanya in the face to face interview. He acknowledged that he could have missed some of the Departments that were involved.

\textsuperscript{35} The Permanent Committee of Experts was formed by: Lluis Arola Ferrer, Ramon Olle Ribalta, Eva Bastida Tubau, Joaquin Boixareu Antoli, Ramon Gomis de Barba, Guillem Lopez de Casanovas, Montse Olle Valls, Miquel Angel Pericas Brondo, Lluis Rullan Colom, Miquel Teixidor Castea, Mireia de la Rubia Garrido, Salvador Barbera Sandez, Xavier Cardona Torrandell, Josep Maria Pujol Artigas.
Some members were selected on the basis not of their expertise but their political importance. These members were identified by Mr Huguet and the President of the Catalan Government. Once the members of the committees were settled, the process of developing the CNARI started\textsuperscript{36}.

In addition, the Minister of the DIUE tasked the DG CNARI to contract the OECD (it was mentioned that the OECD started their work in the second semester of 2007) to evaluate the Catalan research and innovation system. Their final evaluation report was published in 2010, but it was pointed out that the main conclusions were available from the beginning of 2008 and influenced the development of the CNARI.

The CNARI formation phase lasted approximately one year and four months (from June 2007 to October 2008) and was announced at a press conference where Mr Huguet stated CNARI’s aims, and explained the rationale for the process.

The timeline below (Table 5) serves as a summary of how the Agreement was developed:

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\textsuperscript{36} One example was mentioned: the inclusion of Mr Mas Colell in the International Advisory Panel. Mr Mas Colell is the previous Minister of Universities and Research of Catalonia, a prestigious international scholar, and a member of the opposition party. He was also appointed by the political opposition as the main contact point and negotiator of the CNARI. It was his approval of the final document of the CNARI which triggered the leader of the opposition to sign.
<table>
<thead>
<tr>
<th>Activities</th>
<th>Description</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constitution of the Permanent Committee of Experts</td>
<td>Lead the tasks for the development of the Base Document.</td>
<td>17th of October 2007</td>
</tr>
<tr>
<td>First session of the Permanent Committee of Experts</td>
<td>To review the progress and content of the Base Document.</td>
<td>8th of November 2007</td>
</tr>
<tr>
<td>Workshop of the International Advisory Panel</td>
<td>To assess the Base Document and give suggestions on how to improve it. Their conclusions were finalised on the 4th of January 2008 and sent to the DG CNARI (members of this panel are identified later on in this thesis).</td>
<td>21st of December 2007</td>
</tr>
<tr>
<td>Participation of local actors in the process</td>
<td>Through discussion boards: 22 sectors, 7 territorial boards, including 500 participants and a total of 114 personal interviews.</td>
<td>January 2008 – November 2007 to March 2008 – Interviews</td>
</tr>
<tr>
<td>Handover of the Base Document</td>
<td>The Base Document was presented by Mr Huguet in the Executive Council of the Catalan Government where it was approved. The Base Document was also presented at a press conference by Mr Huguet.</td>
<td>30th of April 2008</td>
</tr>
<tr>
<td>The second phase of the process</td>
<td>Bilateral discussions with trade unions, the main industrial associations, presidents of the universities of Catalonia, and all but one of the political parties represented in the Catalan Parliament.</td>
<td>May 2008 – October 2008</td>
</tr>
</tbody>
</table>

Table 5: Timeline of the development of the CNARI

The next section will depict in more detail the various sources that were used throughout the whole process to develop the CNARI, together with other sources relevant for my case study (OECD and EU documents). This will allow the reader to understand what these sources proposed, how the proposals were consistent right through from the international level to the political, and how they were framed.
7.2.3 Overview of the sources used to define the CNARI

A visual explanation of the relationship of the sources to the process of developing the CNARI can be found in Figure 7.

Figure 7: The relationship between sources in the process for the development of the CNARI

A more detailed analysis of the relationship illustrated in Figure 7 is presented at the end of Chapter 7. The purpose of this chapter is only to describe the sources.

A list of the inputs used to develop the CNARI and analysed in this case study can be seen below in Figure 8.
7.2.4 International level: the OECD and the EU as international epistemic communities

In this section I present the international level actors and sources that influenced the definition of the CNARI.

The OECD and the EU are international level organisations that are staffed and/or supported by international epistemic communities. Their concept of innovation is evidenced most comprehensively in the OECD Innovation Strategy (OECD, 2010) and the EU’s framework Creating an innovative Europe: report of the independent expert group on R&D and innovation (European Commission, 2006), and Putting knowledge into practice: a broad-based innovation strategy for the EU (European Commission,
2006). My conceptual framework for this thesis suggests that the influence of both the OECD and EU can be seen in the CNARI (Figure 9).

Figure 9: Timeline of the use of the concept of innovation by the OECD/EU (non-exhaustive sample of position papers) and Catalonia

Red frames are used to identify the sources that are within the scope of this research

In Figure 9 above the development of this discourse in the OECD and EU sources is set in relation to the development of the Catalan Innovation Plans. The timeline and sample of documentation shows how the formulation of EU and OECD innovation strategies

37 The documentation for the EU and the OECD shown in the image 9 are a selection of reports and research undertaken by both organisations from 2001 to 2007 and does not attempt to give a full picture of the evolution of the term ‘innovation’ by either organisations. These samples reflect the same discursive and
coincided with CNARI. Interestingly, the same relationship holds true for government innovation strategies in other European countries. Four examples of recent innovation strategies and plans are shown in Table 6 below (OECD):

<table>
<thead>
<tr>
<th>Country</th>
<th>Plan/policy/strategy for innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brussels Capital Region</td>
<td>2007 – 2013 <em>Regional Innovation Plan</em></td>
</tr>
<tr>
<td>Czech Republic</td>
<td>2009 – 2015 <em>National Policy for Research Development and Innovation</em></td>
</tr>
<tr>
<td>Estonia</td>
<td>2007 – 2013 <em>Estonian Research and Development and Innovation Strategy</em></td>
</tr>
<tr>
<td>Finland</td>
<td>2007 – 2011 <em>National Innovation Strategy</em></td>
</tr>
</tbody>
</table>

Table 6: Sample of innovation strategies by OECD countries from 2004 to 2009.

From this we see that between 2006 and 2010 there was an increase in government actions across the EU to define innovation as a core element of government policy. The Aho Report (Aho et al., 2006) and the EU Innovation Strategy (European Commission, 2006) were part of this trend and so was the beginning of the OECD’s definition of an innovation strategy (OECD, 2007). Further insight into the development of these three sources can be found in section 7.3.3.

conceptual frameworks as the Catalan research plans. This relationship is not studied in detail in this research (I suggest in the conclusions that a long term study of the relationship between Catalonia and OECD/EU is undertaken to validate or not the initial findings in this thesis).

38 These four are from a total of 44 governmental strategies to promote innovation in the OECD, identified from 2004 to 2010.
The OECD Innovation Strategy

The OECD came into existence with the signing of the Convention of Paris on the 14th of December 1960, creating one of the most critical international governmental organisations in relation to economic cooperation. The OECD has researched and proposed a number of alternatives to promote economic growth; this includes innovation as a lever for change. The OECD’s adoption of innovation as an essential element of economic growth was a milestone endorsed by the OECD Council at Ministerial level in Paris (May 2007). The Council instructed the OECD to develop a high level innovation strategy, to ‘provide a cross-disciplinary mutually-reinforcing package of policy elements and recommendations to boost innovation performance’ (OECD, 2007: 3). This was preceded by a long process within the OECD to define what innovation is, what its benefits are, and how it can be implemented.

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39 Article 1 (the agenda) of the Convention stated the aim to ‘promote policies: (a) to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy; (b) to contribute to sound economic expansion in member as well as non-member countries in the process of economic development; and (c) to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations'.

40 OECD policy or research papers related to research and innovation include: National systems for financing innovation (1995); National innovation systems (1997); Managing national innovation systems (1999); Boosting innovation: the cluster approach (1999); Innovative networks: co-operation in national innovation systems (2001); Innovative clusters: drivers of national innovation systems (2001); Innovative people: mobility of skilled personnel in national innovation systems (2001); Dynamising national innovation systems (2002); Governance of innovation systems (2005).
This process can be traced back to 1963, when the OECD published *Science, economic growth and government policy* (OECD, 1963) which highlighted in the OECD literature and framework the relevance of scientific and research policy as a key element in economic growth. The idea of science policy as a basic element for economic growth has evolved since then into the concept of innovation as the key element in tackling some of the barriers to growth. An example of the events developed by the OECD to formulate and disseminate their concepts, and reach a high level consensus in its member states, is the January 2004 meeting of the *Committee for scientific and technological policy at ministerial level* that discussed *Science and innovation policy: key challenges and opportunities* (OECD, 2004).

The text of the OECD Innovation Strategy is aligned with concepts and analysis in the CNARI (see Chapter 7.3). Much of the content of OECD Innovation Strategy was formed from 2007 to 2010\(^4\), having its peak of activity in 2008. This period coincides fully with the creation of the CNARI (see Figure 10 below).

\(^4\) *Innovation and Growth: Rationale for an Innovation Strategy* (OECD, 2007: 3): ‘Ministers asked the OECD to develop a broad-ranging Innovation Strategy to build on existing work, address remaining knowledge gaps, and above all provide a cross-disciplinary mutually-reinforcing package of policy elements and recommendations to boost innovation performance’. 

The OECD Innovation Strategy (OECD, 2010) is a document that lays out the logic of innovation policy. It outlines the challenges of the world and how innovation can help address them, how governments should formulate innovation policies to meet these challenges adequately. We will see later on in text analysis that conceptually the CNARI resembles the OECD document closely. The process tracing of the CNARI will illustrate the influence the OECD discussion had on CNARI’s development.

*The Aho Report, and creating an innovative Europe*

Though the OECD can be considered as one of the most important intergovernmental actors at an international level to promote science and innovation policy (Henriquez and
Laredo, 2012) it is not alone. The EU has also been an active participant in the creation of what we understand nowadays as innovation policy (Mytelka and Smith, 2002).

The EU, like the OECD, developed a group of documents to express their understanding of research and innovation, how it should be used and what the objectives are. Some of these documents also underpin the policy process in other European institutions, as well as in higher education, corporations or think tanks (Landabaso, 1997).

The Aho Report *Creating an Innovative Europe* was developed within formal processes involving the international epistemic communities. For the Aho Report the European Commission used some members of the international epistemic communities (termed as international experts in the report), while *Creating an innovative Europe* is an official Communication from the Commission of the European Communities (‘Commission’ hereon) that proposes strategy on research and innovation to European institutions.

The timeline below shows how for the EU, like the OECD, there is a common evolution in thinking about the role and concept of innovation in Catalonia Figure 11.

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42 ‘Creating an innovative Europe: Report of the independent expert group on R&D and innovation appointed following the Hampton Court Summit and chaired by Mr Esko Aho’, (European Communities 2006) (‘the Aho Report hereon).

7.2.5 Regional level: capturing data from the local epistemic community

In Section 7.2.5 I have listed the data found at the regional level and described briefly what they include and propose. There are five main sources in the development of the CNARI at the regional level:

1. The report of the International Advisory Board of the CNARI (4th January 2008)
2. The analysis of the international expert Svend Otto Remoe (10th of January 2008)
3. The Base Document developed by the Permanent Committee of Experts and the DG CNARI (April 2008)

4. The interviews (from November 2007 to April 2008)

5. Workshops (January 2008) held with what we can term the local epistemic community.

In the following paragraphs I summarise the content of these sources.

1) Report on a preliminary draft of the Base Document by the International Advisory Board of the CNARI (4th January 2008)

The information included in this section is obtained from the evaluation report that the International Advisory Board of the CNARI developed. The inclusion of an International Advisory Board to assist in the effort to develop the CNARI was, as highlighted by Mr Huguet, an important factor in the overall political objective of facilitating the approval of the CNARI and its policy definition process, their reputation and knowledge of the topic gave credibility to CNARI.

In essence, the report is based on the discussions that took place in a workshop to discuss a draft of the Base Document. This workshop was organised by the DG CNARI and included (for further details see chapter 9.6) Leena Peltonen, John Seely-Brown, Giovanni Dosi, José María Castellano, Bengt Holström, Andreu Mas-Colell and Manuel Castells. The evaluation report is divided into three sections: remarks on the Base Document, international experiences in research and innovation policies that can apply to Catalonia, and comments on each section of the Base Document.
2) The Analysis of Catalonia’s needs by Svend Otto Remoe (10th January 2008)

Channels of ideational influence from the OECD or EU to Catalonia are shown not only through documentary evidence, but are also confirmed in an interview I conducted with Svend Otto Remoe. Those channels have also been provided by including members of the OECD or the EU in the process itself, in advisory roles or with responsibility for the development of an output that is part of the process. Both such channels existed in the CNARI process (up to the presentation of the Base Document) in the form of an international consultant who had worked as an advisor to the government of Norway, the EU and the OECD: Svend Otto Remoe. Mr Remoe was brought in by the Minister of the DURSI to analyse the governance system for innovation in Catalonia and was referred to him in my interview as an OECD expert. His participation resulted in an evaluation of the Catalan governance system of innovation, and contribution to the magazine Paradigmes. It is necessary to point out that after Mr. Remoe’s report was released and he had finished his role as an advisor to the DG CNARI, Daniel Malkin (a former OECD member) took over for a short period as an advisor.

3) Transcripts of Interviews (November 2007 to April 2008) and workshops (January 2008) conducted by DG CNARI to Members of the Local Epistemic Community

When the President of Catalonia, in his inaugural speech, spoke of the need to create an agreement among all Catalans in regard to innovation, he did not specify how this

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44 There will be no more references to Daniel Malkin throughout this thesis due to the lack of sources and data describing what his role and influence were in this process. The only time Daniel Malkin was mentioned throughout this research was in an interview with Svend Otto Remoe.
would take place. He requested Mr Huguet to do this. Mr Huguet, in turn, instructed Jordi Cartanya to consult with all major research and innovation stakeholders as part of his proposal to develop the CNARI. The result was the inclusion of input from structured interviews and workshops into the Base Document. Interviewees were identified by the DG CNARI but interviews were conducted by an external firm (LTC Project). The total number of people interviewed was 116. The interviewees were divided into groups, the Technical Office named Axis. Each Axis had a subdivision (DG CNARI¹, 2008). The Axes were:

- Research-talent and innovation intermediaries
- Society
- Businesses

Some of the content of the questionnaires used to guide the interviews will be analysed later on in this chapter. The questionnaire is included in the Annexes (chapter 9.1).

The DG CNARI organised a series of workshops with important actors in order to gain more insight and information to include in the Base Document. A total of 398 people participated (out of 900 that were selected). The selection of the participants was made in cooperation with the universities, social councils, chambers of commerce, territorial delegations of the DIUE, technology centres, industrial associations, public research agencies and the DG CNARI. The participants were divided into 22 groups. The points that were discussed in the workshops were elaborated by Svend Otto Remoe.

The Base Document was the final product or deliverable of the first stage of the definition of the CNARI. It was a key milestone in creating CNARI not only because it represents a first effort to propose a comprehensive research and innovation strategy, but also because most of its suggestions were included in the final CNARI document. The Base Document contained data from the evaluation of the governance system of innovation in Catalonia, from a workshop of the international panel of experts, and from interviews and workshop with local epistemic communities.

The Permanent Committee of Experts was formed by 15 members of the local epistemic community (all of them Catalan). This committee was led by two co-presidents, both of them university professors and managers of either a technological park or of a foundation dedicated to promote innovation in technology. The rest of the members were from the academic sector (5) and the private sector (8). The eight members belonging to the private sector were selected from the traditional industrial sectors of Catalonia - health and life sciences, tourism, electronics, chemistry etc. This thesis suggests that the composition of the Permanent Committee of Experts had an impact on which areas of focus in research and innovation the Base Document put forward as priorities.

The Permanent Committee of Experts drafted the final version of the Base Document which was then presented, by the DG of the CNARI and the Minister of the DIUE, to all
organisations and political parties identified as potential signatories, for their review, modification and acceptance.

5) *The final document: the CNARI*

The final version of the Agreement was obtained after the bilateral meetings with the signatories were finalised. This took six months and, as pointed out in the brief description of the Base Document, the final version of the CNARI document does not derive exclusively from the initial frames and proposals. The CNARI describes what actions should be implemented over the next 10 years to support research and innovation in Catalonia. The differences between the Base Document and the CNARI are considered in Section 4.4.2.8 and can be reduced to: the implementation of a financing model based on performance and alignment with the objectives of the CNARI; the inclusion of public procurement as a tool to promote innovation; the modification of primary, secondary, higher and postgraduate education curriculums to align with the skills identified as necessary in the CNARI (entrepreneurship, critical thinking etc.); and the promotion of innovation networks.

The CNARI is divided into four chapters: *Frame, Shared Baseline, Challenges and Compromises,* and *Execution.*

7.2.6 **Political level: capturing the voice of the decision makers**

At the political level there are two actors: the former Minister of the DIUE and the former President of Catalonia, each of whom have a decision making role and are
politically accountable in the Catalan Parliament. My analysis of the political level is based on six sources of data that capture the discursive frames of these actors. These sources are:

- My own face to face interviews with the former Minister of the DIUE and the former President of Catalonia\textsuperscript{45}
- Written: introductory chapter to the magazine *Paradigmes*, Issues 0-5
- Audio-visual: press conference to present the Base Document
- Audio-visual: press conference presentation on CNARI when approved by the government
- Audio-visual: communications event and press conference for the signature of the CNARI on behalf of the social actors involved (universities, industry, trade unions, and other political parties).
- Written: transcripts of the interventions of the Minister of the DIUE in the Catalan Parliament in matters related to the CNARI, from the 6\textsuperscript{th} of February 2008 to the 17\textsuperscript{th} of July 2008 (a total of 4 interventions).

*My interviews with the former President of the Catalan Government, President Montilla, and Mr Huguet, former Minister of the DIUE (October 2013)*

Most of the information that was captured in the face to face interviews I conducted with President Montilla and Mr Huguet (summarised in Section 9.2) has a direct relation to the written and visual sources at the political level, founded in how the interviewees

\textsuperscript{45} These were interviews that I conducted, and should not be confused with the transcripts of interviews conducted by the DG CNARI (Chapter 7.2.5).
framed their arguments. They did not express a view on concrete policy options, but referred to the ‘grand’ picture of why innovation is needed in Catalonia and how to change the economic model ‘from Fordism to the knowledge economy’ (Mr Huguet). In the case of Mr Huguet, due to his closer involvement in some of the details of the process to develop the CNARI, he makes some concrete statements. This is not the case with President Montilla, who led the initiative as head of the Catalan Government, but had only high level involvement. The interviews have been a useful tool to validate many of the interpretations found in the written and audio-visual sources at both the regional and the political level.

*Introductory Chapters to the Ministerial Corporate Review, Paradigmes*

The Ministerial Corporate Review *Paradigmes* (summary of the content of *Paradigmes* can be found in Section 9.3) was a publication of the Ministry of the DIUE, published while the CNARI was being negotiated at a political level, and until the change of government at the end of 2010. It published five issues on topics of interest to the Ministry of DIUE, and very especially to the CNARI. Each issue contained a monograph on one of the priorities of the CNARI.

The most important *Paradigmes* article by the Minister of the DIUE was the Introduction in Issue 0 (May 2008). This issue was released at the beginning of the bilateral negotiations by DG CNARI and the Minister of the DIUE for the approval of the Agreement by the presidents of the public universities, trade unions, business associations and political parties. In the introduction the Minister explains the basis of the CNARI and his international perspective on why it was necessary. He does not
mention the CNARI, but outlines *Paradigmes*’ vision of a Catalan economy that needs to enter the knowledge economy. *Paradigmes*’ vision expresses the same comprehension of the context to CNARI. Hence, this introduction lays the foundations for future issues of the publication to expand on CNARI proposals in more detail.

**Parliamentary Sessions**

The Minister of the DIUE spoke in Parliament a total of four times in relation the CNARI (between the 6th of February to the 17th of July of 2008), Table 7 below:

<table>
<thead>
<tr>
<th>Plenary Sessions: Summary of discussions</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responds to a question raised by the shadow Minister of Education and Universities of the opposition about ‘the actions to develop the CNARI’ (Serie P – Num.42, tram.310-00163/08)</td>
<td>6th of February 2008</td>
</tr>
<tr>
<td>Responds to a request for information from the shadow Minister of Education and Universities of the opposition about ‘the government’s policy for innovation and research’ (Serie P – Num.52, tram.300-128/08)</td>
<td>21st of May 2008</td>
</tr>
<tr>
<td>Responds to a motion requested by the shadow Minister of Education and Universities of the opposition ‘following the request to the government to explain their innovation and research policies’ (Serie P – Num.53, tram. 302-00108/08)</td>
<td>4th of June 2008</td>
</tr>
<tr>
<td>Responds to a request for information by a Member of Parliament of the same political party ‘about the CNARI’ (Serie P – Num.58, tram. 300-00147/08)</td>
<td>17th of July 2008</td>
</tr>
</tbody>
</table>

Table 7: Plenary sessions of the Catalan Parliament where the CNARI was discussed

*Press Conferences and Communications Events (May 2008 and October 2008)*

In two press conferences (in Barcelona, in May 2008 to present the Base Document and in October 2008 to present the final version of the CNARI) the Minister presented the
two deliverables that marked the end of the two stage definition process designed by Jordi Cartanya (for more details on the process to develop the CNARI please see Section 7.2).

The two stages were:

- The Base Document, which would propose the research and innovation policy prior to negotiating it with the potential signatories of the Agreement
- The Agreement, which would publicise the success of Ministry of the DIUE by explaining to the media that the CNARI is a policy backed by a wide consensus of relevant institutional, business and academic actors

I have presented the actors and sources that I have identified as relevant throughout the development of the CNARI. In the rest of this chapter I interpret the sources by applying the analytical tools described in the methodological section.

7.3 Content analysis: discursive frames

7.3.1 Introduction

In Section 7.3 I present the results from the analysis of the data found in the sources listed in Section 7.2.3 in order to show the convergence of discourse, the overlapping of concepts and, in parts, the influence of ideas elaborated at the international level on the definition of the CNARI.
As was described in the methodological section, the data is coded following the approach proposed by Zhang and Wildemuth (2010: 2-6). This is a four step approach:

1) Selection of sources that fit the scope of the conceptual framework and the case study (for example, documentation that was produced in the development of the CNARI)

2) Selecting the units of analysis

3) Devising categories and schemes derived from international documents: the OECD Innovation Strategy, the Aho Report and the EU Commission Communication

4) The codes from the rest of the sources are then placed in these categories and are summarized in the text and tables in section 7.3.

A detailed account of the coding exercise and references can be found in section 9.7.

As a reminder to the reader, my conceptual framework suggests that policy definition is a messy process that tends to follow a process that combines political and personal motives, such as, for example, the past experience of a politician in research and innovation policy, or the prioritising of policies with a high probability of being approved in order to fulfil a political programme etc. There are also ideational influences, throughout the policy making process, between international, regional and political levels. I propose that policy definition is generally initiated by politicians who want to implement a political agenda. In such a situation politicians initiate a policy process constrained by an overarching ideology and which is either influenced by, or
results in, the use of a modified paradigm that in turn results in the policy being modified.

7.3.2 Overall results

The coding exercise identified four main categories identified through the coding exercise the international level that were replicated at the regional and political levels: context; policy proposals; justification of policy rationales; and ideological components. Additional details to the categories can be found in section 9.7.

There were no changes at the level of ideology but there were changes at the paradigm and policy level. These do not propose a change of society or economic system, hence I term them non-disruptive. These changes, as will be seen later on, are mainly part of a progressive shift from low cost manufacturing, to research and innovation, as a model to compete and grow in a globalised economy. The CNARI is another step (starting in 1993 with the first research plan in Catalonia) towards this objective. I have presented the results of the analysis in the text and tables below. The tables include questions and yes/no answers that guide the reader through the main points proposed in the conceptual framework.
### Degree and type of change at ideology, paradigm and policy levels

<table>
<thead>
<tr>
<th></th>
<th>International Level</th>
<th>Regional Level</th>
<th>Political Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes/No</td>
<td>Degree of change</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Change at ideology level</td>
<td>No</td>
<td>None</td>
<td>No</td>
</tr>
<tr>
<td>Change at paradigm level</td>
<td>Yes</td>
<td>Non-disruptive</td>
<td>Yes</td>
</tr>
<tr>
<td>Change at policy level</td>
<td>Yes</td>
<td>Non-disruptive</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 8: Results showing degree and type of change at the international, regional, political level for the ideology, paradigm and policy elements

Table 9, below, shows that international and regional ideas are very similar, but it does not succeed in establishing a causal link to show the influence of international level ideas at the regional and political level. It shows a similarity of discourse for all the levels. The interviews and the contextual analysis, on the other hand, do show the importance of the OECD and *European Commission* for local politicians and the local epistemic communities.

<table>
<thead>
<tr>
<th></th>
<th>Results from the coding exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the coding show international ideas are similar to regional ones?</td>
<td>Yes</td>
</tr>
<tr>
<td>Does the coding show influence from the international to the regional level?</td>
<td>No</td>
</tr>
<tr>
<td>Is the coding sufficient to show the influence of the international level at the regional level?</td>
<td>No</td>
</tr>
<tr>
<td>Did the coding need additional tools to be meaningful? (interviews, contextual analysis, process tracking)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 9: The usefulness of the coding exercise in showing influence of international level sources at the regional and political level

Doctorate in Business Administration – Juan Ramon Yllera 119
For the purposes of my analysis I have broken down the development of CNARI into two objects of analysis: the documents produced as the process was underway, and the final CNARI document. The final document showed that ideas from the OECD and European Commission were used as references and quotes and its rationales could be found in the introductory elements of the final document. It also included some new elements in comparison to previous research and innovation policies. These changes in policy were not very significant and were adapted to the regional context or needs. They did not challenge existing ideology. The Base Document suggested the requirements for the success (approval of the final CNARI document) of the CNARI process were the use of international experiences and the inclusion of a wide portion of the regional actors related to research and innovation.
Was there a transfer of ideas from the OECD and European Commission to the CNARI? | Yes
---|---
Does the CNARI represent a new innovation policy | Yes
Is the CNARI linked to previous research and innovation policies in Catalonia? | Yes
Were ideas from abroad an indispensable part of the successful construction of the CNARI | Yes
Was the consensual process drawing on international epistemic communities a key factor? | Yes
Did CNARI reflect both international and regional concerns? | Yes
Does the CNARI propose new ideas but not move from the basic ideology that prevails through the OECD? | Yes

Table 10: The final CNARI document

For my other unit of analysis, the process of developing the CNARI, I have relied on my interviews and the textual coding. I have identified that the idea of modifying the existing innovation policy is related to two main factors: the influence of international actors, mainly the OECD and European Commission, and the search for political success. According to this the CNARI was part of a successfully implemented, shared political agenda between the Minister of the DIUE and the President of Catalonia. This success was facilitated by the use of international ideas, such as those proposed in the OECD Innovation Strategy, the Aho Report and the European Commission Communication, all of which were accepted by local epistemic communities who were involved in the policy definition process (for a full account of how common terms were used across the international, regional and political levels please refer to section 9.7).
One path through which the prevalent ideas of the EU and the OECD were brought into the CNARI is the inclusion of international experts in the form of former EU and OECD consultant, Mr Remoe, and the members of the International Advisory Board.

