



UNIVERSITY OF OSLO
FACULTY OF SOCIAL SCIENCES

TIK
Centre for technology,
innovation and culture
P.O. BOX 1108
Blindern
N-0317 OSLO
Norway
www.tik.uio.no



ESST

The European Inter-University Association on Society, Science and Technology
<http://www.esst.uio.no>

The ESST MA

Goodness of fit?
Europeanisation of R&D policies: the case of
Norway and the 3% investment target

Ingvil Louise Nürnberg
University of Oslo
Globalisation, Innovation and Policy
2007

Word count: 24 996

Abstract

At the Barcelona Meeting in March 2002, the EU member-states agreed upon a common policy goal to increase expenditures for research and development to 3% of GDP by 2010. In 2005 this target was also adopted by the Norwegian Government. This thesis is a case study of how and why the 3% objective became a goal in Norwegian research and development (R&D) policy. The adoption of the EU target is considered a case of policy diffusion through Europeanisation. A combination of features from theories used in Science and Technology Studies and Political Science is employed to show how different approaches to innovation and diffusion can help explain policy transfer from the EU to the national level. Furthermore, the combination of theories is used to analyse different actors and arguments involved in the diffusion process. The arguments were divided into interest-based, idea-based, and rule-based claims according to the motivations and mechanisms underlying them. Concluding remarks drawn from the study indicate that the adoption of the 3% target into Norwegian R&D policy was indeed a result of policy diffusion. Furthermore, the case points out how the identification of actors' interest-based, idea-based, and rule-based arguments can be vital for understanding the process leading to the transfer of this EU policy goal. However, while the combination of theories of diffusion and innovation are useful for explaining the Norwegian adoption of the 3% objective, its explanatory power is substantially reduced when trying to assess the implementation, or lack of implementation of this R&D policy goal.

Keywords

Research and development (R&D) – the Lisbon 3% target - policy innovation – policy diffusion – Europeanisation – actors – interest-based, idea-based and rule-based arguments

Acknowledgements

I have received help and support from several persons while working on my Master Thesis, which have greatly facilitated the process. First and foremost, I would like to thank my supervisor, Åse Gornitzka, for her good advice and many helpful comments. Her continuous interest in and encouragements to my work, guided me through what has at some times been stressful times. Her liveliness always made me leave her office in a good mood.

Thanks also to Aris Kaloudis from *NIFU STEP* who was among the first to spur my interest for the topic of Norwegian and EU research and development policies by giving me both cake, good advice and a lot of relevant literature.

Furthermore, great thanks go to my personal translators (mom and dad) who have eased my work load substantially by correcting my grammatical and punctuation mistakes, and always been available for small talk on the phone. Thanks also to all my friends and fellow students who have cheered me up and kept me company.

Ingvil Louise Nürnberg

Oslo, 1 October 2007

Table of Contents

ABSTRACT	iii
KEYWORDS	iii
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vii
1. INTRODUCTION	1
1.1 Research question.....	2
1.2 The concept of the knowledge-based society.....	3
1.3 Outline of the thesis.....	5
2. THEORETICAL PERSPECTIVES ON INNOVATION, DIFFUSION AND POLICY TRANSFER – LITERATURE REVIEW AND CONCEPTUAL BUILDING BLOCKS	7
2.1 Theoretical perspectives on innovation and diffusion.....	8
2.1.1 Innovation and diffusion.....	8
2.1.2 Organisational innovation.....	10
2.1.3 Systems of innovation.....	13
2.1.4 Regulatory and policy innovation and diffusion.....	16
2.2 Transfer and diffusion in a European political context – Europeanisation.....	19
2.2.1 Two main types of Europeanisation – vertical and horizontal.....	21
2.3 Combining theories – Combining main expectations.....	25
2.3.1 Europeanisation of Norwegian R&D policy.....	27
2.3.2 Mechanisms of Europeanisation.....	28
Interest-based Europeanisation.....	29
Rule-based Europeanisation.....	30
Idea-based Europeanisation.....	32
2.4 Research methods, choice of theory and data.....	34

2.4.1 Qualitative research method.....	34
2.4.2 Case study.....	35
2.4.3 Data material and questions of validity and reliability.....	35
2.4.4 Limitations.....	37
3. R&D POLICY - WHY NATIONAL AND EUROPEAN POLICY FOR R&D?	39
3.1 What is R&D?.....	39
3.2 R&D policy - the need for a separate policy field for research and development.....	40
3.2.1 Measuring R&D.....	43
3.3 The international dimension of R&D policy – the OECD and the EU.....	45
3.3.1 Research and development policy and the role of the OECD.....	45
3.3.2 Research and development policy and the role of the European Union.....	47
4. NORWAY AND THE 3% DECISION	50
4.1 Short description of the Norwegian research system.....	50
4.2 The history of Norwegian R&D policy.....	51
4.3 The adoption of the 3% target.....	55
4.3.1 Outline of the road from the OECD to the EU goal of expenditures.....	55
4.3.2 Actors and arguments involved in the diffusion and adoption of the 3% goal.....	57
The Norwegian Government and the Ministries.....	57
The Ministry of Trade and Industry.....	59
The Ministry of Finance.....	60
The Ministry of Education and Research.....	61
The Confederation of Norwegian Enterprise (<i>NHO</i>).....	63
The Research Council of Norway (<i>RCN</i>).....	65
4.4 Living with the 