The Minister of the DIUE gave two reasons for the inclusion of the International Advisory Board: 1) to obtain a critical look at the Base Document from their broad international experience in innovation policy; and 2) most important, to legitimise the process and content of the CNARI, granting it global prestige.

<table>
<thead>
<tr>
<th>Was the process started as a consequence of international debates?</th>
<th>Process to develop the CNARI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was it a deliberate process by local elites to use international ideas and create a convincing policy?</td>
<td>Yes</td>
</tr>
<tr>
<td>Was it a politically driven exercise?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 11: The process of developing the CNARI

Detailed analysis for the international, regional and political levels is presented below where we first we look at the discourse at the international level, and then we link it to the regional and political levels.

7.3.3 International level

Most of the information used to analyse the results in this section is obtained from the context and ideological categories identified in the textual coding exercise that can be found in greater detail in Annex 7. It is clear from the data that the OECD and EU are the main international level actors in the development of the Catalan innovation policy. Though the regional and political levels make reference to other international epistemic
communities (Code 362 to the European Research Council and code 364 to Manuel Castells, who was a member of the International Advisory Panel) in depth analysis showed that the OECD and the EU were the two dominant international sources to which actors in Catalonia referred and that can be traced to the Catalan policy definition process by local epistemic communities, policymakers and politicians. A sample of the key influence of both the EU and the OECD on the CNARI is evidenced by: the inclusion of Svend Otto Remoe, a former advisor to the EU and the OECD; the request to the OECD to evaluate the Catalan innovation system, as part of the actions described in the CNARI; references by Mr Huguet (in interview with me) to international benchmarks used by the EU and the OECD; references (DG CNARI 2008: 180) to OECD proposals; and statements included in documents such as the 2010-2013 Research and Innovation Plan of Catalonia.46

The conceptual framework states that ideology is an overarching element throughout the policy definition process. This includes the understanding of western capitalist elements such as economic growth (Codes 1, 2 and 3); globalisation (Code 11); and competitiveness (Code 30) as key elements, not contradicted by any of the textual codes at the international level. The OECD, the Aho Report and the European Commission use different strategies to express this, but say the same thing. The language of these actors seems at first sight disruptive and critical of the existing system but in essence what the textual codes propose is a transition from labour intensive manufacturing to the use

46 Example: page 155 of the 2010-2013 Research and Innovation Plan details agreements found in the CNARI ‘International experts (CCRI and the OECD) have given recommendations and analysis of the Catalan Research and Innovation System’.

47 An example of the disruptiveness of the language is a press release of the European Commission (IP/06/58 of the 20/01/2006) entitled ‘Independent expert group urges Europe’s leaders to take radical action on research and innovation ‘before it’s too late’.
of innovation to promote economic growth and competitiveness, two key elements of a market oriented system.

For example, the OECD focuses on the need to find new ‘sources of growth’ (codes 1, 2, 3, 31, 33), mainly innovation, as a form of ‘(driving) growth and employment’ (code 29). The Aho Report, on the other hand, focuses on the issue of lack of productivity in Europe (codes 6, 7, 10). The report calls this the ‘productivity challenge’ (Code 10). The solution that is proposed to solve this is, as with the OECD, innovation (codes 34, 35, 36). This includes, as expressed in the Aho Report, ‘(stimulation) of innovation’ (code 34), the ‘(support of) innovative growth’ (code 35) and the transformation of Europe towards a ‘knowledge based society’. As for the European Commission, the concept of globalisation is used to structure their discourse (codes 11 and 13):

‘Economic globalisation has changed the world economic order’ (code 11), ‘Europe’s global economic competitiveness’ (code 13). The European Commission says ‘all forms of innovation need to be promoted’ (code 41) and ‘Europe needs to become a truly knowledge based and innovation friendly society’ (code 39).

As can be deduced from the previous paragraph, there is no shift in ideology (growth and competiveness are an essential part of the discursive frame) but there is an adjustment of the paradigm (Codes 6, 8, 12, 13, 29, 30 and 35) in relation to sources of growth. This becomes clear in the OECD Innovation Strategy, the Aho Report and the Commission’s Communication: labour intensive manufacturing and services (old paradigm) are taken over by research and innovation as a key element of the economy (modified paradigm).
As for the textual codes that describe this change in the paradigm, codes 2 (*OECD Innovation Strategy*) and 9 (*Aho Report*) are the most revealing: ‘Some traditional sources of growth are declining in importance’, and Europe is ‘locked into unmodernised traditional sectors and underinvesting in services R&D’ (*Aho Report*: 2). The paradigm remains almost intact and supports the idea of first order change as it is included in the conceptual framework. It also partially supports the statement that the sources do not express opinions or thoughts that are different to those expressed in the past. In other words, the fact that the focus of economic growth has shifted from Fordist manufacturing to research and innovation can be considered as a change in relation to past proposals, but a minor one and a step that is part of a major long-term change. This did not in itself lead to a strong change in perception, just a minor one built on past proposals (mid-90’s) that were then incrementally amended. The resulting *OECD Innovation Strategy* feeds off past efforts to build up the concept of innovation and introduce it into high level policy proposals.

At the policy level, the suggestions of the OECD and the *European Commission* are not detailed (Codes 56, 57, 66 etc.) and, precisely because of their lack of concreteness, can serve as guidance for the regional and political levels. This makes international level policies applicable. A sample of policies that are identified at the international level that can be identified in the CNARI and political level discourse can be found in Table 12.

The policy proposals read as a checklist of topics that need to be addressed at the policy level, and do not give too much detail as to what the concrete content of the policies should be. The empirical evidence shows traceability of past policy proposals to previous studies or policy documents, traced through the constant use of references. As
an example, the *OECD Innovation Strategy* (2010) uses 40-60% of references that are unmodified results and conclusions obtained from previous OECD studies. In other words, the OECD, the *Aho Report* and the *European Commission* relied on past findings to develop their list of suggested policy proposals.

<table>
<thead>
<tr>
<th>International level policy</th>
<th>CNARI/PRI 2010-2013 (Table 1)</th>
<th>Political level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OECD: Mobility of researchers and scientists (code 232)</strong></td>
<td>Support the mobility of talent and ideas</td>
<td>The international drive requires (...) availability of the most skilled employees to expatriate for long periods (...) (<em>Paradigmes</em>: No.1) – (code 253)</td>
</tr>
<tr>
<td><strong>Aho Report: Public procurement to drive demand for innovation (code 142)</strong></td>
<td>Use public procurement, regulations and sector policies as instruments to create knowledge and innovation</td>
<td>One of the biggest achievements is to bring in the concept of promotion of innovation by the public administration through public procurement of innovative products (Interview: Minister of DIUE) – (code I-17)</td>
</tr>
<tr>
<td><strong>Aho Report: Cultural change open to innovation (code 155)</strong></td>
<td>Socialise and increase the relevance of science and innovation</td>
<td>Creative and risk taking attitudes need to be supported (Interview: President Montilla) – (code I-19)</td>
</tr>
<tr>
<td><strong>OECD: Develop fully functioning knowledge networks (code 176)</strong></td>
<td>Innovation and knowledge partnerships</td>
<td>We need to achieve knowledge transfer (...) the university has (to) (...) transfer knowledge to society (Parliamentary Intervention: 6th of February 2008) – (code 191)</td>
</tr>
<tr>
<td><strong>OECD: Include innovation and entrepreneurship in education and training (code 195)</strong></td>
<td>Increase the creativity, innovation, science and entrepreneurship skills of students</td>
<td>Only countries that invest a lot in education can compete (Interview: Director General of the CNARI) – (code I-21)</td>
</tr>
<tr>
<td><strong>OECD: Evaluation is essential to enhance the effectiveness of policy (code 264)</strong></td>
<td>One of the 3 actions derived from the approval of the CNARI was to evaluate the Catalan Research and Innovation system</td>
<td>External evaluation is necessary to show us where and what we are doing wrong (Interview: Minister DIUE)</td>
</tr>
<tr>
<td><strong>Aho Report: Recommendation is to create a Pact on Research and Innovation (code 272)</strong></td>
<td>The creation of the CNARI</td>
<td>Our reflection is that in strategic sectors we need a long term strategy, an agreement that includes all of the members of society of Catalonia (Interview: Minister of DIUE) – (code I-26)</td>
</tr>
</tbody>
</table>

Table 12: Sample of concepts and actions from the international level that are included in the CNARI

Applicability, on the other hand, is high due to the lack of concrete and detailed solutions offered by either the OECD or the *European Commission*. An example of the
lack of concreteness can be found in the policy proposals on mobility included in the Commission’s Communication ‘transnational mobility and structural mobility between academia and industry (…), (to) create an open, single and competitive labour market for researchers’; ‘barriers (to mobility) need to be removed’ (codes 69 and 70).

The findings described above can be found in Table 13.

<table>
<thead>
<tr>
<th>Does the OECD and European Commission propose alternatives to the market oriented economic system (competitiveness, globalisation etc.)?</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a change in the understanding of how competitiveness, economic growth and globalisation should be achieved?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is this change disruptive (i.e., does it question competitiveness, globalisation and economic growth?)</td>
<td>No</td>
</tr>
<tr>
<td>Is there a change to previous policy proposals to achieve high competitiveness, economic growth and to confront the challenges of globalisation?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are these changes to policy disruptive?</td>
<td>No</td>
</tr>
<tr>
<td>Can many of the resulting policy proposals be traced to previous proposals?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are these policy proposals very detailed and leave no room for adaptation by other actors?</td>
<td>No</td>
</tr>
<tr>
<td>Are these policy proposals high level and orientative and leave room for adaptation by other actors?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 13: Results at the international level
7.3.4 Regional level

We have seen that at the international level most of the elements identified in the conceptual framework can be empirically traced by the data obtained through the coding exercise and the interviews. This includes: ideological continuity (competitiveness and growth); minor modifications of the paradigms that derive from ideology (the right productive model to apply market oriented economic system changes from Fordist manufacturing to research and innovation); and high level policies (that read more like a list of topics to be addressed).

The data identified as regional level (which includes all of the actors that participated in the definition process except for the Minister of the CNARI and President of Catalonia) reflect the same affinity to the conceptual framework as the international level. The regional level data is obtained from the sources presented in Chapter 7.2.5.

- Evaluation report by the International Advisory Board of a preliminary draft of the Base Document by the international board of the CNARI
- The analysis of Catalonia’s needs by Svend Otto Remoe
- Transcripts of interviews and workshops conducted by the DG CNARI to members of the local epistemic community
- The Base Document of the CNARI
- The final document: CNARI

The actors at the regional level include members of the International Advisory Panel, the Director of the DG CNARI, the co-president of the Permanent Committee of
Experts, a member of the Permanent Committee of Experts, and individuals that were interviewed by the DG CNARI or participated in the workshops organised by the DG CNARI (either through the interviews, research or workshops).

Starting with the ideological element at the regional level, the textual codes suggest that ideology at this level is similar to that of the international level. The Base Document expresses a perceived need to modify the ‘productive sector to areas where there is more added value (…) (in) a new and changing context’ (code 17); and ‘to consider which global context and reference for research and innovation (is needed) to (tackle the) (…) challenges, (…), opportunities, (…) threats (resulting from) globalisation’ (code 19).

These are some of the events described at the regional level that justify the need for using research and innovation as the new productive model. The ideological frame supporting a free market economy is also found at the regional level through, as at the international level, the concepts of growth and competitiveness. Some of the codes that show this ideological influence are code 22 (evaluation of the Catalan innovation system by Svend Otto Remoe); code 45 (Interviews of the CNARI) ‘Catalonia has an industry with a structure that is formed by low level technology and low competitiveness’; and code 45, where it is said that Catalonia needs to change towards a ‘business culture based on innovation within firms in a global economic context’.

This brings us to the element that differentiates regional from international paradigm. In regional level discourse there is clearly a localisation or territorialisation of statements made by the international level (referred to in the conceptual framework as adaptation of the adjusted paradigm to the local context). An example of this is code 43 (Base Document) where it is pointed out that there is a need to transform ‘Catalonia into a
country with the possibility of achieving high levels of progress, welfare (…) that puts research and innovation in the centre of socioeconomic action’. This does not differ much from the international level statement, if it wasn’t for the reference to Catalonia, captured in, for example, code 29 (OECD Innovation Strategy): ‘innovation (…) will be increasingly needed to drive growth and employment and improve living standards’.

The logic that was explained at the international level, where new but non-disruptive and highly applicable ideas are derived from an interpretation of the new economic context that focuses on globalisation and international competition, also applies at the regional level. This is framed in a Catalan context, so that now references to the use of research and innovation as key elements for economic growth and competitiveness simply have the term Catalonia associated with them. The international level paradigm is brought down to the regional level but there are no indications of feedback to the international level.

In relation to the policy element of the discursive frame at the regional level, the textual codes show similarities of discourse that do not contradict, within the scope of the case study, the validity of the propositions of the conceptual framework (ideas shape policies through discourse; actors at various levels participate in the dissemination of the policy discourse; dominant ideologies limit policy change; political factors have an impact at the regional level on policy definition). This can be seen in many different textual excerpts. For example, the OECD Innovation Strategy (code 154) says that ‘bankruptcy laws should be less punitive for entrepreneurs’. This is picked up by the transcripts of the interviews performed by the DG CNARI, who point out (code 161) that there ‘must be a tolerance to failure for those who take risk and do not succeed’.
Another example of policy change is the need to improve the protection of patents or the improvement of the existing patent system. At the international level this is expressed by the *OECD Innovation Strategy* in code 175, ‘patent systems need to properly tailored’; by the *Aho Report* in code 178, ‘a balanced set of improvements (in) (...) the community patent systems’; and by the Commission’s Communication in code 185, ‘The Commission will present a more comprehensive IPR patent strategy’. At the regional level this message is replicated with the Base Document in code 187 ‘to generate new conditions that are favourable for innovation (...) strategic management of IPR’. This in simple terms means that the logic that the regional level utilises is the same as that of the international level. The regional level does not question the paradigm proposed by the international level, it only transfers its content to the local reality (for example, the Base Document in code 43 ‘To turn Catalonia into a country with the possibility of achieving high levels of progress and welfare (...) a shared vision that puts research and innovation in the centre of socioeconomic action and that makes possible the positioning in the future with a degree of realistic ambition’ (Base Document, code 43). High level priorities proposed by the international level are used as a roadmap to define the local policies.

The results of the analysis for the regional level can be seen below in Table 14.
Table 14: Results at the regional level

<table>
<thead>
<tr>
<th>Question</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do the alternatives proposed at the regional level challenge or question the market oriented economic system?</td>
<td>No</td>
</tr>
<tr>
<td>Do the views at the regional level of competitiveness, economic growth and globalisation differ from the alternatives proposed by the OECD and European Commission?</td>
<td>No</td>
</tr>
<tr>
<td>Does the view at the regional level include a change in understanding of how competitiveness, economic growth and globalisation should be achieved?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is this change disruptive?</td>
<td>No</td>
</tr>
<tr>
<td>Are the regional level concepts of achieving high level of economic growth and competitiveness based on innovation and research?</td>
<td>Yes</td>
</tr>
<tr>
<td>Do the policy proposals of the regional level coincide with those identified at the international level?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are the policy proposals at the regional level adapted to fit Catalonia?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

7.3.5 Political level

The political level involves the key decision makers, the President of Catalonia and the Minister of the DIUE, probably the only actors in the preliminary conceptual framework who do not offer proposals but make the final decision in relation to which policy alternative to choose (Codes 364, 365). The data related to the political level derives from the press conferences, articles in Paradigmes, parliamentary interventions, and the interviews that I conducted (a summary of these can be found in the Annexes).
The ideological frames at the political level are the same as at the regional level. The political level actors don’t question or discuss matters related to ideology. Examples of this can be found in the articles authored for *Paradigmes* by the Minister of DIUE. This includes codes 24 ‘Catalonia’s ability to fully enter the knowledge economy will determine its capacity to maintain and further strengthen (...) its competitiveness’; and 55 ‘together with innovation, internationalisation is the key element to competitiveness of the Catalan economy’. At the international level this is highlighted by the OECD Innovation Strategy as shown in code 29 ‘Innovation is (also) a key source of future growth’. This is in line with what was pointed out in the interviews conducted by the DG CNARI (code 45), that says that Catalonia needs ‘a business culture based on innovation of the firm in a global economic context’.

In regard to the paradigm element, the Minister of DIUE uses the same arguments in his press conferences (codes 52, 53) as those given at the regional level in the final text of the CNARI (Code 48) ‘promotion of research and innovation as the motor of transformation towards a society and economy of knowledge that will give progress and welfare’. He speaks of the need for innovation to drive socioeconomic progress and the growth in jobs.

The textual codes or claims obtained from the interviews I conducted that relate to the previous paragraph are code I-8, where the Minister of the DIUE claims that ‘there was no discussion or opposition to the idea of focusing on research and innovation, since it was taken for granted’, and code I-3, where he states that the OECD evaluation of Research and Innovation in Catalonia is used as an element to justify the incremental change in paradigm from Fordist manufacturing to innovation.
As for the policy elements in the data obtained from the political level, there is evidence that shows that all the propositions seem to be reflected at this level. The Minister of the DIUE and the President of Catalonia speak of high level concepts and do not go too much into the details of the CNARI and don’t contradict what the international or regional level sources mentioned. This is clearly stated in the proposals related to the budget (Parliamentary intervention 21st of May 2008, code 139) and my face to face interview (with codes I-13 to I-16); and the proposals related to the use of public procurement to promote innovation (face to face interview, codes I-17 and I-18).

In relation to the budget, the Minister of the DIUE says ‘there is an increase in funding that (was made available) to fulfil the priorities mentioned in the (CNARI) document’. Since the CNARI document was developed exclusively by regional level sources, the Minister of the DIUE agrees with their policy and budgetary proposals. This in turn is aligned with what the international level, such as the OECD Innovation Strategy, states, namely ‘government must continue to invest in future sources of growth such as education, infrastructure, and research’ (code 96). As for public procurement, the link between the proposals at the regional level and the remarks made by the Minister of the DIUE are clear. The Base Document points out (code 151) that the public sector should ‘make public procurement a driver of innovation’, to which the Minister of the DIUE agrees to by saying (code I-17) that ‘one of the biggest achievements is to bring the concept of promotion of innovation by the public administration through public procurement of innovative products’. Furthermore, we can trace this argument to international level data, such as the Aho Report (code 142), that proposes the ‘use of public procurement to drive demand for innovative goods, while at the same time
improving level of public services, or the OECD, that suggest that a ‘better use of public procurement can also be effective’ (code 140).

In relation to the role of innovation as a formula to maintain or improve social welfare, there is another link between the international and political levels. It is specified in the Aho Report (p. 3) that ‘investments in education, science, research and innovation should not be seen as alternatives to investments in the welfare society in Europe, but as necessary though not sufficient means to ensure its sustainability, albeit through a reformed social model conducive to innovation’; and in the OECD Strategy (p.14 – Code 338) where innovation is thought of as a ‘means of dealing with global and social challenges’. This is aligned with what the Minister of the DIUE mentions in several of his interventions, such as his intervention in parliament on the 21st of May, where he stated ‘R&D and the creation of an economy with added value … guarantees the welfare state’.

Both the President of Catalonia and the Minister of DURSI, acknowledge that international experts, regardless of the quality of their input to the process to define the CNARI, were important to legitimise the content of the Base Document, and, therefore, the final text of the CNARI.

The reasons these experts were important to legitimise the process was simple, as stated by the Minister of the DIUE in the interview with me. They brought their reputation and expert knowledge. In other words, it would be difficult for those involved in the approval of the CNARI to contradict the opinion of the international experts, especially in a relatively new and socially acceptable topic such as innovation.
Finally and in relation to the political aspects of their actions, the President of Catalonia reiterated in the interview that in his swearing in speech as President, he included innovation as a political priority for Catalonia. He pointed out that this was followed by an integration of industrial, university and innovation policies into one single Ministry (DIUE). It was in the hands of the Minister of the DIUE to guide this process. And it was the Minister of the DIUE, who, in order to facilitate a positive outcome for this item of the political agenda, decided to develop the CNARI by means of an open process that included consultation, that would, in the end, minimise the risk of failure to have it approved by all of the political parties, trade unions, universities and industrial associations linked to it. As the President of Catalonia pointed out, this was made easier due to the lack of conflict involving the concept of innovation and research. It was a concept that was perceived as positive and necessary by most of the Catalan media and political leaders even before his term as President started.

A table summarising the results of the analysis can be found below Table 15.

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48 I carried out a review of articles referring to innovation and research published in 2007 by three newspapers (El País, La Vanguardia and El Periódico) and I scanned the minutes of the Catalan Parliament in relation to the same topic and I did not find any views requesting a decrease in funding of research and innovation programmes or any opposition to the need to develop further Catalonia’s research and innovation capabilities.
At the political level, do the views of competitiveness, economic growth and globalisation differ from the alternatives proposed by the OECD, European Commission and the regional level?  

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the political level, do the views of competitiveness, economic growth and globalisation differ from the alternatives proposed by the OECD, European Commission and the regional level?</td>
<td>No</td>
</tr>
<tr>
<td>Do the views at the political level include a change in understanding of how competitiveness, economic growth and globalisation should be achieved?</td>
<td>Yes</td>
</tr>
<tr>
<td>Is this change disruptive?</td>
<td>No</td>
</tr>
<tr>
<td>At the political level is there a view that a high level of economic growth and competitiveness is based on innovation and research?</td>
<td>Yes</td>
</tr>
<tr>
<td>Do the policy proposals at the political level coincide with those identified at the regional level?</td>
<td>Yes</td>
</tr>
<tr>
<td>Are the policy proposals at the political level adapted to fit Catalonia?</td>
<td>Yes</td>
</tr>
<tr>
<td>Was the elaboration of the CNARI driven solely by the need to change from low technology manufacturing to innovation?</td>
<td>No</td>
</tr>
<tr>
<td>Were there other motivations at the political level for starting the process to develop the CNARI? (e.g. to show a successful record of policies approved)</td>
<td>Yes</td>
</tr>
<tr>
<td>Was the elaboration of the CNARI started as a consequence of the influence of international debates?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 15: Results at the Political level
7.4 Blending the analysis of the codes with the process analysis

I have outlined how the CNARI process developed, presented the actors that participated in the process, listed the sources created in the development of the CNARI and assessed their content.

I presented the CNARI in a narrative form and then in Table 16 (page 148) I chose a sample of codes that shows how, throughout the development of the CNARI, international level discourse is maintained at the regional and political level. Some key words have been underlined in Table 16 to emphasise common terms between sources.

When on the 23rd of November 2006 the newly elected President of Catalonia delivered the traditional investiture speech at the Catalan Parliament, he reassured the members of Parliament that his government was going to ‘push for the signature of the National Agreement on Research’ (p. 18 of the Speech at the Catalan Parliament). This ideas is very similar to that from the Aho Report where it was recommended that a ‘Pact for Research and Innovation’ needed to be developed at EU level.

Other members of parliament would have been able to link the President’s idea to his past experience as Minister of Industry of the Spanish government, where he was responsible for research and innovation policy and had been exposed to EU programmes and policies.

But there was more in this statement than simply inspiration from a relevant EU report or from his past experiences in developing and implementing research and innovation
policies. There was also a portion of political calculation. The President acknowledged in my interviews that an increase in the investment in research and innovation, and the policy sector itself, was for some reason apolitical, that there was some sort of unwritten agreement that innovation was necessary to transform Catalonia into a competitive economy in a globalised world. As such, this vision needed to be shared by all Catalan stakeholders, arriving at a consensus for the research and innovation agreement that would ensure appropriate backing and approval.

With the agreement on research and innovation high on the government’s list of priorities, the President started creating the organisational setting that would develop the CNARI. He decided to group most of the functions that are affected by innovation into one ministry The Ministry of Universities, Industry and Enterprise and named Mr Huguet Minister on the 28th of November. Mr Huguet shared the President’s view on the fact that a positive perception by the Catalan stakeholders of research and innovation would facilitate the development of an agreement, even more so if they were involved to create consensus. Mr Huguet spoke of the symbolism of consensus and its long-term commitment. He added two other important factors, present in the conceptual framework: political strategy and ideological influence. For the political strategy, he alluded to the high probabilities of success in delivering an agreement which had general buy-in and the involvement of most of the relevant stakeholders49. For the ideational influence, he pointed out there was no doubt that Catalan stakeholders thought the region needed to turn towards higher, added value industry that relies on

49 The only group that did not adhere to the CNARI was one of the two workers’ unions involved in the process, CCOO.
advanced technology, and away from low technology manufacturing and construction of the sort that was common in the region until 2006.

One of the first tasks identified in the development of the CNARI was the constitution of a Permanent Committee of Experts who would head the creation of the first key milestone, the Base Document. This committee, as was confirmed by the President and by Mr Huguet, was limited to members that were acceptable to the main\textsuperscript{50} political, educational and socioeconomic parties. The President and Mr Huguet agreed the list of members with, mainly: the political parties represented in the Catalan Parliament, workers’ unions, industrial associations and universities. This was one more step towards a shared vision of the future of Catalan research and innovation, hence the Catalan economy, and, politically, towards the successful approval of the agreement.

The Permanent Committee of Experts was constituted on the 17\textsuperscript{th} of October 2007 and their first meeting took place on the 8\textsuperscript{th} of November.

Having agreed who would be part of the committee, the proponents of the CNARI identified the need to obtain input and guidance from independent sources outside the Catalan research and innovation scene; individuals who could assist the CNARI team by applying their knowledge and experience in an advisory role.

\textsuperscript{50} By ‘main’ political parties I mean all the parties represented in the Catalan Parliament except Ciutadans, a party with 3 MP’s that is opposed to local nationalism and so opposed the CNARI due to the inclusion of the word ‘national’ in reference to Catalonia.

By main educational parties I mean all of the Catalan universities.

By main socioeconomic parties I mean all of the research and technological centers, one of the two main workers’ unions in Catalonia (UGT) and two of the biggest Catalan industrial associations.
One of the external advisors brought in was Svend Otto Remoe. He was tasked with undertaking an evaluation of the Catalan Innovation System. This he did, together with the provision of some methodological support to the DG CNARI, between October 2007 and January 2008. His main finding, as included in Table 16 (code 22) was ‘Catalonia has an industry with a structure that is formed by low competitiveness that only gives small profits in terms of capital and work’. This was in line with the President’s inaugural speech, Mr Huguet’s intervention in Parliament (code 25 ‘without a change to an economy of knowledge we cannot withstand the levels of welfare’); and with statements made by members of the Permanent Committee of Experts that were interviewed in this research. All of which, yet again, coincides with the Aho Report in highlighting a need to leave behind ‘locked (…)and un-modernised traditional sectors’ (p.2, code 9).

The second group to provide independent assessment was the International Advisory Panel (not to be mistaken for Svend Otto Remoe and the Permanent Committee of Experts) which held a workshop to present their view of the first complete draft of the Base Document. Mr Cartanya pointed out, as did Mr Huguet, that the inclusion of the International Advisory Panel served to legitimise the process. Their arguments are reflected across the international and political level, and can be found in the final version of the CNARI. Both Mr Huguet and Jordi Cartanya point out that the suggestions of the International Advisory Panel are not included in the Base Document. They did not specify why they were not included, but comparing the final Base Document with their suggestions, one can find similar statements. This is the case

51 The International Experts Panel included a variety of comparable actions or benchmarks that Catalonia could use (insistence in the development of a cyber infrastructure; the use of pioneers in innovation; existence...
with the *International Advisory Panel’s* recommendation on softer laws to punish failure (‘an innovation culture must also support failure and learning through failure’, 2007, p. 4). This suggestion coincides with the President of Catalonia’s view on the matter (code I-19 ‘creative and risk taking attitudes needs to be supported’), and with the OECD Innovation Strategy (p.12/code 154 ‘bankruptcy laws should be less punitive for entrepreneurs’).

In relation to creating consensus among research and innovation stakeholders, two key mechanisms were defined: 1) obtain the buy-in of those who were identified as signatories of the final Agreement and 2) those identified as the relevant actors to voice their opinion on a regular basis and to provide input into the process (this included business men/women, researchers, managers of technology centres, scientists etc.).

This second activity was executed through interviews and workshops from November 2007 to March 2008. Out of the many inputs obtained from this exercise, one recurred: the need to innovate in order to compete in a globalised world (CNARI Interviews: 11/code 45). This was consistent with Mr Huguet’s view ‘together with innovation, internationalisation is the key element to competitiveness’(*Paradigmes* No.3/code 55), and with the OECD Innovation Strategy as reflected in Table 16 ‘innovation as a way to enhance competitiveness’ (p.9/code 30).

Having collected the inputs from the local actors involved in Catalan research and innovation, the input of the *International Advisory Panel* and the evaluation report by
Svend Otto Remoe, the DG CNARI together with the Permanent Committee of Experts drafted the Base Document which was officially handed over and presented to the media by Mr Huguet on the 30th of April 2008.

The Base Document included numerous analyses, recommendations and frames traceable to sources at the international level. It was an example of a discourse common to the international, regional and political levels. The Base Document (p.75/code 347) says that, in essence, research and innovation should focus on ‘contextual challenges and the will to advance in the welfare of society, environmental sustainability and quality of jobs’. Mr Huguet (code 355) defended the Base Document in parliament with a statement that research and innovation was the only way to create ‘an economy with added value that guarantees the welfare state’. The OECD Strategy (p.14/code 338) suggests ‘innovation as a means of dealing with global and social challenges’.

After presenting the Base Document to the public, Mr Huguet discussed its content with the future signatories. Both Mr Huguet and Mr Cartanya pointed out that as a consequence of the elaborate process of consultation, involvement of experts and local actors, the support of an agreed composition of the Permanent Committee of Experts, and the lack of opposition to the concepts and recommendations that surround research and innovation, there were only cosmetic changes to the Base Document. In essence, the objective of the final Agreement was to ‘improve the economic and financial expenditure in R&D&I in Catalonia’ (p.22/code 138), which, in the words of Mr Huguet, meant that the Catalan government showed ‘commitment to innovation and research that is demonstrated through increases in the budget’ in line with the Aho Report’s request to EU governments to support ‘the most excellent scientists with a
generous level of resources’ (p.14/code 103). The CNARI was approved by all signatories (except for the minor exceptions mentioned before) in October 2008.

Starting from the discursive inputs of numerous actors in the process, this analysis showed how political calculations (for example the idea of innovation and research assumed by most, if not all, to be good and necessary; or the process of defining the CNARI as a consultation with a wide range of actors) were inserted in the approach in order to create consensus/ justification as a means to increase the success of the exercise. This was supported by an understanding that research and innovation are not divisive or highly conflictive policy areas like, for example, redistributionist policies. The sum of these elements led to the approval and widespread support of CNARI by Catalan stakeholders.
<table>
<thead>
<tr>
<th>Activities</th>
<th>Dates</th>
<th>Description of the activity</th>
<th>Regional level codes (sample)</th>
<th>Political level codes (sample)</th>
<th>Source code at the international level (sample)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech of the President of the Catalan government</td>
<td>23rd November 2006</td>
<td>The President of Catalonia presents the government’s political agenda - one of the political priorities is the CNARI.</td>
<td>Not applicable</td>
<td>Speech of the President of the Catalan government (p.18): ‘We will push for the signature of the National agreement on Research’</td>
<td><em>Aho Report: central recommendation is ‘a Pact for Research and Innovation’ (code 272)</em></td>
</tr>
<tr>
<td>Creation of DIUE and approval of Minister to lead the DIUE</td>
<td>28th November 2006</td>
<td>The reorganisation of ministries included the allocation of innovation to the new Ministry of the DIUE - the sources identified here (decree creating the ministry) are not relevant for the research due to the legality of the terms and the absence of discursive content.</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Approach on how to create the CNARI, creation of DG CNARI and kick off of the process to develop the CNARI</td>
<td>June to 15th of September 2007</td>
<td>The approach to create the CNARI was tasked by the Minister of the DIUE to Jordi Cartanya. The approach was approved by the Executive council of the Catalan government together with the creation of a specific Directorate General (headed by Jordi Cartanya) in charge of executing the process. One of the key elements of the approach was to make the process inclusive and open to a wide spectrum of actors not only political or governmental actors.</td>
<td>Base Document (p.11): ‘to turn Catalonia into a country with the possibility of achieving high levels of progress, welfare and a shared vision that puts research and innovation in the centre of socioeconomic action’ (code 43)</td>
<td>Paradigmes No.0: 'Catalonia needs to tackle this process with all its potentialities as well as a wide consensus among the political, economic and social stakeholders' (Paradigmes: No.0) (code 51)</td>
<td><em>Aho Report (23): ‘Our central recommendation is that a Pact for Research and Innovation is needed to drive the agenda for an innovative Europe (…) this requires a huge act of will and commitment from political, business and social leaders’ (code 36)</em></td>
</tr>
<tr>
<td><strong>Constitution of the Permanent Committee of Experts</strong></td>
<td>17th of October 2007</td>
<td>One of the features of the approach to develop the CNARI was that the process would be supervised by a <em>Permanent Committee of Experts</em>. Sources were not identified for this activity.</td>
<td>Not applicable</td>
<td>Not applicable</td>
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<tr>
<td><strong>Evaluation of the Catalan innovation governance system</strong></td>
<td>October 2007 – January 2008</td>
<td>Another key element of the process to develop the CNARI was the evaluation of the governance system. This was done by Svend Otto Remoe who pointed towards a structural deficiency in the Catalan research and innovation system, in his view an outdated production model based on manufacturing and low technology industry.</td>
<td>Evaluation of innovation systems: ‘Catalonia has an industry with a structure that is formed by low level technology and low competitiveness that only give small profits in terms of capital and work’ (code 22)</td>
<td>Intervention in Parliament by the Minister of DIUE: ‘Without a change of a manufacturing economy and traditional services to an economy of knowledge and technology we cannot withstand the levels of welfare and we cannot guarantee a future of the new generations’ (code 25)</td>
<td>Aho Report: 2: ‘locked into unmodernised traditional sectors and under-investing in services R&amp;D’ (code 9)</td>
</tr>
<tr>
<td><strong>First session of the Permanent Committee of Experts</strong></td>
<td>8th of November 2007</td>
<td>A month after the presentation of the <em>Permanent Committee of Experts</em> in October 2007, the first work session took place. Sources were not identified for this activity.</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Workshop of the International Advisory Panel</td>
<td>21st of December 2007</td>
<td>One of the factors used to legitimise the process to develop the CNARI was the inclusion of an International Advisory Panel of reputable experts in research and innovation. The International Advisory Panel wrote a report giving high level suggestions for improvement to a draft of the Base Document. An example of one of the statements is: ‘do not punish failure’.</td>
<td>Report of the International Advisory Panel (p.4): ‘An innovation culture must also support failure and learning through failure’.</td>
<td>Interview: President of Catalonia: ‘Creative and risk taking attitudes need to be supported’ (code 1-19)</td>
<td>OECD Innovation Strategy:12: ‘Bankruptcy laws should be less punitive for entrepreneurs and should offer more favourable conditions (...) with due regard to risk management and the need to avoid moral hazard’ (code 154)</td>
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<tr>
<td>Participation of local actors in the process</td>
<td>January 2008 – Workshops November 2007 to March 2008 – Interviews</td>
<td>A second factor was to open the process to social, business and other actors by means of interviews or workshops. Constant reference was made in interviews and workshops to the need for innovating in order to compete in a globalised world.</td>
<td>Interviews performed by the DG CNARI: 11: ‘a business culture based on Innovation of the firm in a global economic context’ (code 45)”</td>
<td>Paradigmes No.3: ‘Together with Innovation, internationalisation is the key element to competitiveness of the Catalan Economy’ (code 55)</td>
<td>OECD Innovation Strategy: 9: ‘Innovation as a way to enhance competitiveness, diversify their economy and move towards more high value-added activities’ (code 30)</td>
</tr>
<tr>
<td>Hand over of the Base Document</td>
<td>30th of April 2008</td>
<td>The input collected, combined with the work undertaken by the Permanent Committee of Experts, resulted in the Base Document. The Base Document was the baseline to negotiate with the other signatories the final version of the CNARI. Most of the content of the Base Document was retained in the CNARI. The Base Document was handed over to the Minister of DIUE by the Co-Presidents of the Permanent Committee of Expert - One of the actions that is included in the Base Document is the importance of innovation to promote social welfare.</td>
<td>Base Document: 75: ‘Research and innovation should focus on: (...) contextual challenge and the will to advance in the welfare society; environmental sustainability; quality of jobs’ (code 347)</td>
<td>Parliament Intervention: 21st of May 2008: ‘R&amp;D and the creation of an economy with added value is what guarantees the welfare state’ (code 355)</td>
<td>OECD Innovation Strategy: 14: ‘Innovation is a means of dealing with global and social challenges’, (code 338)</td>
</tr>
<tr>
<td>Negotiation with signatories and approval of the CNARI</td>
<td>May 2008 – October 2008</td>
<td>The Minister of the DIUE used the Base Document for discussion with the future signatories. Though the negotiations using the Base Document as a starting point were held in a private setting and no records were identified, the signed version of the CNARI shows a common agreement by all signatories in topics such as investment of R&amp;D&amp;I.</td>
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<tr>
<td>CNARI: 22: ‘to improve the economic and financial expenditure in R&amp;D&amp;I in Catalonia’ (code 138)</td>
<td></td>
<td>Interview: Minister of DIUE: ‘commitment to Innovation and Research is demonstrated through increases in the budget, which the plan that followed the Agreement included, but the crisis and change of government stopped this’ (code I-16)</td>
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<tr>
<td>Aho Report: 14 (‘Public finance to support) the excellent scientists with a generous level of res 103)</td>
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Table 16: Combined view of the process to develop the CNARI and the analysis of the codes
7.5 Answering the research questions

Having analysed the process which developed the CNARI, I am now in a position to answer the research questions and assess how well the propositions align with the process and content analysis of the documentary sources (the propositions will be assessed in the next Chapter 7.6).

The answers to the research questions are presented below:

**What is the direction and degree of research and innovation policy change in Catalonia in the period of study?**

The research shows that there has been change in the policy alternatives and rationales from 2007-2008 in Catalonia in comparison to previous periods. These changes are not disruptive and tend to focus either on modifying existing policies (such as education or the budget) or creating new ones based on existing structures and processes (such as triggering the demand of innovation through public procurement). This includes gradual changes up until 2007, and in the period 2007 to 2008. These changes, which for the CNARI are dispersed and not systemic, have been presented in Table 2 and include topics such as the reorganisation of research and innovation agencies (the creation of Acc10 by merging CIDEM and COPCA); the reorganisation of the areas of focus (including tourism for example in page 14 of the CNARI); and the alignment of financial support to the objectives set in the CNARI etc.
What legitimizes this change in Catalonia?

The analysis reveals that the changes in research and innovation policies in Catalonia from 2007 to 2008 are driven by two circumstances. First, there is a common understanding at the international, regional and political level that justifies the promotion of innovation and research. There is a common framing and narrative across the EU and Catalonia that understands that Catalonia is embedded in a globalised competitive world that makes growth a challenge if maintaining a traditional manufacturing production model.

Taking this contextual situation into consideration, the second circumstance is the commitment by the President of the Catalan government, as a political priority, to a renewed research and innovation policy. In this case, the interest of the President is linked to his previous experience as Spanish Minister in charge of innovation where he led the creation of an innovation and research programme for Spain. The reason that the period of 2007 to 2008 has been selected as a case study is because at the start of this research it was the latest exercise of policy definition in Catalonia.

What are the role and impact of ideas and ideology in shaping or limiting change in regional research and innovation policy in Catalonia?

When the President of the Catalan government highlighted the need to create the CNARI, we know that his thoughts were focused on how to overcome international competitors and to ensure growth and prosperity for Catalonia. This is the message he transmitted in his speech and to the Minister of DIUE. The President was in essence
asking the Minister to develop ideas to tackle the challenge. The CNARI would be formed by ideas and rationales, but what types of ideas and rationales? What sources could be used to create research and innovation policies? The codes, interviews, cross-references and the historical comparison of Research and Innovation Plans in Catalonia do not refute the fact that the main sources of influence are past actions implemented in Catalonia, and innovation strategies proposed by the OECD and the EU.

Considering that the OECD and EU strategies for innovation do not contest the principles of the existing economic system, and taking into account that the other source of ideas are past actions, the changes proposed by the CNARI did not involve radical modifications to the trend that was being applied historically in Catalonia. Ideas, in this case, proposed non-disruptive change, which in consequence means that they were bound by existing ideologically driven ideas, and that new policies and instruments (procurement, for example) were adopted for Catalonia without rejecting the basic paradigm.

**What is the role of international epistemic communities in the elaboration of regional research and innovation policy in Catalonia?**

Overall, the main role of international epistemic communities was to provide the rationale and proposals to be used in the CNARI, and to justify the findings and proposals of the CNARI by having some of its members participate in the process to develop the CNARI. It is highly likely that the OECD and EU developed innovation strategies that influenced the prism through which the ‘growth and competitiveness in a globalised world’ dilemma was perceived. These strategies included remedies to this
dilemma. Overall, international epistemic communities were the main source of ideas in the creation of the CNARI. The group of experts that formed the International Advisory Panel are part of the international epistemic community. Though they were acting as local epistemic community actors, they were part of defining the CNARI in such a way as to legitimize the content of the Base Document. They acted as a bridge to convey the international ideas to the Catalan context.

A summary of the answer can be seen below:

<table>
<thead>
<tr>
<th>Summary of the answers to the research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direction of policy change</strong></td>
</tr>
<tr>
<td><strong>Drivers of policy change</strong></td>
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<tr>
<td><strong>Role of ideas</strong></td>
</tr>
<tr>
<td><strong>Types of ideas</strong></td>
</tr>
<tr>
<td><strong>Role of international epistemic communities</strong></td>
</tr>
</tbody>
</table>

Table 17: Summary of the answers to the research questions

7.6 Assessing the validity of the propositions

The propositions of my research are mainly plausible explanations and answers to the research questions. As expressed in Chapter 2, the propositions were elaborated from the academic literature, from the media (audiovisual and print), from my professional experience and from my observations of the policy making process of the Catalan government.

Having answered the research questions in Chapter 7.5, I can now reassess the propositions made in Chapter 2 in regard to the results of the analysis.
Overall, most of the propositions fit the results of the analytical exercise. The results are summarised and presented below:

1) *Ideas shape policies through discourse* – True:
   - Research and innovation policies in Catalonia in 2008 were formed by beliefs and paradigms that are communicated by means of discourse.

2) *Actors actively engaged in the policy discourse can be found at all levels of the policy process* - Partially true:
   - This is true for the international and regional but not the political level. Neither the Minister of the DIUE or the President of Catalonia transmitted policy ideas as was pointed out by the Director General of the CNARI. They rather adopted what the international and regional level proposed.

3) *The degree to which ideas influence policy change is limited by pre-existing dominant ideologies and their persistence* - True:
   - The proposals in the CNARI used concepts like globalisation and international competition to justify the creation of an incrementally modified research and innovation policy. Dominant liberal-capitalistic ideology was not challenged.
   - A stable overarching ideology exists: there is a co-occurrence of terms and concepts used by the international epistemic
communities, local epistemic communities, the Minister of DURSI and the President of Catalonia.

- These terms and concepts (competitiveness and globalization for example) identify capitalism as the framework that defines our economic system. They suggest that economic growth based on traditional manufacturing growth models is hampering globalisation and international competition. Finally, they look to innovation and research as the key elements to international competitiveness.

- In Catalonia the CNARI initiative is framed by politicians at a high level and based on what is proposed at an international level. Both the Minister of DURSI and the President of Catalonia spoke in global terms about innovation and research, repeatedly using a limited number of concepts when compared with the CNARI’s detailed policy prescriptions. The Minister of DURSI, however, did refer in his interview to international benchmarks and experiences as a means to justify the CNARI. The President of Catalonia, by contrast, referred to his own past experience as Minister of Industry and Innovation in the Spanish government. The views of both of them reflect the same ideas as the OECD and the EU.

- The Minister of DURSI acknowledged the use of international level actors as sources to justify the development and content of the CNARI.
- A new policy emerged (for a description of the differences between the CNARI and past policies please refer to section 3.5.2), grounded on the same reasoning as the OECD and the EU. This is confirmed by content analysis (mainly Tables 3 to 11 of the Annex) and interviews with the political level actors and the Director General of the CNARI. This data highlights the need to conform to globalisation; competition; individual improvement by means of technical education; and human capital development etc.

4) Research and innovation policies are affected by other political factors at the regional level. – True:

- The political level sources declared that the probability of having the policy approved as a consequence of ideational consensus was a key factor that kicked off the process to develop the CNARI.

- As a consequence of dynamics involving local and international epistemic communities, policy definition is not challenged. The concept of innovation appears beyond debate. The need for a new innovation policy is not challenged by those involved in the process, which in itself means that politically it will not be contested. It is assumed as ‘the right thing to do’. Challenges arise when details of implementation are discussed. These challenges are limited, though, to organisational issues such as
the creation of an independent innovation agency in charge of managing the budget and programmes related to innovation.

- The rest of the content (increase of the budget for innovation, the continuity of technological centres programme etc.) was not opposed by any of the actors involved.

- Another point that does not refute the propositions, but complements them is the use of the process to define the CNARI as means to mitigate the political risks of failure. The Minister of DURSI and the President of Catalonia agree that the involvement of multiple actors from a variety of fields (industry, politics, social movements etc.) facilitated the acceptance of the CNARI, though, as the Director General of the CNARI and the Co-President of the *Permanent Committee of Experts* highlighted, the input collected by means of interviews and workshops did not have much of an impact on the development and final version of the CNARI since they replicated international level ideas. The final version of the CNARI, as stated by the President of the *Permanent Committee of Experts*, was mostly a result of the work of the *Permanent Committee of Experts* for the Base document and, to a lesser degree, the representatives of the main opposition party in the Catalan Parliament.
8 Conclusions

In this chapter I update the framework, revisit the literature and highlight the implications for the policy making process.

The day after the CNARI was signed and approved, Mrs. Simó i Castello, a member of one of the political parties that formed the ruling coalition in the Catalan Parliament, asked President Montilla, “Mr. President, what is your view on the use of the CNARI as an instrument to change the production and development model and to promote the stability of the workforce?”. President Montilla replied “We want, with this agreement, to promote a new socioeconomic model that targets growth that has its foundations in education, research and innovation (…), to attract scientific talent, innovators and entrepreneurs, strengthen our research infrastructures, to prioritise resources, and to improve efficiency in the use of our resources (…)”.

The language used here is similar to that used in CNARI discussions; interviews with local stakeholders; Mr. Huguet or the President of Catalonia in interview; or the European Commission when outlining a Europe wide innovation strategy.

In essence, the same terms and proposals arise to solve a productivity related problem, not always described in detail, that derives fundamentally from the challenges posed by globalisation and international competition. The solutions proposed tend to refer to novelty, change, or modernisation of the economy, or the need to embrace a new growth model. The solutions are expressed in a standard narrative that alludes to common ideas

and sources. This is expressed in my conceptual framework and supported in my analysis of the process which developed the CNARI.

This dissertation suggests that research and innovation policies, and strategies, have been developed simultaneously by the OECD, EU and Catalonia. Common discursive frames were shared by the process of developing the CNARI and the language of the OECD and the EU. I have therefore defined the CNARI as a non-disruptive policy framework since it does not challenge dominant ideology and allows for a shared contextual rationale at the regional and international level. I have also described international level actors as essential in the configuration of these rationales and policy prescriptions. I have identified ideology as an element that promotes and limits policy change.

I have alluded to the means through which these dynamics are exercised: discourse, and mutual influence of actors on each other (though the direction of influence tends to be from the international actors towards regional actors and politicians).

I will now explore how my conceptual framework can be modified as a consequence of the analysis. I will then explain the relevance of my thinking to policy making studies, and how my research relates to the rest of the academic literature.

53 The international level actors are in this case the OECD and EU, not to be mistaken for the International Advisory Panel used partially as an instrument to justify the Base Document of the CNARI.
8.1 Modified conceptual framework

In Chapter 5.1 I presented a conceptual framework that served as a guide to explore and explain the role of ideas in research and innovation policy definition. The conceptual framework was built on five propositions that are based on the academic literature presented before. My conceptual framework is formed by four elements:

1) Ideology (which I have defined as the understanding of the world a group does not question, but rather assumes to be true)
2) Paradigm (a high level explanation of an issue, in line with an ideology)
3) Policy (the concrete expression of a paradigm)
4) Political strategies (the use of policy initiatives to fulfil a political agenda).

The conceptual framework was initially conceived as a non linear process kicked off by politicians that try to implement their political agenda. Politicians want to have most, if not all, of their initiatives approved. This is a measure of political success. Politicians express their policy initiatives to policymakers, who frame the policy within the boundaries of an overarching ideology. If a policy initiative is non-disruptive, the chances of success are higher since it doesn’t question a common understanding of the world that all of the actors involved in the policy definition process believe is valid. The policy initiative, though, can be in line with a change of paradigm, as long as this

54 By non-linear I mean that though the conceptual framework is conceived as a step by step concept, it acknowledges the fact that though interactions tend to follow a particular flow (where ideological influences are top down) that this flow can vary, and that these dynamics can change to bottom up or spread both up and down from the paradigm.

55 As has been expressed in Literature Review (Table 3, for example) (Edler, 2003b: 102:103) ideology belongs to the sub-set of normative ideas that ‘suggest where one should head and what is perceived as legitimate’. Policy and paradigm are causal ideas that ‘help define the current situation and explain what action leads to what outcome’. 
change is non-disruptive. My conceptual framework allows for the fact that paradigms can change (although they are limited by ideology) if a situation arises that demonstrates that the previous paradigm is no longer fully valid.

The conceptual framework identifies actors at the levels of ideology, paradigm and policy. These actors are:

- **International epistemic communities**, including individuals, groups or institutions (the OECD and EU in this research) that control a specific knowledge and have ideational influence over regional actors and politicians not only as a consequence of their specific knowledge, but also due to their prestige. Such actors are the main source of non-disruptive paradigm change and they limit their ideas to boundaries set by ideology.

  Due to their global view, international epistemic communities use general policy and paradigmatic prescriptions that can be replicated more locally. Paradigms and policy prescriptions created by the international epistemic communities gain credibility by having been created by reputable experts. When international level paradigms and policy prescriptions are expressed using a non-disruptive discourse, they are understood and assumed to be true by local politicians and policymakers who then transfer them into local policy processes.

  As was deduced from the face to face interviews, the key to the inclusion of policies proposed at the international level was credibility, which, in turn, led to legitimacy. This link has previously been expressed by Mytelka and Smith (2002).
• **Regional epistemic communities** are found at sub-national level. This includes regions and municipalities. Regional epistemic communities hold the knowledge in the region and disseminate what is prescribed by the international epistemic communities, though they regionalise their ideas to make them palatable to regional decision makers. Regional epistemic communities include policymakers and other actors who participate in the policy definition process. Some of the *regional epistemic communities* also belong to the *international epistemic community*. This was the case with the CNARI *International Advisory Panel*.

• The third group, individual decision makers, are politicians. Politicians initiate\(^{56}\) non-disruptive paradigm and policy change regionally. They pursue political success. Their lack of expert knowledge on a policy topic means that they frame their policy initiative according to the discursive structure and content proposed at a high level by the regional and international level: they necessarily feed off past policy efforts. Politicians are not the only source of policy initiative. There can be others, for instance (though not seen in this study) policymakers.

The framework explains the direction and degree of change. However, the analysis has shown that the initial framework needs to be deeply modified.

When defining research and innovation policies, institutions rely on past efforts to create concepts or discourses (as is the case with international level sources) or they look to existing policy successes (as is the case with regional level actors). At the international level we see this in the continuous work performed by the OECD from the

\(^{56}\) Politicians are not the sole initiators of policy. There is no one single source from where policy initiatives stem. For example, actors such as civil servants involved in the policymaking cycle can also initiate policy by influencing politicians.
1960’s to 2010 (see Henriques and Laredo, 2013). The evolution of OECD innovation strategy has incorporated both science policy and industrial policy.

The influence of past policies applies, but in different terms, to the regional level actors. They look at what they have at hand and see how they can improve it. In our case, they did not create entirely new policies. There could be two reasons for this in the Catalan case: the fact that many of these regional actors (such as the co-president of the Permanent Committee of Experts, or participants in the interviews/workshops conducted by the DG CNARI) had already participated in research and innovation policy definition; and the fact that some of the policy actions, such as the technological centres initiative, had already been accepted by research and innovation stakeholders (public universities and research centres, for example).

As for the direct influence of the OECD and the EU in the elaboration of regional research and innovation policies, I suggest that this takes place, but in the end, the causality cannot truly be proven with the data we have. The common discursive frames and contextual analysis show that the views in regards to the need and content of an innovation and research policy are very similar, if not the same, for the three levels (international, regional and political). Nevertheless, a direct continuous link between the international epistemic communities and the policy definition process is not certain.

What we have found is that a member of the OECD was involved in the as-is assessment of the Catalan innovation system; that the evaluation of the state of research and innovation was allocated to the OECD after the CNARI was approved; and finally that there are references to OECD studies and the Aho Report throughout the
development of the CNARI. While these are strong indications of converging discourse, this does not constitute proof of causality. The conceptual framework needs to acknowledge this and describe the influence of international level actors more by means of research and knowledge diffusion than by direct involvement in policymaking.

The role of politicians in the conceptual framework is twofold: to initiate policy in order to fulfil the policy agenda and campaign promises, and to frame the policy initiative within an existing ideology and respecting local or regional realities and past actions. There is more to how the politician participates in the policy definition process than is expressed in the conceptual framework. There is an important personal element to the behaviour of a politician in a position to initiate policy, namely the past experiences of the individual in the subject involved in the policy initiative.

In the CNARI there was a clear relation between the launch of the initiative and President Montilla’s vision, and previous hands on experience, of research and innovation. It is not clear if the CNARI process would have ever taken place if President Montilla had not previously been the Minister of Industry in Spain responsible for research and innovation policies. Perhaps without this previous experience he would not have chosen to create the Ministry of the DIUE to replicate the Spanish Ministry. The influence of past models which have proved reliable in a politician’s previous experience needs to be adequately weighed in the conceptual framework.

The conceptual framework speaks about the role of the politician and how he or she seeks political success by launching a policy process that is supposed to turn a proposal into an approved policy. The analysis based on the framework did not capture issues
such as how a political agenda is created. I did not answer questions such as ‘is the
definition of a political agenda created by the same dynamics as the policy process?’ In
other words, ‘is the political agenda constrained by the influence of ideology, and the
actions of international and regional actors?’.

An element of the conceptual framework that needs to be attributed due weight is why
the discourse of international actors has an effect on regional policy definition. In the
conceptual framework I refer to the boundaries imposed by ideology and I mention the
form in which international actors create policy formulas that are replicated by regional
governments. My analysis suggests a pattern in the data that confirms this but does not
explain how this occurs. The data suggests that the overall agreement with non-
disruptive change in research and innovation policy was what made the idea marketable.
I would suggest that research and innovation are easy to market in the policy arena due
to the simplicity of the message, the close rapport regional actors have to international
actors, and the lack of any concrete detail that might make the policy or paradigm
proposal difficult to fit in with existing regional policies. In other words, it is easy to sell
a change of paradigm and a policy proposal if the discourse being communicated fits
with the overarching policy and discursive framework that regional actors and
politicians understand, or if the policy prescriptions allow for enough flexibility to fit
easily within an existing policy structure.

A modified conceptual framework needs to accommodate several amendments or
additions. In the light of the research I would put more emphasis on the relevance of
path dependency in the elaboration of policies, and on path dependency within the
experiences of politicians. I would also include the indirect, rather than direct, influence
of international actors. Indirect influence includes the importance of the credibility international actors derive from their technical expertise. It would also include their reputation within research. An example of this is the legitimacy given to international policy actors by policymakers and politicians in the CNARI process (and how supporting the concept of international actors can provide some instrumental benefits as with the case of the Framework Programmes of the EU). Finally, the discursive forms that are created by international actors follow a particular structure that allows for adaptation by regional governments. Paradigm and policy formulations communicated by international actors are flexible, not restrictive.

8.2 Contribution to the literature

To understand the role and impact of both ideas and actors, has been a pivotal piece of my dissertation. I first encountered the importance of ideas in policy definition in the work of Mytelka and Smith (2002). Their perspective brought up a number of doubts that lead to my research questions (Chapter 3). In order to answer these questions and define a set of propositions that would end up constituting a conceptual framework, the literature review was written to shed light on the role of ideological ideas in public policy making which opened a window to the sociocognitive branch of critical discourse analysis. Sociocognitive discourse analysis, and the literature on paradigm and policy change, were the key components used to elaborate my propositions and conceptual framework. After having performed the analysis I came across findings that confirmed, contradicted or added to the literature that I selected.
I started the review of the literature related to paradigm and policy change by explaining what I understood as a paradigm: ‘taken for granted world views’ that are underpinned by an overarching narrative that leads to acceptable social norms (Campbell, 2002). I mentioned that the individual accepts a paradigm and ideas based on two criteria: that the idea or paradigm does not clash with the individual’s ‘legacies’ or experience (Weir and Skocpol, 1983); and that the idea or paradigm is supported or spread by experts (Eisenhardt, 1989).

I used Hall’s (1983 and 1993) concept of the acceptance of a paradigm or an idea in the public policy arena. Taking Hall’s (1983) precept, I searched for an alternative actor involved in formulating ideas and change, and came across Skowronek’s (1982) definition of epistemic community as groups of individuals that possess knowledge or a higher understanding of a topic.

Hall (1993), Weir and Skocpol (1983), Campbell (1988) and Risse-Kappen (1994) all allude to the epistemic communities’ influence in the creation and dissemination of ideas and paradigm shifts. As for what constitutes a paradigm change, I use Nadler (1998) and Kezar (2005) who see paradigm change as a change of mental structure, culture and visions. On the other hand, and to understand non-disruptive change, I quote both Morgan (1987) and Scott (1987) who both see non-acceptance of change as due to an individual or organisation’s attachment to existing values, habits and traditions.

As for the literature on ideas, ideology and discourse, I used the sociocognitive approach to critical discourse analysis as the theoretical baseline to understand how ideology, knowledge and discourse work and are embedded in the public policy arena. I
categorised ideas into three blocks based on Edler’s (2003) definition of normative and causal ideas: ideology is normative (concerned with what is perceived as legitimate), whereas paradigms and policies are causal (concerned with which action leads to what outcome). I then reminded the reader that individuals make use of language to express thoughts and to communicate. The construction and communication of thought is discourse. This aspect of social interaction (communication) is studied by discourse analysts, who base their research on the linguistic characteristics of discourse, and by critical discourse analysts, who identify power relations and other issues (racism, sexism etc.) in the use of discourse. Critical discourse analysis (Fairclough et al., 2004: 2) defines discourse as a major part of how we interpret society, act and organise ourselves, all of which, the conceptual framework says, have a strong impact on the creation and development of innovation policy. The sociocognitive approach as expressed by Van Dijk (1993, 1998), understands discourse in these terms and blends this concept with politics, ideology and knowledge. I selected two of the elements researched by Van Dijk: ideology and knowledge. Ideology is understood by the sociocognitive approach as ‘the fundamental beliefs of a group and its members’ (Van Dijk, 2004: 6). This makes ideology the centre piece of the social practices of groups of individuals.

According to Van Dijk, ideology is formed by two elements: cognitive and societal (9). The cognitive element refers to the individual’s retention of beliefs. It is composed of:

- Grand beliefs that define civilizations and define what is good and bad (named ‘common ground’) and shared by a number of groups
• Social beliefs (named ‘sociocultural knowledge’) that allow individuals to understand each other. They are beliefs that help the individual share knowledge and explain the world.

• Opinions, which are controversial views of the individual that are not assumed to be true and can be contested by the group

• Personal beliefs (named ‘episodic memories’) that are obtained from the individual’s unique experience

These categories are equivalent to the following elements of the conceptual framework:

• Grand beliefs = ideology

• Social beliefs = paradigms and policies

• Opinions and Personal beliefs

As for the societal elements, Van Dijk et al. (2004: 30) consider ideology to be a social event where a group of individuals share a set of beliefs. Ideologies assist the individual to ‘organise social representations’ (35). Social representations are key in the understanding and acceptance of policy proposals. Beliefs affect or determine the way an individual acts on a daily basis, granting him or her the category of member of a group that collectively shares a common ideology and, in turn, an understanding of how an economic system should be. At the group level, ideologies are defined by ‘power and dominance’ (Van Dijk et al., 2004: 35).

As a result of this research, I am able to summarise a number of points in the literature that, together with the findings presented in this chapter, can contribute to and offer additional reflection on what is said by the authors I selected. This applies to Hall’s
(1983) framework of degrees of change. He explains that first and second order change are mainly led by an organisation’s internal dynamics, often the opposition of civil servants or the politics-administration nexus who oppose change. He refers to a more systemic change being the result of external factors.

This research highlights how an independent organisational unit (the DG CNARI), promoted non-disruptive change equivalent to first and second order change in Hall’s classification. In other words that very little radical change was apparent.

I propose that one reason change was limited is a group’s permanent framework of beliefs.

A second item of the literature that can be redefined is the relationship between epistemic communities and paradigm change as expressed by Hall (1993), Weir and Skopcol (1983), Campbell (2002) and Risse-Kappen (1994). They refer to these epistemic communities as actors who, due to their specialised knowledge, can trigger paradigm change.

The relation between three of Van Dijk’s cognitive dimensions (‘common ground’, ‘sociocultural knowledge’ and ‘opinions’) and personal experience is, from my point of view, an important feature of public policy development. The experience of a politician can determine the degree of change of his discursive and policy framework (how much he is willing to break from existing policy options), though, once again, it is necessary to understand that the strength of permanent shared beliefs, such as ideology and
paradigms is usually so strong that the personal experience of a politician, no matter how disruptive, will rarely affect the definition of a policy.

8.3 Implications for policy making

There are three implications for policy making derived from my research on the CNARI.

First we have the power of standardisation or normalisation of paradigms and policies across territories and governmental levels in the research and innovation area. I suggested that the contextual analysis and policy prescriptions (ie, policy formulas that can be replicated by all levels of a public administration) considered by international actors, and supported by regional actors, are expressed in such a way that they can be replicated by a wide variety of governments (national, regional, local etc.). This can lead to the adoption of similar policies, based on similar contextual analysis that will allow for cross government comparison and benchmarks. This in turn might lead to competition among territories trying to perform well against a specific benchmark or ranking. Politicians and policymakers will always attempt to do well with regard to indicators that are included in rankings. The issue is, however, whether policy prescriptions, and hence indicators derived from the implementation of these policies, are suitable for a specific region. I suggested that paradigm and policy change proposed at the international level are regionalised by local actors. This is true in the case of

57 An example of how Catalan actors adopted prescribed policies from the international level, Evaluation of Innovation Policies:

Code: 264 - Evaluation is essential to enhance the effectiveness and efficiency of policies to foster innovation (...) this also calls for improved measurement of innovation, including its outcomes and impacts (OECD Innovation Strategy: 14).
Catalonia, though a critical assessment of these policies/competitive ranking indicators is missing from the data.

This brings us to the second point, the role of respected personalities (academics, policymakers, analysts, consultants) as: enablers of a standard view of a regional context; creators of common policy prescriptions; and, finally, supporters of the continuity (in the case of western society) of capitalism and private enterprise as the basic ideological framework around which all governmental actions revolve. This is done by introducing, through discourse, a common view on what elements a policy should contain.

Epistemic communities at the international and regional level understand economic dynamics from the same point of view. They do not normally question the fundamentals of how the economy works or should work. As a consequence of this they share a common ground of beliefs and values that they translate into assessments, observations and policy proposals that tend to be non-disruptive. My point is that part of the influence of international and regional actors on the policy definition process (both institutions like the OECD and EU, and individuals), is their reputation and the assumed validity of their proposals or assessments58, as is expressed by the Minister of DURSI. It is assumed that their higher expertise and knowledge on a specific topic justifies acceptance of their proposals or views.

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58 See page 47 of this dissertation for how epistemic communities exercise their influence by means of causal models that are empirically relevant (Haas, 1992). Their influence is mainly exercised through informal channels (advisory, publications, academia and others). Examples of research related to this influence can be found for economic policy with Hall (1993), in welfare policy with Skocpol and Weir (1983), in energy policy with Campbell (1988), and in national security policy with Risse-Kappen (1994).
The third point is the importance of past experiences of politicians and policy makers and a government’s policy experience (for international and regional actors). I have alluded to the standardisation of policies across countries and regions but it would be unwise to ignore the importance of the individual’s experience in regards to their role as policy initiators (though not so much as policy makers). In contrast to the story in this thesis, a situation could arise where a proposal made at the international level collided with a strong negative experience of a regional government or leading politicians. This thesis did not deal with such a situation of contestation.

As for the empirical findings captured outside of the conceptual framework, I found two that indicate that my conceptual framework is too rigid: the use of more open and participative approaches to develop tools; and the creation of ad-hoc structures in government to overcome opposition from civil servants. Politicians, in other words, look for different policy tools and processes to overcome obstacles such as rigid structures, or (what they perceive as) unqualified or unreliable resources. It is plausible that the discourse of innovation and its perceived need is so solid that it can support the creation of a new administrative structure outside the organisational dynamics of the existing bureaucracy.

Setting out, I understood the policy process as a linear sequence of steps where ideology, paradigms, the influence of epistemic communities and other points that have been described before, come together to shape the definition of a policy, but this original framework under-rated the importance of a broader field of participants in the policy formulation process. When I undertook the case study, I found that although the
classical view of the process, where an elite is involved, holds true, the process of policy definition is becoming more and more diluted, making it necessary to look at the participation of a wider base of actors in order to justify the result as inclusive, where all opinions and views are taken into account. The perception of a policy process as open to a large number of actors is tempting for a politician, because wide participation will most probably strengthen the legitimacy of the policy and reduce obstruction to the policy (even more if the policy being proposed has broad consent).

Finally, contradicting Hall’s claim (Hall 1993) that the policymaker or civil servant is one of the barrier that limits change, I suggest this is not always the case. With the CNARI, where the Minister of the DURSI thought that the expertise and flexibility to execute a process such as the CNARI could only be undertaken by a structure formed by individuals staffed from outside of the public administration, I observed that politicians acknowledged the power of civil servants and tried to surpass this obstacle by creating ad-hoc and temporary structures in government sourced with individuals from outside the civil service and operating with different terms of reference and labour regulations. Politicians look for temporary resources with a particular set of skills and with enough flexibility to be able to undertake tasks that would probably not fit with the roles and responsibilities that exist in the civil service structure. Concretely, the Minister of DURSI specified that the concept was not challenged and that he created an ad-hoc structure because he wanted flexibility in the team in charge of developing the CNARI.
8.4 Proposals for future research

I propose below that two lines of research could be performed in the future to complement my conceptual framework and to offer a comprehensive view of the role of political ideas in the policy definition process. In the first instance we have research that will refine my conceptual framework, in the second, we have other possible research areas that derive from the findings in my case study.

There are two limitations to my conceptual framework that would benefit from further enquiry. First, there are the constraints imposed on my case study by the absence of a long-term comparative analysis (of the evolution of the concept of innovation in the OECD, EU and Catalonia from the 1960’s to 2010). Second, the conceptual framework would benefit from multiple case studies to better assess its validity. Though the process of developing the CNARI is illustrative, it would need to be supported by additional cases to see to what extent the results presented in my dissertation are shared in other regions.

To develop a more comprehensive understanding of the role of ideas in the policy process based on the findings of this research, I propose three potential lines of enquiry.

1) An examination of the creation of ad-hoc or non-bureaucratic structures that exclude civil servants, to create and implement policy. How are such non-bureaucratic structures justified by the politician? What strategies are pursued by policymakers or politicians to undertake this? What sort of resistance do the traditional structures of a public administration make to such a process? If there is no resistance, why is this so?
2) Further exploration of how political and electoral programmes are defined. Mainly: what are the influences of a politician’s personal experience in elaborating a political programme? What is the influence of discourse from international epistemic communities?

3) A consideration of the role of open and participatory processes. Are participatory policy definition processes (in this case in innovation) being used as a political instrument? Or are they part of a current trend towards transparency in government? Is it possible to collate the input from a wide range of actors, or is it wishful thinking? Is the involvement of a wide range of actors reflected in the final policy?
9 Annexes

9.1 Annex 1: Structure of interviews with local epistemic communities

Questionnaire

The thesis refers to, in chapter 7.2.5 and others, of the transcripts of interviews to regional stakeholders that were conducted throughout the development of the CNARI. I have included below the full questionnaire.

<table>
<thead>
<tr>
<th>1. Opinion on the SWOT analysis (DG CNARI 2008: 284-294) presented to the interviewees prior to the interview. Does the interviewee agree or disagree with the results of the SWOT?</th>
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<tr>
<th>2. What are the potential and hierarchical priorities for R&amp;D&amp;I in Catalonia in relation to: the main sectors of the Catalan economy; emerging sectors; new sectors based on knowledge; in the social sphere?</th>
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<th>3. What type of initiative does Catalonia need to undertake to promote innovation (interviewee asked to rank these in importance with a numerical value from 1-4): fiscal incentives; public-private financing for the promotion of innovation in business; reduction of bureaucracy re grants applications; promotion of training and knowledge acquisition for innovation; stimulation of a culture of risk taking to make individuals more tolerant to failure; promotion of a business culture based on growth and innovation if the business in a globalised context; promotion of venture capital more oriented to innovation; any other initiatives needed.</th>
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<th>4. What type of initiatives must be taken to strengthen research in Catalonia (interviewee asked to rank these in importance with a numerical value from 1-4): to make the career of researcher more attractive and to increase the salaries of researchers; to increase the public budget of R&amp;D to reach the European average; to increase financial contributions to universities so that they can undertake the role of creating social and economic value from their knowledge creation activities; to promote the identification, development and retention of talent; to establish a clear evaluation of the results of research; to prioritise the investment in research excellence; to give high priority to basic research; any other initiatives needed.</th>
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<th>5. How can the creation of knowledge to increase innovation be promoted? And how can economic clusters stimulate new dynamics of knowledge that can make innovation easier?</th>
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<th>6. What is the state of innovation in the interviewee’s sector?</th>
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<th>7. Which model of research and innovation is best for Catalonia?</th>
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<th>8. Does the interviewee value the initiative to develop a CNARI?</th>
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<th>9. What is the interviewee’s main proposal for the CNARI?</th>
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9.2 Annex 2: Summary of the politician level interviews

As part of the case study I conducted several face to face interviews with the key actors and policy makers in the elaboration of the CNARI. The results of the interviews served to compliment and validate some of the results of the analysis. (Two of these interviews were with the main political drivers of the development of the CNARI: President Montilla and Mr Huguet. I present in this annex the results of the interview in two blocks: contextual interpretation by both President Montilla and Mr Huguet; and forms of legitimisation of the process by Mr Huguet.

In relation to the contextual interpretation of both President Montilla and Mr Huguet, there is a focus on a ‘need for change’ (both), from a ‘low productivity model to a more productive one’ (President Montilla), or, from Mr Huguet’s point of view ‘from Fordism to the knowledge economy’. For this, the main success of the CNARI, from Mr Huguet’s point of view, is the ‘adoption of a new paradigm’ by the Catalan population. This is validated by President Montilla, as he speaks about ‘new forms of thinking and working’ in reference to innovation and research as a ‘creative’ and ‘risk taking’ attitude. Mr Huguet also points out, in regard to ‘risk taking attitudes’ that those who take on ‘challenges’ and ‘do not succeed’ should not be punished. There is a common understanding that ‘the current system doesn’t work’.
Both individuals refer to past experiences or policies. President Montilla refers to his experience as Minister of Industry for Spain, where he was functionally responsible for research and innovation. He refers to the need for ‘agreeing in the issues that matter to the country as a whole’ adding ‘(a) wide base of consultation is needed’. He also claims that the influence of European Union programmes is ‘inevitable and positive’. When asked about the use of international benchmarks and experts, he confirmed that it is necessary to ‘look for inspiration and learn from others who have succeeded’, though he also added ‘it as important to learn from those who failed’. When asked if he thought there was a consensus in relation to the need for an economy that is strong in innovation and research, he said that ‘there was no opposition nor questioning’ of ‘the need to focus on innovation and research as drivers of the Catalan economy’.

Mr Huguet, on the hand, when asked about what sort of influences he could identify in the elaboration of the CNARI, referred to past policies or plans. He concretely stated that ‘the technological centres’ initiative of the previous government was taken into account for political and policy reasons (‘political’ was in reference to Mr Mas-Colell, Minister in charge of research in the previous government, and the main advisor on this issue to the leader of the opposition party). With regard to providing the means to legitimise the content of the agreement, he pointed to experience and knowledge of the international experts and the involvement of the OECD. He referred to international best-practices, mainly Finland, recurrently. As for the results of the CNARI, he spoke more about governance initiatives than policies. He mentions the one agency model for managing innovation and research programmes. He constantly pointed out the need ‘to reduce the number of actors in the Catalan
innovation system’. He agreed with President Montilla that there were no barriers to
the ‘admission that innovation and research is the path to follow’. The relevance of
the EU programmes was highlighted once again, when Mr Huguet stated ‘we had to
align the timing of our plans to the requirements of the European Union framework
programmes’. Finally, the OECD was mentioned as a key reference throughout the
process of developing the CNARI. He stated that the evaluation of the Catalan
innovation system was a key source in creating the CNARI; that he understood the
use of OECD or former OECD consultants to be not only a way of capturing
knowledge, but more importantly, legitimizing the Base Document, and allowing
the CNARI to be approved by consensus.

9.3  Annex 3: Summary of the introductory Chapters of Paradigmes

Paradigmes was a magazine published with the sponsorship of the Ministry of the DIUE
to support the vision of a Catalonia that needs to embrace innovation. It is described in
section 7.2.5 and is included in the codes. The following excerpts of the Introduction to
Issue 0 (2008: 4-5) are key to understanding the Minister of the DIUE’s view on,
mainly, the change of economic model and the need to focus on research and innovation
to achieve this change:

• ‘The Knowledge economy has become Europe’s strategy to react to
globalisation after the Lisbon summit (2000). Just as Catalonia spearheaded the
industrial revolution in the 18th and 19th centuries and thus managed to survive,
it will now only succeed if it takes a leading role in the revolution of the Knowledge society’

• ‘Catalonia’s ability to fully enter the Knowledge economy will determine its capacity to maintain and further strengthen not only its competitiveness – and thus its ability to create stable, high-quality employment – but also the structural elements of social cohesion’

• ‘… the shift of the economic paradigm in Catalonia fostered by the Ministry and the whole Government. This shift shall lead to the knowledge society, based on innovation, internationalisation and encouraging activities with high added-value’

Talent, corresponding to the first issue of Paradigmes, is a recurring topic for the Minister of the DIUE, as will be seen. He claims that to have talent, means ‘to have the best scientific, entrepreneurial (resources) and innovate’. This links with ‘quality of competences, adequacy of profiles and the rate of the scientific staff, innovators and entrepreneurs’ and the capacity of organisations to use this talent ‘efficiently’. The rest of the Minister’s text for Issue 1 focuses on matters close to his function as Minister in charge of Universities (the ‘U’ in DIUE) by focusing on the implications this has on the Higher Education system. Minor excerpts, referring to articles found in this issue of Paradigmes, form the remainder of his comment, with: ‘the use of ‘Barcelona’s leading roles as a hub attracting talent from all over the world’; the need to prioritise ‘to stimulate the biggest capabilities wherever available’; and to enhance the role of not-for profit organisations in the knowledge economy.
The four remaining magazine issues present a similar structure to Issue 1 of *Paradigmes*. They contain reference to the need to change as a consequence of the globalising context Catalonia finds itself in, and they recommend that Catalonia goes down the path of a knowledge economy. This includes: ‘not forgetting about ‘political economics’; ‘to concentrate on long term growth and not only short term profit’; to ‘reorient some widespread traditions in our collective culture’; ‘improving the interaction between public authorities and companies’; ‘the need to develop leadership in business and as a collective’; ‘to stimulate partnership’; ‘internationalisation of services’ etc.

It is important to state that a large number of the international and local actors belonging to the epistemic communities contributed to *Paradigmes*, which was the institutional review publication, defending the CNARI. This dissertation thinks this is a clear sign of the importance of international and regional experts (Svend Otto Remoe, Mark Romoff, Suafa Gronfeldt, John Seely Brown etc.) in the elaboration of the research and innovation policy.

9.4 Annex 4: Summary of Plenary Sessions of the Catalan Parliament that included discussions on the CNARI

The process to develop the CNARI was discussed in the Catalan Parliament. Mr Huguet intervened in all the sessions were the CNARI was discussed. The content of the interventions are described below, in chapter 7.3.5 and included the codes.
Parliamentary interventions are more confrontational, more rhetorical, than written documents or press conferences. Plenary sessions are the forum where the government, through its representatives, defends their policies, management and ideas. Despite the particular strategy that the Minister follows in Parliament, which takes a defensive stance in comparison to the other sources used in this dissertation, there are a portion of the transcripts of parliamentary interventions that reveal the discursive framework of the minister in relation to research and innovation and how it was influenced international and regional sources.

The tone of the Minister in his parliamentary interventions is more confrontational, and the structure of his messages are, similar to the press conferences and communication events, lacking the linear and logical rigour of his collaborations in Paradigmes. His interventions in parliament are reduced to simple phrases that, combined, describe a scenario of ‘Catalonia’, with or without the CNARI: ‘without the change from a manufacturing and (traditional) service economy to a knowledge and technological industry and services (...) we won’t be able to hold the level of welfare we have and we won’t be able to guarantee the future of the new generations’. A clear use of a metaphorical stand on why the Minister believes the CNARI is necessary is when he refers to R&D&i as ‘the hen with the golden eggs’ for Catalonia. This expression is very revealing since he claims, that if Catalonia does not excel in research and innovation, it is ‘doomed’.

The Minister’s strategy to defend his position in regard to the content of the Base Document was to refer on various occasions to the participation of experts. The relevance of international and regional experts is used as a justificatory criterion in the
elaboration of the CNARI. It is true that throughout the transcripts neither party
(shadow Minister of Education and Universities and the Minister of the DIUE)
questions or challenges the other with alternative visions to a ‘Catalonia at the forefront
of Europe in research and innovation’. All members of parliament who have expressed
an opinion in the transcripts agree on the need for change outlined in this case study.

The Minister of the DIUE’s references to examples of other countries that he claims
have been ‘successful’ in changing to a knowledge economy are also found in his
parliamentary interventions on the importance of the CNARI as a ‘vital tool’ for the
‘future of Catalonia’. He says that the CNARI will provide the base to ‘succeed’, like
the countries he refers to succeeded. Though there are added difficulties to this task as a
consequence of the economic crisis: ‘now, with the economic crisis that we have over
our heads, there is even a bigger need for this, because the only the countries that can
profit from all the talent they have can transform it into social value or market value to
succeed’. He adds, in another intervention: ‘the countries that continue to bet on cheap
low skilled workers cannot maintain the levels of prosperity and will finish by falling in
their level of welfare’.

In his intervention of the 17th of July (during a period of negotiations with the
Universities, Trade Unions, Industrial associations and Political parties) the Minister
lists the points that will form the final version of the CNARI: ‘we have to capture talent,
capture, retain and recover (...) we have to transfer knowledge (...) we have to pull from
research to make it profitable in the business sectors (...) we have to internationalise all
the systems (...) research, technology and business (...) we have to focus on where we
are strong economically, over the GDP, but also scientifically (...) we need to improve governance (...) and we need long term investment’.

The frames this dissertation has identified, and that appear also in the Minister’s collaboration with Paradigmes and in his press conferences, stress the need to:

- shift from manufacturing to a knowledge economy
- compete internationally in products of high added value
- do this through research and innovation
- promote a culture of research and innovation in Catalonia
- ‘take care of talent’ both local and from abroad
- extend the role of universities from academic research centres to ‘patent creating’ institutions
- change the business model in the private sector towards high technology and knowledge-driven products

9.5 Annex 5: Summary of the press conferences used to present the CNARI

Similarly to Annex 4, another set of public appearances or interventions of Mr Huguet throughout the development of the CNARI have included two press conferences. The key messages are described below.

As has been seen in the international and regional expert level analysis, there is continuous reference to comparative frames such as: who leads in innovation; what is our position in comparison to the best countries; who is below us; what do we perform
best in etc. As such, the Minister of DURSI points out at the beginning of his interventions that the fact that the Catalan Government is defining a CNARI as a ‘necessity’ is because ‘many countries have done it’, and they ‘are leading countries in R&D&i’. This also serves as a justification standard through his interventions: others who have done it are ranked high, if we do it, we can also rank high. Justification is offered for Catalonia go into the knowledge economy, complete with the CNARI as a key pillar, as other countries have done. The fact that ‘international experts’ also recommend this gives the Minister all the support he needs to eliminate criticism. Journalists who attended the Minister’s press conferences did not enquire about the essential paradigm on which the CNARI is based: ‘the change to a global economy’, where Catalonia ‘will pass from a manufacturing and service economy to a real knowledge economy that should be at the forefront of the world economy’. The Minister repeats several times that the CNARI is crucial to tackle ‘global human and economic challenges such as an increasing population, health, dependency, renewable energies’. The CNARI is a ‘strategic response to a structural problem Catalonia has as a participant in the global economy’. Increasing ‘competition from China and India is threatening the European welfare state, we need to be competitive to not lose this’. The Minister here adds a social element to his liberal statement of competition (despite the fact that he belongs to a social-democratic political party) and recommends ‘an economy of the best, to achieve excellence’. Further social welfare statements in his interventions include: ‘Innovation is not only technological. It is also social. The dependency problem. Quality of life of dependents can be improved through innovative forms of tackling this, because through innovation government can be more efficient in the use of its resources’.
About the policy proposals, the Minister points out six ‘transversal’ pillars that will help ‘Catalonia to improve in R&D&i indicators’. The objectives of the policies are described as to ‘get more patents from university research and fewer articles; to create jobs; to achieve stability in our search for excellence’. The policy pillars the Minister refers to are: ‘to create talent at home and to bring it from outside (...); wide innovation, social and technological (...); strengthen key sectors (...); public sector needs to promote research through the procurement of innovation (...); to promote cooperation, creativity of the actors (...); to improve the governance of the governance systems of innovation’.

Broadly speaking, not all of the proposals found in the CNARI are identified by the Minister in his interventions.

1. Overall the interventions of the Minister in his press appearances including some repeated messages which are be part of his acquired ‘natural’ (natural is here considered to be the logical frames an individual uses when he/she communicates verbally on a particular topic. This kind of direct, semi-improvised communication can show the level of knowledge or understanding of the individual, compared to written sources where the individual can re-write and consult to achieve a ‘framed’ message. The context and the content of the CNARI was understood in press conferences as: ‘talent’; ‘focus on excellence’; ‘to be competitive in a global economy’; ‘return of investment of university academics through patents’; ‘to lead international rankings’; ‘Base Document developed and validated by experts’; ‘to be above the European average in R&D&i’; ‘to tackle human and economic challenges’; ‘we are not talking about solidarity, but about efficiency’; ‘prioritization, like other countries have done, to see where we are strong (...) experts will tell us where we need to invest’;
‘people will not be left aside’; ‘some companies will achieve change, others will fail’.

9.6 Annex 6: Composition of the International Advisory Panel

The following table provides an introduction to the individuals that formed part of the International Advisory Panel given by Jordi Cartanya in the magazine Paradigmes (N.0, p.171):

<table>
<thead>
<tr>
<th>Member</th>
<th>Area of Expertise</th>
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<tbody>
<tr>
<td>Leena Peltonen</td>
<td>Professor of the Finnish Academy of Molecular Genetics. Member of the European Scientific Research Council.</td>
</tr>
<tr>
<td>John Seely-Brown</td>
<td>He was director of scientific research of the Xerox research centre in Palo Alto. He is an IT engineer specialized in artificial intelligence, he is considered one of the leading world experts of the interaction between science, technological innovation and business.</td>
</tr>
<tr>
<td>Giovanni Dosi</td>
<td>Professor of Economics at the Santa Anna School of Business in Pisa. He is a European expert in economic analysis of technological and innovation policies.</td>
</tr>
<tr>
<td>José M. Castellanos</td>
<td>Entrepreneur, he has been a key figure in</td>
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<td><strong>Doctorate in Business Administration – Juan Ramon Yllera</strong></td>
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<tr>
<td><strong>188</strong></td>
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<tr>
<td><strong>the development of Inditex. He is a</strong></td>
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<tr>
<td><strong>member of the Board of Adolfo</strong></td>
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<tr>
<td><strong>Dominguez SA, President of the Bankinter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Foundation for Innovation.</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Bengt Holmstrom**
Director of the Economics Department at MIT, he is one of the key figures in the development of modern organizational theory.

**Andreu Mas-Colell**
Professor of Economics at the Universitat Pompeu Fabra. Former Catalan Minister of Universities, Research and Information Society. He has been named (2009-2011) Secretary General of the Scientific Council of the European Research Council.

**Manuel Castells**
Professor of Research at the UOC. Emeritus Professor of Sociology and Urban and Regional Planning at the University of California. He also holds tenures as a Professor at the MIT and the University of South California.

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9.7 Annex 7: Textual codes

The tables in this chapter show how the codes from the sources described in chapter 7.2 have been categorized as per the schemes found in the international level sources (for
further information as to how the codes were structured and why please refer to the chapter describing the methodology). I have included a detailed description for each of the categories of how I have interpreted the codes within the boundaries of the conceptual framework.

9.7.1 Category: Interpretation of the Context

When speaking about Context, the dissertation refers to the interpretation of a reality that revolves around a topic. In this case study, the reality that is interpreted is Economic, including a set of concepts such as competition, production and growth.

The form of interpretation ranges from review, analysis, assessment or a simple statement without the use of supporting evidence. The main sources that build up this category belong to the international level and the political level. Only two sources at the regional level offer relevant input: The Base document and the Evaluation of the Catalan Research and Innovation Systems. The other two sources (Workshops and Interviews) offer a political assessment (a very specialized view on a subtopic such as scholarships for language courses etc.) of the context that has not been considered as relevant for this category by the dissertation. This is a consequence of the questions that are asked in the interviews, and the structure of the Workshops. They were more focused on obtaining input for Policy proposals and improvements than on understanding their perception of the overarching economic context.
The table below presents the original text extracted at the three levels that explain what the stakeholder’s vision or point of view of the context that makes Research and Innovation a necessary element to address.

The approach used by the original sources to present the context is based on the following sequence: historical analysis of international economic institutions (recent history to present). It includes points such as the identification of problems to maintaining economic growth, or the concept of growth. The second part of this category includes solutions to the problems identified in the first section, and it is entitled solution to contextual problems.

In the historical analysis of international economic institutions, the dissertation has captured a common trend that refers to (as pointed out earlier in this point):

A) Growth: the excerpts that make a direct reference to growth are codes 1, 2, 3, 6 and 7. These correspond to the International Level. Other Levels of analysis do not include a direct reference to growth, but suggest forms of actions that will assist a territory to achieve the goal of obtaining economic growth (codes 17, 18, 22, 25, 28). There is not a concrete definition of what growth stands for; it is simply termed as economic growth. There are some codes that link growth, or lack of growth, to other international economic institutions; to productivity (code 6), to demographics (code 3). Growth is understood by some sources as the key to reduce unemployment and public debt (code 1). Growth is seen as an object that needs actions from other institutions: a change in the productive structure will lead to economic growth (codes 9, 2). Growth is, from the point of
view of international level sources, the goal that nations need to achieve. This goal brings up other contextual elements that are intimately linked between each other: economic structure, globalization, productivity, demographics and competition. It is also directly related to the maintenance or increase of the welfare of the population (an important argument used at the political level in codes 354 and 355).

B) Economic structure: The codes that the dissertation has included here are: 2, 5, 6, 9, 15, 17, 18, 20, 21, 22, 24, 25, 28, I-4. Overall, the references in the sources to economic structure appeal to some sort of modification of productive sectors or mindset. It clearly brings forth a focus on change, which the dissertation understands as the main evidence of Paradigmatic change (code 16 and code 17 include expressions such as: “social and economic transformation”, “new and changing context”), though it still falls under the umbrella of economic growth, that has not ceased being a standard and continuous idea that the sources here presented still adhere to. Hence, the claims found in the codes that refer to economic structure, either directly or in a blended (together with other concepts) manner, are an example of incremental paradigmatic change leading, subtly, to incremental policies that address a problem of growth. Overall, and as specified previously, the need to change the economic structure refers to: productive and/or industrial sectors (some of the nomenclatures referred to them are: “sources of growth”, “structures”, “factor productivity”, “sectors”) and mindset (some of the nomenclatures referred to the mindset are: ‘expectations’, ‘capacity’). There is a balanced distribution of the codes that refer to Economic structure through all the international, regional and political level. The
dissertation has identified a trend of acknowledging a change in economic structure from two different levels of detail: at the international level, where it refers to economic structures in a theoretical way; and at the regional and political level, where the concepts are more specific and focused on Catalonias perceived needs (‘education’, ‘training Systems’, ‘high level technology’ etc.).

C) Globalization: The concept of globalization does not appear as an independent concept continuously, it only does so in three cases (codes 11, 19, 23). Curiously, each of these cases belongs to either one of the levels (code 11 to the international level, code 19 to the regional level, and code 23 to the political level). This is interpreted by the dissertation as an acknowledgement on behalf of the stakeholders that participate in the elaboration of the sources of the existence of globalization as a ‘challenge’, ‘opportunity’, ‘threat’. In either case, the existence of globalization is seemed to determine what a government does to reach the final goal of economic growth. This concept is particularly dealt with by the sources as a transversal concept that affects the rest. The dissertation interprets a common understanding of globalization and its impacts on the other elements as: globalization forces nations to understand and reinterpret their economic relations and priorities to adapt to a wider number of stakeholders if the goal of economic growth wants to be achieved. The impact at the paradigmatic level of the inclusion of globalization into the equation is not considered important on behalf of the dissertation: it has an impact on economic structure, productivity, there is a change in the demographic trends, and on competition since there are more competitors.
D) Productivity: The codes that refer to productivity are: 6, 7, 9, 10, 17 and 22. It is dealt with by sources as a ‘challenge’. It is not treated in any of the codes as an opportunity as the idea of globalization was. Productivity is considered a constraint, a problem that needs to be addressed urgently (code 10 probably represents the most dramatic call for a change in this matter). It is also understood as a form of obtaining more with the same or less resources. Productivity is therefore considered something similar to efficiency, which has an impact on competition. The concept of Innovation is closely linked to this idea of efficiency. So are the ideas of change in the economic structure from ‘traditional’ to new sectors.

E) Competition: The codes that refer to competition are: 6, 8, 13, 22, 24, and 26. Again there is a balance in the number of references to this concept. It can also be termed a linked and transversal concept. Or so it is dealt as by the sources. It is defined in terms of: ‘productivity’, ‘maximization’, ‘profits’. It is sometimes dealt with in a comparative way (code 6, 8 and 26). It also appears linked to the idea of productivity (codes 6 and 22). The dissertation considers that it constitutes an element of the equation that leads to economic growth as a consequence of its close relation with the productivity, globalization items.

To summarize: the aggregate of the elements (B to E) are interpreted by the sources as an interrelated set of units that lead to the overarching objective of economic growth. The ideological elements and the Paradigm, as has been expressed by the dissertation, is continuous, excluding a small change in focus (globalization) and scope (economic structure). The rest of the elements are considered by the dissertation also as continuous: the idea of productivity as efficiency, the idea of competition against other nations, also close to the notion of efficiency. The interpretation of the context, in any case, does not
suggest that any radical change will be suggested in the policy proposals or the conclusions derived from the interpretation of the context.

*Solution to the contextual problems (Annex: Table 2)*

Contrary to what is specified in the Interpretation of the Context, the solutions derived from this interpretation do not offer a closed set of categories. The form of expressing what is needed by a territory in the new (perceived) contextual dynamics relies on two concepts: Innovation, and, to a lesser degree, Knowledge. Innovation, as the dissertation expected, appears in 23 of the 26 codes. The variety of implications the sources adhere to the idea of Innovation varies only slightly. There is, as in the interpretation of the context, a continuity of Discourse from the International to the Political Level. But the continuity of Discourse in this case is more evident. The combinations the sources have established between the idea of Innovation and the Interpretation of the Context are diverse but significant. The dissertation considers that the combinations constitute a building block of the rationale that justifies the Policy proposals (point 8.1.3) and that is based on the previous contextual analysis. The combinations used by the sources do not necessarily establish a direct link between the units identified in the interpretation of the context and the word ‘Innovation’. Though these direct links are evident (as an example, the combination of Globalization+Innovation appears in codes 45 and 55). The dissertation has identified the following combinations (with the interpretation of the context):

A) Innovation as a mean to achieve economic growth (codes 31, 33, 35, I-12, I-10):

the dissertation has selected only three codes out of 26. This means that the dissertation has been restrictive in establishing the link between the concept of Innovation used by the sources (the dissertation understands that the definition
used by the sources are described in code 29, though the Regional and Political level sources have more of a technological-centered vision of it). The goal of economic growth, as specified previously, is a final goal. It is formed by a combination of units (globalization, competition, productivity and economic structure). Therefore, the solutions to the issues identified in the contextual analysis can be found throughout all of Table 2 of the Annex. The dissertation will be restrictive as to what include in the analysis due to the wide range of examples available and will base the selection in the cases that include the word ‘growth’. By doing this, there are two results: economic growth (code 31), or growth in Innovation (code 35), that has a direct impact on economic growth.

B) Innovation and Competition: This combination includes the codes: 30, 37, 43, 44, 45, 48, 49, 50, 51, 55. In this case, the dissertation has used a flexible approach to identify the codes to be included in this combination. The link between Innovation and Competition is balanced throughout the three levels (which means that it appears recurrently in the International, Regional and Political levels). It constitutes a relevant part of the Political Level Discourse. At the Regional level there is a specific interest in linking an improvement of the Catalan competitiveness to not only Innovation, but to the other major concepts, Knowledge, and with the behaviour of businesses (codes 44, 45 and 48).

C) Innovation and Behaviour: This includes the combination of codes: 38, 39, 40, 42, 47, 50 and 51. This is probably the most consistent of combinations. It presents a concern, or challenge, that is perceived by the sources to be relevant. The behavioural change suggested by the sources include: to be open to change and dynamism in society and business (code 39), to be a more risk taking society
(code 42), to be more creative (code 47) and to establish a new culture of entrepreneurship (code 42). All of these lead to the same challenge: to change the mindset of the group or individual. Change is therefore perceived not only in economic terms, but also in behavioural terms.

To Summarize: The dissertation has identified three main blocks of challenges to enter the Innovation or Knowledge driven economy: Innovation and growth; Innovation and competition; and Innovation and behaviour. Though the nomenclature, or title of these blocks do not coincide with the units of the previous section (Interpretation of the Context), the units used to understand the context are present in an explicit or implicit form through all of the codes that the dissertation has selected for Table 2. The dissertation considers that the contextual analysis and the challenges or solutions derived from this analysis match, and that the rationale suggested in the Assumptions is met at this stage. There is, therefore, a coherent vision of what the context is and what the challenges are if a government wants to fulfil the goal of economic growth. There are no challenges to the overarching principles of ideas such as continuous economic growth, competition etc. The dissertation considers that this is proof that there is no major change to Cultural Knowledge, to the Paradigm of social welfare delivered through economic performance, except that the focus or priority has shifted from manufacturing to Innovation.
<table>
<thead>
<tr>
<th>International Level</th>
<th>1</th>
<th>The past two years (2008/2009) have seen reduced potential output growth, increased unemployment and soaring public depth. To recover and move towards a more sustainable growth path, new sources of growth are urgently needed (OECD Innovation Strategy: 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Some traditional sources of growth are declining in importance (OECD Innovation Strategy: 9)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Many countries have stagnating or declining populations, and this reduces the role of labour input in long-term economic growth, especially in advanced economies (OECD Innovation Strategy: 9)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Increasing political pressure to meet various social challenges, such as climate change, health, food security (etc.) (OECD Innovation Strategy: 9)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Europe must break out of structures and expectations established in the post WW2 era which leave it today living a moderately comfortable life on slowly declining capital (Aho Report: 1)</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Production falling behind, for the first time in the post WW2 era, the average growth rates of real GDP. Labour productivity and total factor productivity have continued to fall further behind those of the USA in the same period (Aho Report: 2)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Failing to capitalise on the application of ICT (since) productivity growth has in recent years been driven mainly by the ICT using service sector (...) Productivity growth in the EU is relatively stable across time, in contrast to a very large acceleration in the USA (Aho Report: 2)</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Losing out as large firms globalise their R&amp;D. The net imbalance of R&amp;D investment by EU firms in the USA compared with US firms in Europe increased five-fold between 1997 and 2002 (Aho Report: 2)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Locked into unmodernised traditional sectors and under-investing in services R&amp;D (Aho Report: 2)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>The productivity challenge is more urgent as a consequence of an ageing population (Aho Report: 2)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Economic globalisation has changed the world economic order, bringing new opportunities and new challenges (Communication of the Commission: 2)</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Europe’s citizens are concerned by important issues ranging from climate change and the depletion of non-renewable resources to demographic change and emerging security needs (Communication of the Commission: 2)</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>These legitimate concerns must be turned into an opportunity to enhance Europe’s global economic competitiveness (Communication of the Commission: 2)</td>
</tr>
<tr>
<td>14</td>
<td>The EU has extraordinary innovation potential. Europe has a long-standing tradition of break-through inventions. It has a wealth of creative people and can build on its cultural diversity (Communication of the Commission: 2)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Despite (...) strong policy focus on innovation, the EU deficiencies have not been sufficiently tackled and its economy has not yet become the comprehensively innovative economy that it needs to be (Communication of the Commission: 3)</td>
<td></td>
</tr>
<tr>
<td>Regional Level</td>
<td>16</td>
<td>Catalonia has always been a dynamic and open society that has been able to adapt to changes and has been at the forefront of many social and economic transformations (Base Document: 9)</td>
</tr>
<tr>
<td>17</td>
<td>The strength given by a diversified economy (...) does not hide the need to transform the productive sector to areas where there is more added value, and towards the use of the means of production of a new and changing context (Base Document: 9)</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>The education and training systems (...) have many inconveniences (...) scientific production has grown (...) but still has some weak points, some of them structural (...) The innovation indicators position Catalonia far from the top-performing countries (...) the governance of the Catalan systems for research and innovation (...) has many weaknesses (Base Document: 9-10)</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Catalonia needs to consider which global context and frame of reference for research and innovation (...) socio economic and environmental challenges, new opportunities and threats as a result of globalisation, accelerated changes in sociocultural, business and collective services models (Base Document: 10)</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Catalonia is below the European average in relation to the key indicators: investment in R&amp;D; innovation in business; number of researchers etc. (Evaluation of the Innovation Systems)</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Catalonia has a well developed university system, but falls behind in terms of investment in human capital (Evaluation of the Innovation Systems)</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Catalonia’s industry has a structure formed by low level technology and low competitiveness which means small profits in terms of capital and work (Evaluation of the Innovation Systems)</td>
<td></td>
</tr>
<tr>
<td>Political Level</td>
<td>23</td>
<td>The knowledge economy has become Europe’s strategy to react to globalisation after the Lisbon Summit (Paradigmes: No.0)</td>
</tr>
<tr>
<td>24</td>
<td>Catalonia’s ability to fully enter the knowledge economy will determine its capacity to maintain and further strengthen not only its competitiveness, but also the structural element of social cohesion (Paradigmes: No.0)</td>
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</tr>
<tr>
<td>25</td>
<td>Without a change of the manufacturing economy and traditional services to an economy knowledge and technology we cannot sustain the current levels of welfare and we cannot guarantee the future of new generations (Parliamentary Intervention)</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>In a global frame, only the countries that are able to maximize talent and to transform it into social value or market value can survive (Parliamentary Intervention)</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>We have a well founded industry and great human capital (Press Conference)</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>The change from traditional to global economy that we are undertaking is fundamental to guarantee in Catalonia stable and well paid jobs with added value (Press Conference)</td>
<td></td>
</tr>
<tr>
<td>I-1</td>
<td>The misalignment between research and business means that findings in research are not transformed into practical outcomes, research is a social function (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-2</td>
<td>The Catalan system was too complex (…) atomised, and needed to be put into order (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-3</td>
<td>The evaluation undertaken by the OECD showed that we (Catalonia) are very good at research, but terrible at things like creating patents (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-4</td>
<td>The system didn’t work (…) research never reached business or transform it (research) into a product to sell (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-4</td>
<td>Scientific research is not enough (…) it needs to be accompanied by innovation and research in the social field, like health services (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-6</td>
<td>The biggest problem with Catalonia is that it is atomised, Catalonia needs to merge and prioritise, based on what it is good at (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-7</td>
<td>There are no evidence-based policies in the creation of the previous plans except looking at others and seeing what works (Interview: Director General of the CNARI)</td>
<td></td>
</tr>
<tr>
<td>I-8</td>
<td>There was no discussion or opposition to the idea of focusing on research and innovation, it was taken for granted (Interview: Minister of DIUE)</td>
<td></td>
</tr>
<tr>
<td>I-9</td>
<td>There were socio-economic needs, identified as key by the government, for the development of the CNARI (Interview: Director General of the CNARI)</td>
<td></td>
</tr>
<tr>
<td>I-10</td>
<td>Only countries with strong education and research and innovation are stable in growth and high in welfare (Interview: Director General of the CNARI)</td>
<td></td>
</tr>
<tr>
<td>I-11</td>
<td>Too much technological innovation and too little innovation in other places like design (Interview: Director General of the CNARI)</td>
<td></td>
</tr>
</tbody>
</table>
9.7.2 Category: Policy proposals or Solution to problems identified in the contextual analysis

This category is by far the largest and most detailed. The dissertation has coded into units the various suggestions for action that the sources express. The variety of actions, the dissertation has concluded, is not as wide as initially suggested by the number of codes found. These codes, if studied closely, can be structured into 7 major groups: market building/regulation, fiscal/budgetary, the role of public procurement or of the government, behavioural, knowledge creation and management, education, the role of the individual (researcher, entrepreneur), and the governance model and other management proposals. This point will be divided into the 7 major groups.

Overall, the data suggests that there is a common understanding of what needs to be done, and this common understanding derives from the contextual analysis and challenges that are identified in point 8.1.2. Some of the groups show that the importance given to it by the different levels is balanced, and at other times, it is evident that it is not as balanced. Globally, the dissertation perceives a coincidence in the proposals suggested by each level, while these proposals are a continuation or amendment from previous or standard actions. There is not a break from past suggestions. Or at least not one that can be considered radical. There is a slight modification of these: as an example, one of the financial tools to improve the state of R&D&I in Europe, tax incentives, do not break with past Policy tools (code 2 at the International Level, code 117 at the Regional Level for example), that used tax incentives to promote what was then considered a sector to prioritize (tax exemptions for those with mortgages is a common practice in Spain and Catalonia; this is suppose
to lead to the promotion of property purchasing, and, therefore, to assist the construction sector).

The dissertation believes, as a result of the analysis of the empirical textual data that Path Dependency at the Policy definition levels exists. The dissertation concludes that Path Dependency at Policy definition levels is expressed in an incremental manner if compared to the Literature included in this thesis. Evidence that the rationale of the Assumptions is being met with the data suggests that Path Dependency at this stage of the Policy Process is due to the contextual analysis performed at the International and Regional levels, and to the influence of the Policy proposals done at the International level, from where the lower levels receive their input to determine which is the right path towards economic growth, and how to promote this new path. The evidence at the Political level, suggests that the Policymaker relies on the Regional and International level (specially the Regional Level) as essential sources to conceptually understand the new field of Knowledge he is exposed to and also propose actions. It is also evident that the Policymaker understands partially the new area of action, and within this area, he bases his Discourse on a reduced number of points.

A) Proposals related to market building or regulation (Table 3)

The codes included in this group are: 56 to 95 of the annex. The dissertation identifies this group with the following contextual set of codes: economic structure (codes 57, 64, 68, 76, 80, 84, 85, 90 and 94), productivity (codes 60, 66 and 69) and competition (codes 56, 58, 59, 61, 62, 63, 65, 66, 67, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94 and 95). The main focus of the sources that are included in this group are on deregulation or modification of the current
regulations (codes 58, 59, 61 for example) that exist to: promote the development of Innovation through the flexibilization of administrative norms (codes 62 and 81 for example); amendment of labour laws that might be a barrier to the flexibility of innovative businesses to apprehend and release resources (codes 64 and 68 for example); to adequate the regulatory Framework towards a more innovative friendly scenario; and to identify areas of priorization (codes 83 and 84 for example). The last of the focuses is the only one that is not related to a change in the existing regulations.

In relation to the references to the economic structure, they are distributed equally at the International and Regional level. They sometimes contain elements that suggest that the proposal is related to both a change in the economic structure and to increase the competitiveness of a territory. There is a focus on behalf of the International Level to centre their economic structure proposals to this duality of restructure and compete. Their actions can be summarized as: market oriented Policies and elimination of barriers to mobility. Both are intended to eliminate the limits of the Innovation market (what the Aho report terms as unleashing Innovation). The Regional Level concentrates, and coincides with the International Level on this, that any restructuring of the economy is directed to prioritize or concentrate the territories attention on a specific productive sector that can offer a better competitive stand within an international and innovative centred economy. Hence their insistence in the words: prioritization and focus.

When reviewing the concept of productivity and its match with the codes selected in Table 3 of the annex, the dissertation identifies a special concentration of the sources at the International Level to deregulate or modify the existing regulations over the workforce for, what it seems as expressed by the text, to make the allocation of resources (work force) more efficient. This, say the codes, is due to the high dynamism and mobility of Innovation. The more flexible the regulations are in regards to the
workforce, the easier it is for a high dynamic business to recruit or dismiss personnel. At a certain point, there are also other proposals included that have been added in this table (and not in table 10) that promote or defend a legal Framework that can assist the individual to undertake his/her work wherever he/she is needed (eliminate restrictions of space and functions).

Finally, and in regards to competition, the dissertation has observed that this concept is difficult to separate from the rest of the codes that have been included in either economic structure or productivity. This is the reason why there is a duplication of some of the codes. The dissertation has understood that the reference to Market oriented actions at the International and Regional Level are competition enhancement proposals. These proposals could also be perceived as an attempt to restructure the economy. The dissertation has discarded this since it considers that economic restructuring refers to priorization (as has been expressed before), whereas Market building proposals refer to laying out the mechanisms to assist a territory in developing an Innovation friendly context that can assist them to compete globally. This is supported by some statements (codes 76, 74, 72, 82 and 78). The conclusive statement of this group is that the sources believe in instituting measures that promote competition (mainly at regulatory level), meaning that they are to free Innovation from its barriers (administrative, labour etc.). Flexibility, reduction of regulations or their amendment, dynamism, mobility and efficiency, which are concepts that have been mentioned in point 8.1.2 appear in this section again, but with a concrete form.

B) Proposals related to Fiscal/Budgetary Policies (Table 4)
The codes included in this section range from 96 to 139. The dissertation has grouped them into: priorities, institutional reforms, venture capital, budget objectives and tax policies. In broad terms, this is probably the clearest example of how incrementalism is expressed at the definition stage of the Public Policy cycle. Codes 119 and 138, both belonging to the Regional Level, suggest an increase in expenditure for R&D of approximately 1% annually up to 2017, which the dissertation considers as incremental. On the other hand, there is a revealing word found in code 124, ‘incremental increase’, that gives the dissertation a detail of what the intentions of the stakeholders involved at the Regional Level Policy definition process is. This clearly is a contrast with the strong feeling the dissertation perceives from the International Level sources, who advocate for change in a somewhat contradictory form: they use words such as ‘new’ (code 113), ‘modernized’ (code 105) and ‘significant increase’ (code 115). This gives the impression of suggesting radical change, very especially if code code 111 is considered (‘increase of 20%’ of investment in R&D). But in parallel to these strong words requesting, and sometimes demanding radical change, one can see these statements balanced by expressions including ‘reform’(code 98), which the dissertation considers a diluted concept of ‘new’, ‘shifted’ (code 108) which stands for moving something that already exists etc.

On the one hand, we have a mixture of expression that relate to radical and incremental changes, on the other we have the Regional Level, whose proximity to reality (to the Catalan reality) observe a need for change, but for incremental change. The Regional Level extracts the incremental elements as expressed at the International Level. The dissertation has observed that the majority of the proposals at the International and Regional Level coincide. This relation is shown below:
• Fiscal/Budgetary priorities: education, training and research are accepted by both levels as the priority on which to focus on (codes 96, 97, 107, 115, 124, 127 and 128). In relation to education, this is conceived by both levels from a holistic perspective (including basic and higher education). There are specific references to universities (codes 124 and 127), though this is not a common trait of the sources, where generalistic sectors (such as education) are treated as one unit. Both the International and Regional Level agree that human capital is the solution to shifting towards an innovative economy and economic growth. Expressions like those found in codes 96 (‘future sources of growth such as education (…) and research’), 97 (‘basic research (…) provides the seed for future Innovation’) and 128 (‘increase of public resources for R&D are crucial’) are the clearest example of the relevance attributed to education and research in the promotion of Innovation. At the Political Level it is stated in code I-21.

• Reform of Public Financial Institutions/Tools: As has been expressed previously in this point, the word reform is included in the group of incremental adjectives. The dissertation defends this by pointing out that reform stands for modifying something that already exists. The dissertation understands that non incremental Policies would either not include a reform of an existing organization, but the creation of a new one, or the radical modification of the existing one. This is not the case of the reform Policies proposed at the International and Regional Levels. The codes included in this group are: 105, 108, 110, 112, 113 and 136. These codes refer to international, European or Catalan. The need to adapt existing organizational structures and tools for delivering Innovation can be traced at the three levels (for the Political Level, see I-24, I-25, I-26, I-27, I-28, I-29, I30 and I-33).
• Promotion of Venture Capital: This group of codes (100, 109, 117 and 125) constitute, from the dissertations perspective, the most relevant ‘new’ item to the Policy proposal list identified in the fiscal/budgetary category. Previous plans did not include the role of private capital, or venture capital in the promotion of Innovation through research. It is clearly stated in the sources at the International and Regional Level that it is important to share the weight of financing research and Innovation by both the private and the public sector. This proposal, as the word ‘venture’ itself declares, is exclusively directed to start ups and entrepreneurial projects. This excludes a large number of funding opportunities or needs. Codes such as 100 (‘key sources of finance for many innovative start ups’) and 109 (‘venture capital is essential to the entry and growth of entrepreneurial firms’). The proposals related to Venture Capital, though new and considered as relevant by the sources, do not constitute an important change to the financial Systems surrounding Innovation and research.

• Budgetary objectives: By budgetary objectives, the dissertation refers to specific quantitative budgetary targets. These range from 20% budgetary increase to 2%. At the International Level, where budgetary constraints are not seen in specific terms (they define their proposals at an international level and not at specific local levels where there is a concrete budget with concrete figures that needs to be rearranged to suit a set of priorities on behalf of the Policymakers). Overall, the dissertation observes a grand speech advocating an increase in expenditure in research (code 111) at the International Level, whereas the expectations are much lower at the Regional Level, who have to suggest modifications in the governmental budget with real figures. The codes included here are: 111, 119
and 138. At the Political Level, the view is the same as the Regional Level (codes I-13 to I-16)

- Tax/Fiscal Policies: include codes 102, 104, 114, 116, 122, 129, 130, 131 and 135. This group includes the groups of actions that are most incremental, since fiscal Policies tend to be linked to tax collecting tools, and these do not vary considerably from year to year. The fact of excluding the returns on the capital invested in an innovative project only determines a change in priorities. In this case, and due to the interest in promoting growth through research and Innovation, it is these two sectors that will be in some way exempts from paying taxes. So, the main suggestion found in this group for the International and Regional Levels are: ‘tax reduction’ (code 135 and 129), ‘fiscal incentives (to reduce) social costs’ (code 104), ‘tax incentives’ (codes 114, 116, 131 and 132).

C) Proposals related to the role of Public Procurement and role of government (Table 5)
Public Procurement is, together with legislation/ or regulation and fiscal Policies, one of the most powerful tools to promote any Policy priority. The content of codes from 140-153 that correspond to this group clarify how much weight they have as a tool to implement Policy. The scope suggested by the sources (the dissertation has not detected any sources for the Political Level) is that of a public procurement that is incisive on the demand-side of Innovation. As code 140 specifies: ‘well-designed demand-side Policies are less expensive than direct support measures’. This quote, which is similar to codes 142, 143, 146 and 152, does not exclude the use of direct financing by means of grants, scholarships and other forms of direct finance. Hence it can be considered as an incremental proposal, since it does not exclude other forms of financing that were in existence prior to this CNARI, especially with such a small increase in the budget.
The reasons defending the use of public procurement are varied: to temporarily replace venture capital in risk investment (code 141), to raise the quality of the public sector (code 146), and to help the ‘emergence’ of solutions for citizens (code 148). Though the most important reason is to: ‘stimulate Innovation’ (code 150).

Some of the codes provide suggestions as to how the public procurement should function (codes 143, 148, 149, 150, I-17 and I-18), which includes: pre-commercial procurement, public consultation, competitive dialogues, identification of priority areas and others.

The dissertation defines this group more as a mean to obtain a goal than a Policy proposal. Despite this, it is relevant to understand how even the data extracted from the sources that relate to tools for the execution of actions are incremental. The use of public procurement to drive demand is not new. What is new is that it is directed to promote Innovation through demand. Other traditional tools for promoting Research and Innovation are not discarded and treated somewhere else (such as fiscal deductions).

D) Proposals for behavioural change (Table 6)

The codes included in this section range from 154 to I-20. The dissertation sees this group as an anomaly. By anomaly, the dissertation refers to the fact that an intangible, such as personality or cultural traits, are taken into account and perceived by the Policy maker as an actionable item. In other words: that Policy actions can be undertaken in this particular area. What is more surprising is that the reference to Behavioural change is present in a balanced way through the three levels. This surprise on behalf of the dissertation means that the dissertation was not expecting this group, which in itself means that this was not present in previous research and Innovation plans. This group is
‘a priori’ not incremental, but totally new. Though the dissertation has understood that this group has proposals that have been, in some ways, considered previously and can be acknowledged as incremental. The dissertation understands that some sections of the topic being dealt (behavioural change) with by this groups is intangible, which in itself it means that it is initially thought to be difficult to define its scope with precision. This is not as it seems, as some of the proposals have been turned into more pragmatic objectives. This is the case of:

- Code 151, to avoid moral hazard on those who take the risk, ‘bankruptcy laws should be less punitive for entrepreneurs (…) in due regard to risk management’
- Code 161, ‘to promote intracompany Innovation’
- Code 166, ‘basic education has to promote the culture of entrepreneurship’

As seen, behavioural change has found the channel and tools to be implemented in some of its proposals. But others still remain uncertain as to where they are heading to:

- Code 155, to ‘foster a cultural shift which celebrates innovation and a desire to possess innovative goods and experience innovative services’
- Code 158, ‘a cultural change which celebrates Innovation’
- Code 163, ‘catalans need to be more creative’

For these codes it is difficult to determine what the action is, a part from a communication plan and a more ambitious education for the younger generations. It does seem for the dissertation that these behavioural changes requested by the different sources have not got a concrete form or shape. They appeal more to a wish than to a realistic development.

To conclude, the dissertation initially interprets the inclusion of behavioural change as a non-incremental proposal, though when taking a detailed look at content of the codes,
there are some that are considered as incremental (such as code 151), whereas others are not. Those that are not, from the dissertations point of view, lack definition and a sense of being specific, which make the proposal more of an intention than a real action item.

E) Proposals related to Knowledge (Table 7)

The codes included in this group range from 172 to 191.
Knowledge is one of the most used words in the Research and Innovation Policy scenario. Nowadays it represents the crucial element to the research and Innovation process. As code 189 defines it: ‘Knowledge is the key to competitiveness, for development and for social progress’. All of the sources consider Knowledge as a key feature for developing Innovation. Being this so, and in order to foster Knowledge, the sources propose two main groups of actions: regulation (mainly directed to patent rights) and tools/structures.

The modification of regulations or the adaptation of regulation to suit the promotion and diffusion of Knowledge is a major concern at all levels in the sources. The main request for action, the strengthening of the rights of patent owners and of intellectual property rights can be seen as a priority through from the International to the Regional Levels (codes: 175, 177, 178, 180, 181, 182, 185 and 186). The Political Level does not offer direct evidence of this, but it can be deduced from the texts that there is a perception on behalf of the Policymaker to extend the protection of patents and intellectual property. It is understood by the sources that without the right protection of patent right or intellectual property rights at an international level, the full potential of local creativity and Innovation cannot be fostered.

Being regulation a strategic tool to promote the creation of Knowledge, the sources understand that the tools to create and disseminate Knowledge are equally important.
The sources identify a set of pre-existing tools that will assist them in fulfilling the objective of creation and diffusion. These are: ICT networks (code 172), diffusion of free public information (code 173 and 174), Knowledge networks (code 176; it is a wider concept that includes ICT’s), mobility of researchers (code 179), contract research (code 183), collaborative research (code 183), licensing (code 183), publications (code 183), exchange of researchers (code 183), cooperation of higher education institutions (code 188).

The proposals found in table 8 are, again, incremental. The dissertation believes that the path pointed out by the sources in relation to Knowledge creation, protection and transfer were pre-existent. The suggestions offered by the sources only differ from previous tools in that they have to be reformed or modified (such as the regulation for patent and intellectual property rights) or adapted to the new circumstance (such as the cooperation of researchers in public and private institutions). There is clearly a dependency on previous efforts.

F) Proposals related to Education (Table 9)

The codes included in this group range from 192 to 230. The dissertation has tried to identify criteria to divide this group, like the other groups included in point 8.1.2, into various sub-groups. This division has not been possible due to the nature of the proposals. Since Education is treated as a major source for developing an innovative friendly economic structure, and since it includes several layers of action (Higher Education, Secondary education, Training) that have a common objective, it is not possible to distinguish each one of these levels in the proposals. When analyzing the content of the proposals, the dissertation understands that they lack specific details
unlike other groups (tax exemption for example) and generally use more rhetorical elements (codes 192, 193, 194, 200, 203 and 208 serve as an example).

The dissertation can not specify if path dependency, or an incremental approach to change in the education Systems, takes place in this group as a consequence of the overuse of rhetorical expressions. Some of the proposals might suggest more radical change (code 192: ‘reforms of education and training Systems (…) can help increase returns from public investment in Innovation’). Others simply suggest a modification of the current education Systems as the right approach to promote Innovation (code 195: ‘education and training Policies should foster an entrepreneurial culture’). Overall, the evidence suggests that there are no major intentions of breaking with the existing education Systems. The following codes provide the following evidence:

- The major Policy change is to recognise the essential role of universities in the Innovation enterprise (…). This requires (…) ensuring independence, competition, excellence, entrepreneurial spirit’ (code 194)
- ‘To make evident the profitability of research and its value’ (code 202)
- ‘To change the focus of the secondary education towards maths, science and technology’ (code 210)
- ‘The international drive requires (…) multilingualism’ (code 230)

The dissertation believes that the sources, due to their understanding of education as one of the keys to develop a pro-Innovation society, they have avoided specifying clear proposals (except for codes 229 and 230 at the Political Level) and have concentrated more on objectives, even “wishes”. The dissertation interprets this as a need to maintain a balance of the documentary sources. The dissertation observes that the authors of the sources are very keen to develop specific proposals in this area (possibly because many
of them are university professors), but have preferred to not overwhelm the reader with a long chapter of specific proposals that cannot be met in the other groups of proposals.

G) Proposals related to the role of the Individual (Table 10)

The codes included in this group range from 231 to 261.

This group of actions focus on the individuals needs as a key institution in research and Innovation. The dissertation has observed in all of the sources a recurrent vision of the researcher or the entrepreneur as the element that needs to be tailored to suit the needs of the new Knowledge-driven economy. Previous groups of actions such as education, behavioural proposals, regulatory reform, tax Policies are directed to make the context more convenient for the individual so that he or she can develop their full potential as researchers or implement their innovative ideas as entrepreneurs.

The dissertation distinguishes three blocks of proposals within this group:

- Proposals related to the rights of the Researcher and Entrepreneur (codes 237, 243, 247, 249, 253 and 255)
- Proposals related to the Mobility of Researchers (codes 232, 233, 236, 240, 245 and 250)
- Proposals related to Excellence or Talent of the Researcher (codes 234, 235, 240, 242, 254, 256, 257, 258, 259, 260 and 261)

Again, the dissertation understands that these proposals focus on actions that existed previously. There is in Catalonia a Statute of the Researcher. This Statute is insufficient based on the current proposals. The Regional Level sources, as an example, consider that it does not compensate in salary terms the importance of the figure of the researcher for the future development of the Knowledge-economy in Catalonia (code 249). So, the change suggested by the sources entails an important, yet incremental, change in
comparison to what the current Statute of the Researcher reflects. Regarding mobility, the dissertation considers that it has always been crucial for researchers and entrepreneurs to move in order to absorb ideas or concepts that can be then brought back and turned into a potential innovative project or product. The dissertation understands that this Policy proposal simply needs an increase of expenditure. The dissertation considers that it is not ground-breaking or that it proposes exceptional change to not be considered as incremental. This also applies to the proposals related to excellence or talent. Though the insistence at a rhetorical level (especially important in the Political Level codes 256 to 261) is important, it is not that relevant at the Policy level, where, once again, it promotes extra expenditure to an existing action.

H) Proposals related to Governance, Performance and Management (Table 11)

The final group that the dissertation has identified in Category 2 is not so much Policy relevant, but more important for the management or execution of the actions that where proposed previously. The codes included in this group range from 262 to 326. The dissertation sees that the impact of these proposals at the Policy execution phase will be relevant, but not at the Policy definition stage. The dissertation, therefore, understands it is out of scope.

The proposals found in this group are very detailed compared to other groups of codes. The dissertation believes that this is due to the involvement of Mr.Remoe at the Regional Level, who offered an insight to the governance model of research and Innovation in Catalonia. The main areas of focus in this group have been reform of the governance Systems (codes 263, 270, 271, 275, 279, 280, 281, 282, 287, 288, 289, 290, 291, 292, 293, 294, 296, 303, 307, 309, 315, 316, 320, 324, 325, 326 and I-24 to I-31),
evaluation of the research and Innovation effort (codes 264, 269, 284, 285, 297, 305, 306 and 314), coordination of the effort (codes 266, 268, 277, 286, 300, 322 and 323) and the use of Standards (codes 265, 267, 273, 276, 278 and 298). The topics raised in these codes include metrics to assess the performance of the Innovation Systems, forms of promoting coordination in between different levels of governance, setting standards and interoperability of, especially, telecommunications related technology. In general, the codes alternate rhetoric with specific details (from: ‘governance needs to be improved (…) to aggregate to be powerful globally’ in code 326; to: ‘develop a measurement Systems of the achievement of the strategic objectives’ of code 299).

To summarize: The main objectives of the dissertation for point 8.1.2 are:

- To understand if the actions suggested by the International Level had an impact on the Regional and Political Level; and to understand if the Regional Level had an impact on the Political Level
- To identify if the proposals suggested by the sources can be considered as incremental in respect to past Policies or are new and radical changes.

Regarding the first objective, the dissertation believes that there is a link between what is proposed at the International Level and at the lower levels (Regional and Political). The relationship or coincidence of proposals is intense in between the International and Regional levels, but not so much in between the International and Political Levels. In fact, the proposals identified at the Political level, which are reduced, tend to link with some portions of the education, individual and governance proposals of the Regional level. There is an abundance of expressions at the Political Level that relate to talent and excellence, but only one for fiscal and Knowledge Policies.
For the second objective, if the Policies proposed can be considered as incremental in comparison to past Policies, or in other words, is Path Dependency present at the Regional Level (and even at the International Level), the dissertation believes it is. Most of the proposals fit into the category of small reform or change of existing actions or proposals.

Taking into account what is expressed in the Assumptions, we have learnt that there is Path Dependency and incrementalism. The dissertation needs now to understand if incrementalism is a consequence of the continuity of the Common Ground, which is termed in this document as Ideology, and if the suggested influence of the International Levels is such, the dissertation believes it can be assessed through the justification standards used by the Regional and Political Levels.

Table 2: Solutions to the contextual analysis

<table>
<thead>
<tr>
<th>International Level</th>
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<tbody>
<tr>
<td></td>
<td>29</td>
<td><strong>Innovation, which involves the introduction of a new or significantly improved product, process or method, will increasingly be needed to drive growth and employment and improve living standards</strong> (<em>OECD Innovation Strategy: 9</em>)</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td><strong>Innovation as a way to enhance competitiveness, diversify the economy and move towards more high value-added activities</strong> (<em>OECD Innovation Strategy: 9</em>)</td>
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<tr>
<td></td>
<td>31</td>
<td><strong>Innovation is also a key source of future growth for emerging countries</strong> (<em>OECD Innovation Strategy: 9</em>)</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td><strong>(social challenges) Innovation is crucial for solving such problems in an affordable and timely manner</strong> (<em>OECD Innovation Strategy: 9</em>)</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td><strong>Innovation-driven growth makes it easier for government to make the necessary investment and undertake the policy interventions to address these challenges</strong> (<em>OECD Innovation Strategy: 9</em>)</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td><strong>To create in Europe a market that stimulates and encourages innovation, and in so doing provides firms with the incentive to raise their R&amp;D level and to apply successfully the full range of new technologies</strong> (<em>Aho Report: 1</em>)</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td><strong>(a) paradigm shift (...) replacing a social framework developed</strong></td>
</tr>
</tbody>
</table>
and adapted to an industrial, resource-based society to one which supports innovative growth in a knowledge based society (*Aho Report: 19*).

| 36 | Our central recommendation is that a Pact for Research and Innovation is needed to drive the agenda for an innovative Europe (...) this requires a huge act of will and commitment from political, business and social leaders (*Aho Report: 23*) |
| 37 | In this new economic order, Europe cannot compete unless it becomes more inventive, reacts better to consumer needs and preferences and innovates more (*Communication of the Commission: 2*) |
| 38 | call for collective action to safeguard the European way of life that combines economic prosperity with solidarity (*Communication of the Commission: 2*) |
| 39 | The Commission is convinced that even more is needed – Europe has to become a truly knowledge based and innovation friendly society where innovation is not feared but welcomed, is not hindered but encouraged, and where it is part of core societal values and understood to work for the benefit of all its citizens (*Communication of the Commission: 3*) |
| 40 | The EU can only become comprehensively innovative if all actors become involved and in particular if there is market demand for innovative products (*Communication of the Commission: 3*) |
| 41 | All forms of innovation need to be promoted, for innovation comes in many forms other than technological innovation, including organisational innovation and innovation services (*Communication of the Commission: 4*) |
| Regional Level | 42 | Catalan society should be more dedicated to science, technology and innovation, to promote a new culture of entrepreneurship that has lost some of its past prowess (...) and promote the culture of risk taking (*Base Document: 10*) |
| 43 | To turn Catalonia into a country with the possibility of achieving high levels of progress, welfare and a shared vision that puts research and innovation in the centre of socioeconomic action, and that makes possible our positioning in the future with a degree of realistic ambition (*Base Document: 11*) |
| 44 | Innovation should address areas that are intense in occupation (construction and tourism), but should also change the economic systems toward research and businesses with high knowledge and more added value (*Evaluation of the Innovation Systems*) |
| 45 | A business culture based on innovation within firms in a global economic context (*Interviews: 11*) |
| 46 | To share the new model for socioeconomic development that has its foundations in education, research and innovation (*CNARI: 32*) |
dynamic and creative society that is capable of confronting the challenges, to benefit from the opportunities and to think in a global and local way (CNARI: 33)

Promotion of research and Innovation as the motor of transformation towards a society and economy of knowledge that will give progress and welfare (CNARI: 30)

new model for socioeconomic development that has its foundations in education, research and Innovation Catalonia needs to transform the productive sector towards niches of added value and to adapt its productive processes to a new environment (CNARI: 33)

Catalonia will only succeed (within globalisation) if it takes a leading role in the revolution of the knowledge society (Paradigmes: No.3)

Catalonia needs to tackle this process with all its potentialities as well as a wide consensus among the political, economic and social stakeholders (Paradigmes: No.0)

Without a change to the innovative economy there will not be any stable or added value jobs (Press Conference)

Research and innovation need to be the drivers of socioeconomic progress in Catalonia (Press Conference)

Need the change that will allow the Catalonia of the XXIst century to be a pool of knowledge, qualified work, where our children can have access to high professional qualifications, and where we can collaborate in global growth and its sustainability (Press Conference)

Together with innovation, internationalisation is the key element to competitiveness of the Catalan Economy (Paradigmes: No.3)

The biggest input is the idea of surpassing the political cycle by obtaining consensus in key concepts such as research and innovation (…) which are key for development and growth (Interview: Director General of the CNARI)

Table 3: Proposals related to market building or regulation

Structural policy reforms of the Framework conditions that support innovation, such as the removal of regulatory barriers to innovation and entrepreneurship, including administrative regulations, (…) can do much to strengthen innovation and growth (OECD Innovation Strategy: 10)

Markets can also be strengthened to unleash demand for innovative products and services that meet social and global needs. Getting prices right, opening markets for competition and devising innovation-inducing standards and smart regulations are among the approaches that governments can use to unleash innovation (OECD Innovation Strategy: 10)
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<tbody>
<tr>
<td>58</td>
<td>Simplifying (for market entry and exit for start-ups) and reducing start-up regulations and administrative burdens can reduce barriers to entry <em>(OECD Innovation Strategy: 12)</em></td>
</tr>
<tr>
<td>59</td>
<td>Bankruptcy laws should be less punitive for entrepreneurs and should offer more favourable conditions for restructuring ailing businesses <em>(OECD Innovation Strategy: 12)</em></td>
</tr>
<tr>
<td>60</td>
<td>Labour market policies should provide the flexibility needed to reallocate resources from declining to innovative firms, along with support for lifelong learning and re-skilling workers <em>(OECD Innovation Strategy: 12)</em></td>
</tr>
<tr>
<td>61</td>
<td>Low regulatory barriers can help ensure that high-growth firms do not spend the capital they need to support their growth on overcoming bureaucratic obstacles <em>(OECD Innovation Strategy: 12)</em></td>
</tr>
<tr>
<td>62</td>
<td>Provide a harmonised regulatory environment across the EU favourable to Innovation and based on early anticipation of needs <em>(Aho Report: 23)</em></td>
</tr>
<tr>
<td>63</td>
<td>The need for light touch and harmonised regulation and the removal of those which are creating ever rising compliance costs without clear benefit <em>(Aho Report: 7)</em></td>
</tr>
<tr>
<td>64</td>
<td>(for public and private partnerships) actions (...) for Member States and for universities themselves to ensure both that remaining structural barriers to cooperation with industry such as civil service restrictions on university staff are removed <em>(Aho Report: 16)</em></td>
</tr>
<tr>
<td>65</td>
<td>(a) defined legal structure and in a harmonised and synchronous manner <em>(Aho Report: 22)</em></td>
</tr>
<tr>
<td>66</td>
<td>(mobility) is about creating structures and changing values to allow movements of institutions, people and resources in a way that accelerates the transitions to an innovative Europe (...) <em>(Aho Report: 19)</em></td>
</tr>
<tr>
<td>67</td>
<td>A harmonised regulatory environment across the EU <em>(Aho Report: 23)</em></td>
</tr>
<tr>
<td>68</td>
<td>(prioritization) Areas where a market for Innovation can work and Public Policy can have a significant role (...) focus and concentration of resources are necessary. They are: e-Health, Pharmaceuticals, Transport and Logistics, Environment, Digital Content, Energy and Security <em>(Aho Report: 8)</em></td>
</tr>
<tr>
<td>69</td>
<td>finding new applications both trans-national mobility and structural mobility between academia and industry are essential (...) create an open, single and competitive labour market for researchers, with attractive career prospects <em>(Communication of the Commission: 5)</em></td>
</tr>
<tr>
<td>70</td>
<td>Barriers persist in the Internal Market. They continue to hamper mobility, depriving business of the necessary scale to capitalize investment (...) These barriers need to be removed <em>(Communication of the Commission: 5)</em></td>
</tr>
<tr>
<td>71</td>
<td>Reducing the administrative costs of regulation of enterprises will be a significant contribution to innovative activities (Communication of the Commission: 6)</td>
</tr>
<tr>
<td>72</td>
<td>The regulatory environment should also reinforce consumer confidence by ensuring that protection measures that exist are applied effectively to innovative products in the same way as to existing products (Communication of the Commission: 6)</td>
</tr>
<tr>
<td>73</td>
<td>Regulation should be predictable, flexible, simple and effective (...) should focus on the Policy goals, rather than on the technical solution (Communication of the Commission: 6)</td>
</tr>
<tr>
<td>74</td>
<td>To identify areas where the removal of barriers would essentially contribute to the competitive process and lead to the emergence of new markets. (Communication of the Commission: 12)</td>
</tr>
<tr>
<td>75</td>
<td>Policy makers can for example examine the regulatory environment (...) to promote a more Innovation friendly culture (Communication of the Commission: 12)</td>
</tr>
<tr>
<td>76</td>
<td>The identification of priority areas should be market driven, in the need to preserve free and fair competition (Communication of the Commission: 12)</td>
</tr>
<tr>
<td>77</td>
<td>The Commission intends to implement this Innovation friendly led market initiative within the existing legal and institutional Framework (Communication of the Commission: 14)</td>
</tr>
<tr>
<td>78</td>
<td>The Community and Member States should continue to develop and implement a strategy to create an open, single, and competitive European Labour market for researchers (Communication of the Commission: 17)</td>
</tr>
<tr>
<td>Regional Level</td>
<td>79</td>
</tr>
<tr>
<td>80</td>
<td>Research and Innovation should focus on: social challenges (health, education, energy, social Innovation); capacities that makes us different and opportunities (agribusiness, cultural and creative industries, industries for technological transference, innovative services); key future sciences and technology (ICT, Bio/Mass/Material processes, organizational sciences, human and social sciences) (Base Document: 16)</td>
</tr>
<tr>
<td>81</td>
<td>Better regulation to promote the development and export of Catalan technology (Base Document: 14)</td>
</tr>
<tr>
<td>82</td>
<td>An analysis of the existing regulation for research and Innovation to see areas for improvement (Base Document: 15)</td>
</tr>
<tr>
<td>83</td>
<td>To establish the priority areas for Innovation in Catalonia (Base Document: 15)</td>
</tr>
<tr>
<td>84</td>
<td>The order of priorities should be emerging sectors first, then those based on new Knowledge, followed by the traditional sectors of Catalonia, and finally by the social sector (Interviews: 13)</td>
</tr>
<tr>
<td>85</td>
<td>It is crucial that the government prioritise the sectors they target, and it is needed to be done correctly (Interviews: 53)</td>
</tr>
<tr>
<td>86</td>
<td>Bureaucracy needs to be eliminated (Interviews: 57)</td>
</tr>
<tr>
<td>87</td>
<td>Internationalisation is a must (Interviews130)</td>
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</tr>
<tr>
<td>88</td>
<td>As an example to others, government should show their commitment to change by reducing administration and to innovate in its structures or processes (Workshops: 92)</td>
</tr>
<tr>
<td>89</td>
<td>Regulation related to patents needs to be reviewed (Workshops: 57)</td>
</tr>
<tr>
<td>90</td>
<td>A focus is needed and a prioritization is essential (...) towards territorial cohesion (Workshops: 92)</td>
</tr>
<tr>
<td>91</td>
<td>A one “window” Policy for administrative paperwork (Workshops: 51)</td>
</tr>
<tr>
<td>92</td>
<td>“transformation” changes that need to be pushed in the short term to improve the efficiency and efficacy of the R&amp;D&amp;i Systems (CNARI: 17)</td>
</tr>
<tr>
<td>93</td>
<td>To assist in the generation of contexts that are favourable for Innovation (CNARI: 51)</td>
</tr>
<tr>
<td>94</td>
<td>To define a strategy to focalize research and Innovation in Catalonia (...) To make concrete prioritizations of research and Innovation for the coming years (CNARI: 64)</td>
</tr>
</tbody>
</table>

**Political Level**

| 95 | Improving interaction between public authorities and companies as well as overall governance in the economy. New regulations (...) (Paradigmes: No.0) |

**Table 4: Proposals related to Fiscal/Budgetary Policies**

<table>
<thead>
<tr>
<th>International Level</th>
<th>96</th>
<th>Government must continue to invest in future sources of growth such education, infrastructure and research (OECD Innovation Strategy: 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>Public Investment in basic research, in particular, provides the seed for future Innovation (OECD Innovation Strategy: 10)</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>Structural Policy reforms of the Framework conditions that support Innovation, such as (...) pro-growth tax reforms can do much to strengthen Innovation and growth (OECD Innovation Strategy: 10)</td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>The tax climate for entrepreneurs should be made more neutral: potential entrepreneurs may also be discouraged from leaving their current employment by the financial and health costs associated with losing employer-based health insurance and social security contributions. Where possible, barriers to the transferability of such benefits should be lowered (OECD Innovation Strategy: 12)</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Well-functioning venture capital markets and the securitization of Innovation-related assets (eg. Intellectual property) are key sources of finance for many innovative start-ups and need to be developed further (OECD Innovation Strategy: 12)</td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Financial markets should continue to provide sufficient room for healthy risk taking, long-term investment and entrepreneurship, all key drivers of Innovation, while ensuring safeguards in case</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of failure (OECD Innovation Strategy: 12)</td>
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</tr>
<tr>
<td>102</td>
<td>Tax Policies or other economic instruments can provide the necessary signal and thus foster a market for Innovations (OECD Innovation Strategy: 14)</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>(Public finance to support) supporting the most excellent scientists with a generous level of resources (Aho Report: 14)</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>(Public Finance to support R&amp;D&amp;i) through smart use of R&amp;D grants and fiscal incentives for Industry (...) fiscal incentives (...) reduction or elimination of social costs for R&amp;D workers (...) R&amp;D grants should be maintained (Aho Report: 15)</td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Modernised State Aid Framework implemented to support ecology of industry (Aho Report: 16)</td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>A focus on excellence and willingness to cut sub-standard or low priority research to free up resources to be spent on the best (Aho Report: 17)</td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>Ensuring that the brightest minds are provided with adequate capital and human resources to support them (Aho Report: 17)</td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>(the EU budget) needs to be shifted towards the creation of an innovative Europe (Aho Report: 18)</td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>Adequate supply of venture capital is essential to (...) the entry and growth of entrepreneurial firms (Aho Report: 20)</td>
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</tr>
<tr>
<td>110</td>
<td>(remedies to lack of venture capital) include: a single fund structure to avoid double taxation for an investor located in one EU member state; strengthen the valuable role of the European Investment Fund so that it maintains counter-cycle capital funding; to encourage the venture capital sector to specialize and build up its expertise in key areas for the future (Aho Report: 21)</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>(in relation to structural funds) expenditure on research and Innovation should be trebled to a minimum voluntary commitment of 20% of these funds (Aho Report: 24)</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>Creating an environment conducive to private investment in research, development and Innovation (Communication of the Commission: 17)</td>
<td></td>
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<tr>
<td>113</td>
<td>New funding scheme under the 7th FP will offer a new Framework for realizing particularly ambitious research and technology agendas that require high public and private investment at European level; CIP (...) in support of Innovation including in energy eco-Innovation and ICT; Risk sharing finance facility will support investment in high-risk research(etc.) (Communication of the Commission: 9)</td>
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<tr>
<td>114</td>
<td>Tax incentives in favour of R&amp;D and optimise their use (Communication of the Commission: 11)</td>
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<tr>
<td>115</td>
<td>Member states are invited to significantly increase the share of public expenditure devoted to education (Communication of the Commission: 16)</td>
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<tr>
<td>116</td>
<td>A Communication (...) with detailed guidance for the design and evaluation of generally applicable tax incentives for R&amp;D</td>
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<tr>
<td>Regional Level</td>
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<td></td>
<td>117</td>
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<td></td>
<td>To generate new conditions that are favourable for Innovation: (...) venture capital; favourable tax Policies (...) (Base Document: 14)</td>
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<td>118</td>
<td></td>
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<td></td>
<td>To invest more and better in research and Innovation (Base Document: 19)</td>
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<td></td>
<td>119</td>
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<td></td>
<td>Catalonia should reach the 2% by 2010 and the 3% by 2017 (Base Document: 19)</td>
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<td>120</td>
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<td></td>
<td>Diversification of the sources of investment that should include: all of the governments departments; local and territorial administrative levels; the increase in this investment from the Spanish government; increase of funding from Europe; Catalan and foreign corporations in Catalonia; financial entities and investment funds (Base Document: 20)</td>
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<td>121</td>
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<tr>
<td></td>
<td>To increase the investment of big corporations in R&amp;D&amp;i (Base Document: 21)</td>
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<td></td>
<td>122</td>
<td></td>
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<td></td>
<td>A plan to award tax exemptions to the businesses that invest in R&amp;D&amp;i (Base Document: 21)</td>
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<td>123</td>
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<td></td>
<td>To finance publicly research and to finance privately Innovation (Interviews: 67)</td>
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<td>124</td>
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<td></td>
<td>A progressive incremental increase of the public budget for R&amp;D; to finance universities depending on their capacity to change Knowledge into value for social, economic (Interviews: 76-77)</td>
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<td>125</td>
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<td></td>
<td>Private equity needs to increase its relevance as part of the GDP (Interviews: 14)</td>
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<td></td>
<td>Public financing should increase and research European levels (Interviews: 21)</td>
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<td></td>
<td>Universities should cease receiving their funds on a student base approach, but on a research and patent output base (Interviews: 125)</td>
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<td>128</td>
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<td></td>
<td>The increase of public resources for research and Innovation activities are crucial (...) the investment has to be the same as the European average if we want a research and Innovation sector to be also at the European average (Interviews: 147)</td>
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<td>129</td>
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<td></td>
<td>There needs to be some sort of fiscal exemption for private businesses that innovate (Interviews: 163)</td>
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<td>130</td>
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<td></td>
<td>Tax exemptions are at the basis of promoting Innovation (Interviews: 201)</td>
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<td>131</td>
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<td></td>
<td>Co-finance and tax incentives help push for Innovation in businesses (Interviews: 221)</td>
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<td>132</td>
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<td></td>
<td>Funding through private donations is another solution or tools to promote research and Innovation that is not linked to public money (Interviews: 35)</td>
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<td>133</td>
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<td>Private investment in Innovation should increase in importance, assume a leading role (Workshops: 92)</td>
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<td>134</td>
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<td>The use of other forms of financing Innovation and research through sponsorships and foundations (Workshops: 60)</td>
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<tr>
<td>135</td>
<td>Help on behalf of government to obtain more European funding and assistance in terms of tax reduction (Workshops: 92)</td>
<td></td>
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<tr>
<td>136</td>
<td>“transformation” changes that need to be pushed in the short term to improve the efficiency and efficacy of the public and private resources to tackle the challenges that have been identified (CNARI: 51) To reinforce the capacity of Catalonia to have an international impact in research and Innovation (CNARI: 20)</td>
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<tr>
<td>137</td>
<td>To orientate the instruments and resources towards the areas of focus and prioritization (CNARI: 21)</td>
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<tr>
<td>138</td>
<td>To dedicate 2% of the GDP to R&amp;D and 3,75% to R&amp;D&amp;i investment in the private sector by 2010 with the objective of reaching the 3% and 4,5% respectively in 2017 To focus public investment in R&amp;D to support Innovation to the objectives of the CNARI To improve the economic and financial expenditure in R&amp;D&amp;i in Catalonia(CNARI: 22)</td>
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</tbody>
</table>

| Political Level | 139 | Investment, long term investment (Parliament Intervention: 21\textsuperscript{st} of May 2008) |

| I-13 | All of the additional budget included in the CNARI would be given to research centres that meet one of our axis or priorities (...) this means that all research has to give back to society something (...) this also means that the research needs to be aligned with businesses (Interview: Minister of DIUE ) |
| I-14 | There is an increase in the funding that we made available to fulfil all the priorities mentioned in the document (Interview: Minister of the DIUE ,) |
| I-15 | The universities that are dependent on public money where more active and resistant to change whereas trade unions and industrial corporatism that depend on other sources of finance where more receptive to change (Interview: Minister of DIUE ) |
| I-16 | Commitment to Innovation and Research is demonstrated through increases in the budget, which the plan that followed the Agreement included, but the crisis and change of government stopped this (Interview: Minister of DIUE ) |

| International Level | 140 | Better use of public procurement can also be effective, in particular when government is a large consumer. Well-designed demand-side Policies are less expensive than direct support measures (OECD Innovation Strategy: 10) |
| 141 | Governments will need to take the lead in areas that firms find too risky and uncertain through investment in public research and well-designed support for pre-competitive research in the |

Table 6: Proposals related to the role of Public Procurement and the role of government
| 142 | Use public procurement to drive demand for innovative goods, while at the same time improving level of public services (Aho Report: 6) |
| 143 | In the area of public procurement, new EU directives have created opportunities for public authorities to purchase innovative solutions, with key changes including: possibilities for technical and competitive dialogues between purchaser and supplier (...) to understand each other; the facility to specify requirements in terms of functional performance or standards; options to permit variants, thus opening up bids to alternative ideas; conditions that allow transfer of intellectual property to the suppliers (Aho Report: 6) |
| 144 | A key to successful procurement for Innovation is the “intelligent” customer who is able to be aware of potential new solutions (Aho Report: 6) |
| 145 | (remedies to lack of venture capital) strengthen the valuable role of the European Investment Fund so that it maintains counter-cycle capital funding (Aho Report: 21) |
| 146 | Improved public procurement practices an help foster market uptake of innovative products and services while raising the quality of public services in markets there the public sector is a significant purchaser (Communication of the Commission: 11) |
| 147 | Policy makers can for example (...) make better use of the opportunities provided by procurement rules and improve the overall market environment to promote a more Innovation friendly culture (Communication of the Commission: 12) |
| 148 | Without excluding any areas from this initiative (identification of priority areas) there is a clear public interest in helping the emergence of solutions that would provide answers to citizens’ concerns (Communication of the Commission: 12) |
| 149 | The Commission will conduct a detailed analysis based on the information from a variety of sources, including a public consultation, to identify possible areas where a combination of supply and demand measures may help the emergence of Innovation-friendly markets (Communication of the Commission: 14) |
| 150 | Pre-commercial and commercial procurement can stimulate Innovation (Communication of the Commission: 17) |
| 151 | To have available a public sector and a public administration that is innovative: cluster research and Innovation with social goals; to generate advanced services; to make public procurement a driver of Innovation (Base Document: 14) |
| 152 | Public administration should act as the motor of R&D&i by generating demand, ordered in relation to strategies for the territory and prioritization principles (Workshops: 92) |
| 153 | To have a public sector that is innovative and that can act as a motor for Innovation (CNARI: 33) |
### Political Level

| I-17 | One of the biggest achievements is to bring in the concept of promotion of innovation by the public administration through public procurement of innovative products (Interview: Minister of DIUE) |
| I-18 | Many things were lost after we left government, but the basis for maintaining the innovative spirit is still in someways there (…) people that participated in the process now have this in mind (Interview: Minister of DIUE) |

### Table 7: Proposals for behavioural change (tolerance to risk)

| International Level | 154 | Bankruptcy laws should be less punitive for entrepreneurs and should offer more favourable conditions (…) with due regard to risk management and the need to avoid moral hazard (OECD Innovation Strategy:12) |
| 155 | Foster a cultural change shift which celebrates Innovation and a desire to possess innovative goods and experience innovative services (Aho Report: 6) |
| 156 | (A) Paradigm shift (…) replacing a social Framework developed and adapted ton an industrial, resource based society to one which supports innovative growth in a Knowledge based society (Aho Report: 19) |
| 157 | Use of public procurement to drive demand for innovative goods, while at the same time improving the competitiveness of Europe (Aho Report: 23) |
| 158 | A cultural shift which celebrates Innovation (Aho Report: 24) |
| 159 | Member states are invited (…) to tackle the obstacles in their education Systems to promoting an Innovation friendly society (Communication of the Commission: 16) |

| Regional Level | 160 | To promote intracompany Innovation (on-the-job Innovation) (Base Document: 14) |
| 161 | There must be a tolerance to failure, to those who take a risk and do not succeed (Interviews: 124) |
| 162 | To bet for a culture that is more tolerant to failure and that praises risk takers (Interviews: 124) |
| 163 | Catalans need to be more creative and innovative (Interviews: 59) |
| 164 | A change of the culture of private businesses in Catalonia is a priority (Interviews: 92) |
| 165 | Those who takes risks should be well valued, as brave (…) and if they fail, not as failures, but as brave (Interviews 178) |
| 166 | Basic education has to promote (…) the culture of entrepreneurship and Innovation (Workshops: 29) |
We need a cultural transformation, and also social, from the base (...) new values such as effort, meritocracy, entrepreneurship (etc) (Workshops: 93)

To orientate a joint and coordinated action to socialise science, technology and Innovation (CNARI: 61)

To bring science, technology and Innovation close to the people (...) To put science, technology and Innovation to the front of the political social and economic sphere of Catalonia (CNARI: 61)

The international drive requires (...) taking people with different cultural background into the core of organizations (...) (Paradigmes: No.1)

Reorienting (...) traditions (such as) individualistic (...) practices (Paradigmes: No.0)

Creative and risk taking attitudes needs to be supported (Interview: President Montilla )

People who take risks should not be punished (Interview: Minister of DIUE )

Table 8: Proposals related to Knowledge (Patents, Intellectual Property rights etc.)

<table>
<thead>
<tr>
<th>International Level</th>
<th>172</th>
<th>Governments should also foster ICTs, in particular broadband networks, as platforms for Innovation by upholding the open, free, decentralised and dynamic nature of the internet (OECD Innovation Strategy: 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>173</td>
<td>Provision of this information (information that is publicly generated or funded) at no or low cost can stimulate Innovation and improve the transparency and efficiency of government (OECD Innovation Strategy: 13)</td>
</tr>
<tr>
<td></td>
<td>174</td>
<td>Public information should remain open so as to eliminate exclusive arrangements and allow innovative commercial and non-commercial re-use (OECD Innovation Strategy: 13)</td>
</tr>
<tr>
<td></td>
<td>175</td>
<td>Patent Systems need to be properly tailored to ensure a proper balance between incentives for Innovation and the public benefit that flows from dissemination of the knowledge in the market place (OECD Innovation Strategy: 13)</td>
</tr>
<tr>
<td></td>
<td>176</td>
<td>The development of fully functioning knowledge networks and markets could have a significant impact on the efficiency and effectiveness of the innovation effort (...) Governments can first underpin the development of a knowledge networking infrastructure; second, implement measures (...) to share public-sector knowledge and data; and third, foster the development of collaborative mechanisms and brokerages to encourage the exchange of knowledge and ensure a fair return on investments made (OECD Innovation Strategy: 13)</td>
</tr>
<tr>
<td></td>
<td>177</td>
<td>Intellectual property Systems including national, community</td>
</tr>
<tr>
<td>178</td>
<td>A balanced set of improvements (in) (...) the community patent Systems for obtaining and enforcing patents on an EU wide basis (<em>Aho Report</em>: 7)</td>
<td></td>
</tr>
<tr>
<td>179</td>
<td>Mobility in (...) Knowledge means cutting across established structures to allow new linkages to be made that are well adapted to emerging knowledge based industries (<em>Aho Report</em>: 21)</td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>A globally competitive intellectual property rights regime requires the community patent to be achieved (<em>Aho Report</em>: 23)</td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>Suitability of existing Intellectual Property Rights mechanisms to the service sector needs to be specifically addressed (...) better enforcement of IPR on foreign markets is crucial to protect European Companies (<em>Communication of the Commission</em>: 7)</td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>Affordable patent procedures that balance cost with quality and legal certainty, accompanied by timely, cost-effective and predictable dispute resolution must be a priority (<em>Communication of the Commission</em>: 6)</td>
<td></td>
</tr>
<tr>
<td>183</td>
<td>All of the many forms of Knowledge transfer – contract research, collaborative and co-operative research, licensing, publications and exchanges of skilled researchers between public and private sectors- need to be further developed (<em>Communication of the Commission</em>: 8)</td>
<td></td>
</tr>
<tr>
<td>184</td>
<td>In order to address the poor up-take of research results in Europe, the Commission will (...) promote Knowledge transfer between universities and other public research organisations and industry (<em>Communication of the Commission</em>: 17)</td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>The Commission will present a more comprehensive IPR patent strategy (...) and prepare a more comprehensive IPR strategy (...) facilitating inter alia the circulation of innovative ideas (<em>Communication of the Commission</em>: 17)</td>
<td></td>
</tr>
<tr>
<td>Regional Level</td>
<td>186</td>
<td>To increase the stock of Knowledge both codified (publications) or tacit (abilities, experience) (Base Document: 13)</td>
</tr>
<tr>
<td>187</td>
<td>To generate new conditions that are favourable for Innovation (...) strategic management of IPR (Base Document: 14)</td>
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</tr>
<tr>
<td>188</td>
<td>The generation of Knowledge should drive Innovation through the cooperation of universities, technological centres and the private sector (Interviews: 50)</td>
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<tr>
<td>189</td>
<td>Knowledge is the Key to competitiveness, for development and for social progress (Interviews: 49)</td>
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</tr>
<tr>
<td>190</td>
<td>Generation of Knowledge increases Innovation through the interaction of universities, technology centres and the private sector (Interviews: 50)</td>
<td></td>
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<tr>
<td>Political Level</td>
<td>191</td>
<td>We need to achieve Knowledge transfer (...) university has (to) (...) transfer Knowledge to society (Parliamentary Intervention: 6th of February 2008)</td>
</tr>
</tbody>
</table>
Table 9: Proposals related to Education

<table>
<thead>
<tr>
<th>International Level</th>
<th>Proposal</th>
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<tbody>
<tr>
<td>192</td>
<td>Reforms of education and training Systems and public research institutions (...) can help increase returns from public investment in Innovation (<em>OECD Innovation Strategy: 10</em>)</td>
</tr>
<tr>
<td>193</td>
<td>Human capital is the essence of Innovation. Empowering people to innovate relies on broad and relevant education as well as on the development of wide-range of skills that complement formal education. Curricula and pedagogies need to be adapted to equip students with the capacity to learn and apply new skills through their lives (<em>OECD Innovation Strategy: 11</em>)</td>
</tr>
<tr>
<td>194</td>
<td>Universities, colleges and vocational training centres are essential nodes in the Innovation Systems, both producing and attracting the human capital needed for Innovation (...) the major Policy change is to recognise the essential role of universities in the Innovation enterprise rather than view them (...) as providers of essential public goods. This requires a greater focus of Policy makers on ensuring independence, competition, excellence, entrepreneurial spirit and flexibility in universities (<em>OECD Innovation Strategy: 11</em>)</td>
</tr>
<tr>
<td>195</td>
<td>Education and training Policies should foster an entrepreneurial culture by instilling the skills and attitudes needed for creative enterprise (<em>OECD Innovation Strategy: 11</em>)</td>
</tr>
<tr>
<td>196</td>
<td>Consumer education should improve the functioning of markets by helping to equip consumers to become active participants in the innovative process and enable them to make informed choices (<em>OECD Innovation Strategy: 12</em>)</td>
</tr>
<tr>
<td>197</td>
<td>(education) must promote talent and creativity from an early stage (...) these include entrepreneurial skills in the wider sense, as well as literacy, scientific and mathematical competence (...) (<em>Communication of the Commission: 4</em>)</td>
</tr>
<tr>
<td>198</td>
<td>The member state’s education systems should ensure that there is sufficient availability of key skills to support Innovation (<em>Communication of the Commission: 5</em>)</td>
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<table>
<thead>
<tr>
<th>Regional Level</th>
<th>Proposal</th>
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<tbody>
<tr>
<td>199</td>
<td>The necessary base of Human Capital has to be wide and include scientists, entrepreneurs, managers, professionals of all kinds, consumers and citizens who also form part of the Research and Innovation systems (<em>Base Document: 12</em>)</td>
</tr>
<tr>
<td>200</td>
<td>To excel in higher education, technical education and continuing education: to increase the prestige of technical education; to transform continuing education; to increase the value of higher and postgraduate education; to turn doctoral degrees into a reference in the Research and Innovation Systems of Catalonia (<em>Base Document: 12</em>)</td>
</tr>
<tr>
<td>201</td>
<td>To have talent with scientific-technological and entrepreneurship vocations: to prepare scientists and businesses of tomorrow (...); increase the number of mathematicians, experimental scientists and engineers (<em>Base Document: 12</em>)</td>
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<tr>
<td>202</td>
<td>To make evident the profitability of research and its value (Base Document: 13)</td>
</tr>
<tr>
<td>203</td>
<td>To develop a strong public research Systems: universities, research hospitals and first level innovators (Base Document: 13)</td>
</tr>
<tr>
<td>204</td>
<td>To obtain research infrastructure that is advanced: cyberinfraestructure and cyberservices of quality (Base Document: 13)</td>
</tr>
<tr>
<td>205</td>
<td>To reinforce basic research and new sciences that are growing quickly: clusters of interdisciplinary cooperation in basic research; national funds for frontier research (Base Document: 13)</td>
</tr>
<tr>
<td>206</td>
<td>To transform Knowledge in social and economic value (Base Document: 13)</td>
</tr>
<tr>
<td>207</td>
<td>To improve basic research in the private sector and public services: to promote basic cooperative research between SME’s and corporations; to attract Research activity of international firms; to improve the implication of the public sector in basic research (Base Document: 13)</td>
</tr>
<tr>
<td>208</td>
<td>To reformulate the and increase the prestige of technical training and Knowledge (...) to establish the worker-learner model (...) to improve the image of technical training in businesses (Base Document: 14)</td>
</tr>
<tr>
<td>209</td>
<td>A firm push to continuous education on behalf of all the agents involved at all levels: strategy, objectives, management (etc.) (Base Document: 10)</td>
</tr>
<tr>
<td>210</td>
<td>To change the focus of the secondary education towards maths, science and technology (Base Document: 12)</td>
</tr>
<tr>
<td>211</td>
<td>To achieve top-universities, the current university model needs to be revisited (...) financial model, evaluation Systems (etc.) (Base Document: 13)</td>
</tr>
<tr>
<td>212</td>
<td>Innovation must be promoted from the school Systems (Interviews: 126)</td>
</tr>
<tr>
<td>213</td>
<td>It is crucial to reform the university Systems, universities need to speak the same language as business, (...) the curriculum of universities needs to change, be more multidisciplinary (Interviews: 15)</td>
</tr>
<tr>
<td>214</td>
<td>Universities should follow the anglo-saxon model of universities (...) that is based on research and postgraduate education (Interviews: 44)</td>
</tr>
<tr>
<td>215</td>
<td>It is crucial that Innovation and entrepreneurship be taught at all levels of the education Systems (Interviews: NA)</td>
</tr>
<tr>
<td>216</td>
<td>Training for Innovation is a need if we want to become an Innovation driven country (Interviews: 17)</td>
</tr>
<tr>
<td>217</td>
<td>There is an urgent need for specialisation at universities (Interviews: 59)</td>
</tr>
<tr>
<td>218</td>
<td>The relationship between the education Systems and business is non-existent (Interviews: 93)</td>
</tr>
</tbody>
</table>
The education Systems in Catalonia needs structural changes urgently (Interviews: 69)

Basic research is at the core centre of the Innovation and research Systems (...) it needs to be promoted and then turned into applied research, that is marketable or socially useful (Interviews: NA)

All research should be of excellence as opposed to mediocre (Interviews: 182)

Basic education has to promote the scientific profession, technology, internationalisation and the culture of entrepreneurship and Innovation (Workshops: 29)

Postgraduate studies of high quality need to be promoted (Workshops: 91)

Foreign languages are key at all the educational levels (Workshops: 84)

University research should prioritise patents before articles or papers (Workshops: 91)

The education and training Systems needs to improve in technical and continuous education (...) the university Systems needs a change to be able to generate graduates with the profiles and competencies needed in the new economy (CNARI: 18)

To strengthen the public research Systems (CNARI: 40)

A higher education Systems of excellence in research that is internationally recognised in the priority areas that are considered to generate advanced Knowledge and that is valued economically and socially (CNARI: 33)

The international drive requires (...) adopting English and multilingualism in general as daily working tools (...) (Paradigmes: No.1)

In the most advanced countries in the world work is done in projects, sometimes individually, sometimes in a team. This is also learning, and research, and this allows to manage the hours/professor (...) the efficiency (Parliament Intervention: 6th of February 2008)

Only countries that invest a lot in education can compete (Interview: Director General of the CNARI)

Entrepreneurs are particularly important actors in Innovation, as they hep turn ideas into commercial applications (OECD Innovation Strategy: 11)

International mobile talent contributes to the creation and diffusion of Knowledge, particularly tacit Knowledge. To encourage the circulation of Knowledge, government should build absorptive capacity, open labour markets to foreign students, and ensure that the tax regime does not penalise mobile...
| 233 | Migration regimes for the highly skilled should be efficient, transparent and simple and enable movement on a short-term or circular basis *(OECD Innovation Strategy: 11)* |
| 234 | (Public finance to support) supporting the most excellent scientists with a generous level of resources *(Aho Report: 14)* |
| 235 | Ensuring that the brightest minds are provided with adequate capital and human resources to support them *(Aho Report: 17)* |
| 236 | Mobility of researchers both geographical and between sectors must be enhanced *(Communication of the Commission: 5)* |
| 237 | The Community and Member States should continue to develop and implement a strategy to (create an open, single, and competitive European Labour market) for researchers, with attractive career prospects, including possible incentives for mobility *(Communication of the Commission: 5)* |
| 238 | Member states are invited (...) to tackle the obstacles in their education systems to promoting an Innovation friendly society *(Communication of the Commission: 16)* |
| Regional Level | 239 | The degree by which Catalonia is capable of having qualified people to do Research and Innovation will be key for the future *(Base Document: 12)* |
| 240 | To attract, hold, promote and mobilise the scientific and innovative talent: to improve the career of the researcher and resources that work in research; to increase the number of researcher and technology professionals in the Research and Innovation Systems; to attract and retain the best students, entrepreneurs and scientists *(Base Document: 12)* |
| 241 | To improve the critical mass and the quality of the researcher *(Base Document: 12)* |
| 242 | To have talent that is critical and of quality *(Base Document: 12)* |
| 243 | Conditions of researchers have to be aligned with the *European Charter of the Researcher* and the *Code of Conduct for the employment of researchers* *(Base Document: 12)* |
| 244 | To train teachers to make the change of focus effective in secondary education (towards maths, science and technology) *(Base Document: 15)* |
| 245 | To promote mobility of researchers and scientists in between the actors of the Innovation Systems *(Base Document: 10)* |
| 246 | To increase the number of researchers in the Innovation Systems (in SME’s, technology centres etc.) *(Base Document: 12)* |
| 247 | A crucial point is the definition of the professional career of a researcher, and the increase of their pay *(Interviews: 258)* |
| 248 | A career at university should be the equivalent to a career in research (...) academics should be researchers at the same time *(Interviews: 92)* |
| 249 | If we want more research, we need to establish clearly a professional career for the university researcher, and pay them more *(Interviews: 113)* |
| 250 | Talent needs to be attracted and retained (...) though it also needs to have mobility to continue growing and learning (Interviews: 208) |
| 251 | The improvement of the indicators of Innovation in Catalonia need to be linked to talent (...) it has to be created, sought, retained (...) (Workshops: 56) |
| 252 | Mid and top level executives should be trained to work with Innovation and research (Workshops: 40) |
| 253 | Professors or academics should be compatible with research functions at both the university and with business (Workshops: 40) |
| 254 | A position as a researcher should have prestige and this should correspond in its labour and social conditions as a key of creating and retaining talent (Workshops: 58) |
| 255 | The researcher should also be compensated financially if a patent he has researched is commercially successful (Workshops: 70) |
| **Political Level** | **256** | The international drive requires (...) availability of the most skilled employees to expatriate for long periods (...) (Paradigmes: No.1) |
| | **257** | (to achieve excellence includes) talent exchange as a way towards progress in the home country and abroad (Paradigmes: No.1) |
| | **258** | The need for new generations, new businesses (entrepreneurs), new professionals assume the challenge of undertaking collective projects (Paradigmes: No.2) |
| | **259** | A success founded in human capital, in effort, in talent (...) (Paradigmes: No.1) |
| | **260** | Going for talent is a key driver of the Knowledge society (Paradigmes: No.1) |
| | **261** | We have to attract talent: attract, retain, recover (Parliament Intervention: 6th of February 2008) |
| | **I-22** | The effort put into research does not reflect the output in terms of effort to create patents (Interview: Minister of DIUE) |
| | **I-23** | We need to change our ways of working from hierarchical fordism to horizontal project driven collaborative work with skilled resources (Interview: Minister of DIUE) |

Table 11: Proposals related to Governance (Firms and Government), Performance and Management

<p>| International Level | <strong>262</strong> | A whole-of-government approach to Policies for Innovation is needed. This requires stable platforms for co-ordinating actions, a focus on Policies with a medium-and long term perspective, and leadership by Policy makers at the highest level (OECD Innovation Strategy: 14) |</p>
<table>
<thead>
<tr>
<th>Line</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>263</td>
<td>This also involves coherence and complementarities between the local, regional, national and international levels (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td>264</td>
<td>Evaluation is essential to enhance the effectiveness and efficiency of Policies to foster Innovation (...) this also calls for improved measurement of Innovation including its outcomes and impacts (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td>265</td>
<td>Use standards-setting powers to demand high technological performance levels and reach agreement on new standards quickly and efficiently (Aho Report: 23)</td>
</tr>
<tr>
<td>266</td>
<td>(in relation to public procurement) the real challenge at a European level (is) to explore ways of aggregating and coordinating demand through common standards, regulations and joint procurement (Aho Report: 7)</td>
</tr>
<tr>
<td>267</td>
<td>Setting world class standards that grab the market, in the mould of the GSM and ADSL experiences (Aho Report: 7)</td>
</tr>
<tr>
<td>268</td>
<td>(open Innovation systems) firms, universities, and research centres must work closely together while at the same time preserving their distinctive contributions (Aho Report: 16)</td>
</tr>
<tr>
<td>269</td>
<td>It is essential that rigorous and innovative approaches to socioeconomic evaluation of research are used to demonstrate both its past and future value (Aho Report: 17)</td>
</tr>
<tr>
<td>270</td>
<td>European technology platforms are a key organisational Innovation in the creation and exploitation of Innovation friendly markets (Aho Report: 21)</td>
</tr>
<tr>
<td>271</td>
<td>For cluster to thrive effective multi-level governance arrangements will need to be in place, combining regional, national and supra-national elements (Aho Report: 22)</td>
</tr>
<tr>
<td>272</td>
<td>Our central recommendation is that a Pact for Research and Innovation is needed to drive the agenda for an innovative Europe (...) this requires a huge act of will and commitment from political, business and social leaders (Aho Report: 22)</td>
</tr>
<tr>
<td>273</td>
<td>Ambitious use of standards-setting powers to demand high technical performance levels and reorganisation (as a consequence of the Pact) (Aho Report: 23)</td>
</tr>
<tr>
<td>274</td>
<td>An independent monitoring panel (...) should report annually on progress in relation to the pact (Aho Report: 25)</td>
</tr>
<tr>
<td>275</td>
<td>The new generation of European Regional Policy programmes promotes an approach based on regional innovative clusters (...) it is at the level of the region that many business, specially SME’s interact with one another and with centres of learning and technology (Communication of the Commission: 7)</td>
</tr>
<tr>
<td>276</td>
<td>(the commission) will seek to speed up the adoption of open, interoperable standards and to better integrate SME’s and consumers in the standards setting process (Communication of the Commission: 6)</td>
</tr>
<tr>
<td>277</td>
<td>Structured and strategic partnerships between business and universities need to be strengthened (...) this requires more</td>
</tr>
</tbody>
</table>
possibilities of exchange of staff, teaching and encouragement of entrepreneurship in university (Communication of the Commission: 8)

<table>
<thead>
<tr>
<th>Page</th>
<th>Text</th>
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<tbody>
<tr>
<td>278</td>
<td>Policy makers can for example examine (...) the setting of standards to promote a more Innovation friendly culture (Communication of the Commission: 12)</td>
</tr>
<tr>
<td>279</td>
<td>To implement the Policy orientations put forward by this Communication, an improved governance structure for Innovation is necessary (Communication of the Commission: 15)</td>
</tr>
<tr>
<td>280</td>
<td>The governance structure of the renewed Lisbon Strategy provides a forum for Policy, discussions and the exchange at the EU level of best practices on Innovation (Communication of the Commission: 15)</td>
</tr>
<tr>
<td>281</td>
<td>The governance cycle of the renewed Lisbon Strategy envisages the adoption of Integrated Guidelines to guide the process over a three year period (Communication of the Commission: 15)</td>
</tr>
<tr>
<td>282</td>
<td>The main competence to foster Innovation often lies at regional level. Regions should therefore be involved in the preparation and implementation of the National Reform Programmes (Communication of the Commission: 16)</td>
</tr>
<tr>
<td>283</td>
<td>A new Framework for State Aid to research development and Innovation (...) to help member states target State Aid on market failures preventing research and Innovation activities (Communication of the Commission: 17)</td>
</tr>
<tr>
<td>Regional Level 284</td>
<td>to develop an appropriate metric to assess the benefits of research; to expand and communicate the impact of research (Base Document: 13)</td>
</tr>
<tr>
<td>285</td>
<td>To adopt and increase a renewed strategy in Innovation: to define a new frame for Innovation; to analyse and understand the nature and impact of Innovation (Base Document: 14)</td>
</tr>
<tr>
<td>286</td>
<td>To simplify the development of interconnected development with different types of Innovation: technological Innovation; non technological Innovation; interaction with users and new organisational models; to define and implement a strategy for Innovation in services (Base Document: 14)</td>
</tr>
<tr>
<td>287</td>
<td>To create a business oriented Innovation Systems: to create a favourable environment for business and entrepreneurs; to promote active participation in the management of Innovation to the businesses; to create new and global technology driven businesses (etc.) (Base Document: 14)</td>
</tr>
<tr>
<td>288</td>
<td>To Generate ecoSystemss of Innovation dynamics and Knowledge in relation to: clusters and Innovation environments for the regions (Base Document: 14)</td>
</tr>
<tr>
<td>289</td>
<td>The Catalan Research and Innovation Systems has to be formed by (...) research universities that are capable of developing high level scientific research; centre of excellence in research with autonomy that cooperate with universities; in the health sciences,</td>
</tr>
</tbody>
</table>
by research hospitals that will research at an international standard (etc.) (Base Document: 13)

290 To clarify the structure of the Systems at the level of individuals and structures: rights, obligations, types of research structures (etc.) (Base Document: 17)

291 A renewed cluster strategy (...) down-up and with clear roles and responsibilities (Base Document: 17)

292 The creation of an Agency for Research and Innovation as a financing organisation that will finance all of the Research and Innovation Systems (Base Document: 17)

293 To develop a joint strategy, government and universities, to create an international platform of postgraduate studies (Base Document: 55)

294 To develop a plan to (...) (have available) professionals in the management and direction of research, Knowledge transfer and Innovation (Base Document 57)

295 Develop a plan for the identification of best-practices related to on-the-job Innovation (Base Document: 59)

296 To develop a communication mechanism to disseminate the socioeconomic impacts of research (Base Document: 61)

297 To develop the mechanisms to assess the socioeconomic impacts of research (Base Document: 61)

298 To develop a coordinated strategy to standardize the communication lines for the actors of the Innovation Systems (Base Document: 64)

299 To develop a measurement Systems of the achievement of the strategic objectives of (Catalonia) in Innovation and research (Base Document: 61)

300 To promote joint ventures public-private (sector) projects (Base Document: 70)

301 To develop a strategy for non-technological Innovation (Base Document: 71)

302 A plan to increase entrepreneurship (Base Document: 74)

303 To create territorial Innovation systems (within Catalonia) (Base Document: 77)

304 To create new tools to increase the internationalisation of the Catalan businesses (Base Document: 79)

305 There needs to be a clear Systems that evaluates the impact of research in Catalonia (Interviews: 271)

306 Patents need to become the unit to assess the performance of universities (...) publications are a good indicator, but patents determine the usefulness of the money and time invested in the research; academics could compliment their income with royalties from business depending on how successful his/her research is in the market (Interviews: 15)

307 The governance of universities needs to change drastically (Interviews: 145)

308 There needs to be constant communication to disseminate
<p>| | |</p>
<table>
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<tbody>
<tr>
<td>309</td>
<td>The change of governance, to a new model, that includes a research and Innovation Systems that is documented and clearly evaluated (Interviews: 60)</td>
</tr>
<tr>
<td>310</td>
<td>A communication plan to promote Catalan products (Interviews: 64)</td>
</tr>
<tr>
<td>311</td>
<td>The assessment of the performance of universities should be done through the creation of economic and social value (Interviews: 92)</td>
</tr>
<tr>
<td>312</td>
<td>Clusters need to be run under the aegis of business (Interviews: 32)</td>
</tr>
<tr>
<td>313</td>
<td>The meeting point between the actors involved in research and Innovation needs a new and modern university Systems (Workshops: 90)</td>
</tr>
<tr>
<td>314</td>
<td>Universities should be assessed through objectives that are linked to business and how human capital is transferred from the university to business (Workshops: 90)</td>
</tr>
<tr>
<td>315</td>
<td>New efficient structures, new ways to get to the customer, a new strategy of the business concept (Workshops: 92)</td>
</tr>
<tr>
<td>316</td>
<td>Government should change in a creative manner their processes, structure and hierarchical model (Workshops: 92)</td>
</tr>
<tr>
<td>317</td>
<td>Clusters should have an independent decision making structure and be able to manager their own resources (...) competition in between them should not take place, they should support each other (Workshops: 16-26)</td>
</tr>
<tr>
<td>318</td>
<td>Coordination between the different departments of government involved in R&amp;D&amp;i (Workshops: 27)</td>
</tr>
<tr>
<td>319</td>
<td>Evaluation by objectives of the CNARI (Workshops: 92)</td>
</tr>
<tr>
<td>320</td>
<td>To design and develop a strategy to specialize each territory in areas of science, technology and Innovation (CNARI: 64)</td>
</tr>
<tr>
<td>321</td>
<td>To establish an reordering and articulation of the research and Innovation agents in the Catalan Systems and to promote their coordination (...) To develop a dynamic model of governance that strengthens the strategic capacity and the coherence in decision making and in the design and execution of R&amp;D&amp;i Policies (CNARI: 69)</td>
</tr>
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</table>

**Political Level**

<p>| | |</p>
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<tbody>
<tr>
<td>322</td>
<td>Partnerships and joint projects are the most immediate and adequate tool to overcome (the problem of size) (Paradigmes: No.2)</td>
</tr>
<tr>
<td>323</td>
<td>To reinforce cooperation Policies, especially in infrastructures (Paradigmes: No.2)</td>
</tr>
<tr>
<td>324</td>
<td>Deepen recently initiated reforms of public and collectives services (Paradigmes: No.2)</td>
</tr>
<tr>
<td>325</td>
<td>We need to disseminate this (talent, transfer of Knowledge, Innovation) (Parliament Intervention: 21st of May 2008)</td>
</tr>
<tr>
<td>326</td>
<td>Governance needs to be improved (...) we will need to aggregate to be powerful globally (Parliament Intervention: 21st of May)</td>
</tr>
</tbody>
</table>
There is a need to simplify the innovation system (…) it is too complex (…) we proposed to create one independent R&I agency that would manage the R&I resources (Interview: Minister of DIUE)

The atomization of the Catalan system needed to be addressed to build in economies of scale and accountability (Interview: Minister of DIUE)

Our reflection is that in strategic sectors we need a long term strategy, an agreement that includes all of the members of society of Catalonia (Interview: Minister of DIUE)

There was a proposal to merge all of the universities of Catalonia into a Catalan university system like California, and we will be up in the rankings (Interview: Minister of DIUE)

To prioritise and focus on what we do well, and not on what we wish we could do well (Interview: Minister of DIUE)

To be efficient we needed to merge structures, to simplify the systems and to build the bridges between agents of the system (Interview: Minister of DIUE)

Social agents need to be part of it, own the CNARI (Interview: Minister of DIUE)

A need to multiply the number of clusters, specialised clusters as meeting point between universities, research centres and technological centres (Interview: Minister of DIUE)

It was key that the Minister of DIUE had all of the policies that are related to the productive model…innovation, business, industry etc. (Interview: Director General of the CNARI)

The single agency proposal was destroyed by the corporatism of universities and smaller technology centres (Interview: Minister of DIUE)

The permanent committee was supposed to be a test of how the single agency that would have been created was supposed to work (Interview: Minister of DIUE)

9.7.3 Category: Ideological frames

As it has been pointed out at the end of point 8.1.3, and as it has been mentioned in the Assumptions, the overarching reason suggested by the dissertation regarding the existence of incrementalism in the definition of Public Policies is that the most important source of change, termed by the dissertation as Paradigm (Common Ground in Van Diks words), is static. If the Paradigm is static, it means that a group’s
explanations that the reality we live in is also static. This in turn means that problems identified in the Public Policy sphere will be tackled with the same actions. This is due to the fact a problem is solved through a solution. Therefore a solution is developed based on ones understanding of the problem. A new mental approach to understanding a problem might bring a new approach to solving it. On the contrary, if the problem is understood by using the same mental frame as before its existence, the answer to this problem will most probably be based on the same the same criteria as before. This is due to the non-modification of the mental frame that persists prior to the identification of the problem.

The dissertation considers the persistence of the Paradigm as true in the Case Study analyzed in this thesis. The dissertation understands that the at the Paradigm level, in western civilization, the individual tends to consider socioeconomic order as a balance between individual and group progress. The first one refers to the most basic elements of capitalism: profit, efficiency, personal ambition, growth. The second one refers to the societal aspect of the individual, including a will for the group one belongs to, to: increase their welfare, distribute the opportunities and risks, and to provide a minimum of security.

This balance is clearly stated in sources, where there is a balance of references for either the Liberal vision of the socioeconomic model (named as individual progress before), with 10 codes; and the Social view (named as group progress), with 20 codes. The Liberal Discourse has its most extreme example in code 328 (‘reduction or elimination of social costs for R&D workers’), whereas the Social Discourse has its most characteristic example in code 354 (‘All societies want to find the way to have their own model of success that will allow (it) to achieve high levels of prosperity of the
individual and welfare of the group’) and I-36. This comparison can be performed with the majority of the codes from Table 12 and Table 13.

To summarize: the dissertation considers that there is enough evidence at the three levels to determine that the continuity of the Paradigm is present in this Case Study. There is no evidence to suggest that the change of Paradigm, as it is understood by the dissertation, takes place with the new concept of the Knowledge Economy.

Table 12: Ideological frames: Liberal

<table>
<thead>
<tr>
<th>International Level</th>
<th>327</th>
<th>The creation, diffusion and application of Knowledge are essential to the ability of firms and countries to innovate and thrive in an increasingly competitive global economy (OECD Innovation Strategy: 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>328</td>
<td>reduction or elimination of social costs for R&amp;D workers (...) (Aho Report: 15)</td>
</tr>
<tr>
<td></td>
<td>329</td>
<td>The most excellent scientists should be supported (Aho Report: 24)</td>
</tr>
<tr>
<td></td>
<td>330</td>
<td>The market approach is the main driver (Aho Report: 24)</td>
</tr>
<tr>
<td></td>
<td>331</td>
<td>create an open, single and competitive labour market for researchers, with attractive career prospects (Communication of the Commission: 17)</td>
</tr>
<tr>
<td></td>
<td>332</td>
<td>(The identification of priority areas should be market driven) in the need to preserve free and fair competition (Communication of the Commission: 12)</td>
</tr>
<tr>
<td>Regional Level</td>
<td>333</td>
<td>Internationalisation: to think, be and do globally (Base Document: 53)</td>
</tr>
<tr>
<td></td>
<td>334</td>
<td>To promote the globalisation of Catalan Research and Innovation (Base Document: 77-78)</td>
</tr>
<tr>
<td></td>
<td>335</td>
<td>The CNARI should put us at the forefront of this globalised and competitive world (Workshops: 93)</td>
</tr>
<tr>
<td>Political Level</td>
<td>336</td>
<td>We need to avoid that an excessive zeal for egalitarianism makes us despise the mechanisms able to stimulate the biggest capabilities wherever available (Paradigmes: No.0)</td>
</tr>
</tbody>
</table>
Table 13: Ideological frames: Social

<table>
<thead>
<tr>
<th>International Level</th>
<th>337</th>
<th>Tax Policies or other economic instruments can provide the necessary signal and thus foster (...) the removal of environmentally harmful subsidies (OECD Innovation Strategy: 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>338</td>
<td>Innovation is a means of dealing with global and social challenges (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td></td>
<td>339</td>
<td>Low-income countries face specific challenges for making Innovation the engine of economic development (...) in these countries Policy should focus on enhancing educational attainment (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td></td>
<td>340</td>
<td>Market failures limit investment and the development and deployment of Innovations. Pricing of environmental externalities, such as carbon emissions will be an important trigger for Innovation (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td></td>
<td>341</td>
<td>Economic challenges coincides with increasing political pressure to meet various social challenges, such as climate change, health, food security, or access to clean water (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td></td>
<td>342</td>
<td>Cutting back public investment in support of Innovation (...) will damage the foundations of long-term growth (OECD Innovation Strategy: 10)</td>
</tr>
<tr>
<td></td>
<td>343</td>
<td>Evaluation is essential to (...) deliver social welfare (OECD Innovation Strategy: 14)</td>
</tr>
<tr>
<td>Regional Level</td>
<td>344</td>
<td>Socialization: science, technology and Innovation inserted in society (Base Document: 53)</td>
</tr>
<tr>
<td></td>
<td>345</td>
<td>To promote an equal gender Innovation and Research centre (Base Document: 59)</td>
</tr>
<tr>
<td></td>
<td>346</td>
<td>To have available a public sector and a public administration that is innovative: cluster research and Innovation with social goals; (...) (Base Document: 75)</td>
</tr>
<tr>
<td></td>
<td>347</td>
<td>Research and Innovation should focus on: (...) contextual challenge and the will to advance in the welfare society; environmental sustainability; quality of jobs (Base Document: 75)</td>
</tr>
<tr>
<td></td>
<td>348</td>
<td>The order of priorities should be emerging sectors first, then those based on new Knowledge, followed by the traditional sectors of Catalonia, and finally by the social sector (Interviews: 50)</td>
</tr>
<tr>
<td></td>
<td>349</td>
<td>The social sector is a motor for Innovation (...) it acts as a “pusher” of the Systems since it wants sustainable growth, Knowledge, creativity, participation (Interviews: 56)</td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>It is important that the investment in Innovation has a return in social terms (Workshops: 60)</td>
</tr>
<tr>
<td></td>
<td>351</td>
<td>A focus (...) towards territorial cohesion (Workshops: 92)</td>
</tr>
<tr>
<td></td>
<td>352</td>
<td>Innovation should create occupation and economic welfare (...) to become an open society truly globalised (Workshops: 89)</td>
</tr>
</tbody>
</table>
Together with Innovation, internationalisation is the key element to competitiveness of the Catalan Economy (Paradigmes: No.3)

All societies want to find the way to have their own model of success that will allow (it) to achieve high levels of prosperity of the individual and welfare of the group (Paradigmes: No.2)

R&D and the creation of an economy with added value is what guarantees the welfare state (Parliament Intervention: 21st of May 2008)

Scientific research will fail unless it is accompanied by social innovation that helps maintain and increase the welfare of society (Interview: Minister of DIUE)

<table>
<thead>
<tr>
<th>Political Level</th>
<th>353</th>
<th>Together with Innovation, internationalisation is the key element to competitiveness of the Catalan Economy (Paradigmes: No.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>354</td>
<td>All societies want to find the way to have their own model of success that will allow (it) to achieve high levels of prosperity of the individual and welfare of the group (Paradigmes: No.2)</td>
</tr>
<tr>
<td></td>
<td>355</td>
<td>R&amp;D and the creation of an economy with added value is what guarantees the welfare state (Parliament Intervention: 21st of May 2008)</td>
</tr>
<tr>
<td></td>
<td>I-36</td>
<td>Scientific research will fail unless it is accompanied by social innovation that helps maintain and increase the welfare of society (Interview: Minister of DIUE)</td>
</tr>
</tbody>
</table>

9.7.4 Category: Justification of policy proposals

Justification of policy proposals form the evidence of the chain of influence in between the International, Regional and Political Levels. The Assumptions of this thesis suggests that the International Level has an influence over the Regional and Political Levels. A form of assessing if this is true is to observe what the original sources are referring to each other. In other words, if, as the Assumptions suggests, the Regional Level uses the International Levels as reference to justify their position; the Political Level uses the Regional level as reference to justify his position; the Political Level uses the International Level to justify his position.

- At the International level (codes 356 to 361) the dissertation has perceived a use of external and internal references in the exposition of their positions. The quantitative data that is used derives mainly from external references such as ‘Deloitte and Touche’ (code 356); ‘European Federation of Pharmaceutical Industries and Associations’ (code 357). On the other hand, the qualitative data (mainly inputs from other Policies) is obtained from internal references (codes 358, 359, 360 and 361)

- At the Regional Level (code 362), there is a blended approach to the sources used as forms of justifying a proposal. On the one hand, the Regional Level
sources use International Level references: the OECD, the European Commission. On the other they use and adapt sources developed by what the dissertation has termed as Local Epistemic Communities (CIDEM, Spanish Institute of Statistics). The dissertation considers that there is not a recurrent use of the International Level references throughout the sources at the Regional Level, but the relevance awarded to the International Epistemic Communities (OECD for example) is crucial for the credibility of the proposals, mainly in the Base Document and in the Evaluation Report of the Catalan Innovation Governance Systems.

- At the Political Level (codes 364 to I-39) the relevance of referencing is used as a position of strength on behalf of the Policymaker. There is, again, a blended approach to the use of references by the Policymaker: organizations like the OECD (code 364) are referred to, the opinion of Regional and International level, like the academic Manuel Castells (codes 364) and past Policies of the government (code 365).

**To summarize:** The dissertation has observed that the link between the sources and the idea of justification standards is not evident. There is a possible flow of references that show: top-down (from the International Level downwards) at the International Level; blended at the Regional and Political Levels.

The dissertation understands that this relation (justification-sources identified) cannot be empirically proven in the current case study.
Table 14: Justification standards: External References

<table>
<thead>
<tr>
<th>International Level</th>
<th>Reference Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>356</td>
<td>(e-health) accounts for 9% of GDP in Europe and the share is growing at 6% pa (...) it is estimated (e-health) will account for 5% of the total Member States health budget by 2010 (references used: Report on e-health by Deloitte and Touche) (Aho Report: 8)</td>
</tr>
<tr>
<td>357</td>
<td>(Pharmaceuticals) Europe’s position as the world’s leading manufacturing local of pharmaceuticals is under long-term threat despite being the only high technology sector to (...) show positive trade balance. It employs 588,000 people including 100,000 in R&amp;D (references used: European Federation of Pharmaceutical Industries and Associations) (Aho Report: 9)</td>
</tr>
<tr>
<td>358</td>
<td>(footnote) examples include the Eurostars initiative and the proposals for support for the ARTEMIS European Technology Platform (Aho Report 22)</td>
</tr>
<tr>
<td>359</td>
<td>(References to past Policies) (the commission) in its Communication of 10 November 2005 (...) (Communication of the Commission: 4)</td>
</tr>
<tr>
<td>361</td>
<td>(Typical expressions about the origin of the proposal or analysis) [From the Commission] ‘The Commission is convinced that’ [no reference provided/it is assumed that the Commission has deduced this themselves from a non declared analysis] ‘One reason why the EU innovation potential has so far not been fully exploited lies in the persistent deficient conditions and in the persistent underestimation of innovation as an important value in society’ [says who?] (Communication of the Commission: 4)</td>
</tr>
<tr>
<td>Regional Level</td>
<td>362 (external references at the context analysis) [EU used as a reliable actor that inspires the proposals found in the Base Document] 7th FP insists on cooperation between firms and government, it strengthens the role of the researcher (etc.); the European Research Council that looks for scientific excellence and promotes basic research close to research with a practical use (etc.); (a special mention to the EU Innovation Strategy) [OECD – used as a comparison] economic diversity positions Catalonia as one of the top regions in the OECD in relation to the increase of jobs (...) it does not hide the fact that a transformation in the productive sector is needed (...) [CIDEM – Used their data] Appendix graphs including Isabel Busom’s research [Spanish Institute of Statistics – Used their data] Appendix graphs (Base Document: 28)</td>
</tr>
<tr>
<td>363</td>
<td>(external references) [same as above for the CNARI]</td>
</tr>
</tbody>
</table>
Political Level  | 364  | (external references) the first draft has been examined by scientific committee headed by the doctors Mas-Colell and Manuel Castells. And finally we have had an evaluation done by a consultant that works for the OECD in a comparison with European Innovation Policies (*Parliamentary Intervention: 6th of February 2008*)

365  | (internal references) [To justify his points, the Minister of the DIUE uses examples of success by his government]

366  | (external references) [*Paradigmes* is written by what is termed by the Minister of the DIUE as experts. His articles refer to the ideas reflected by the experts.]

I-37  | The evaluation that we did of the system was done by the OECD international experts and it helped legitimise our points (*Interview: Minister of DIUE*)

I-38  | We did many benchmarks (…) we looked at the Scandinavian models, especially Finland (*Interview: Minister of DIUE*)

I-39  | The agency model was justified as having worked abroad (*Interview: Director General of the CNARI*)
References


CIRIT. (2003). Informe d’avaluacio del II Pla de Recerca de Catalunya, Generalitat de Catalunya, Barcelona


DG CNARI. (2008¹). Pacte Nacional per a la recerca i la innovacio, Generalitat Catalunya, Barcelona.

DG CNARI. (2008²). Pacte Nacional per a la recerca i la innovacio: entrevistes, Generalitat Catalunya, Barcelona.

DG CNARI. (2008³). Pacte Nacional per a la recerca i la innovacio: Taules de treball, Generalitat Catalunya, Barcelona.


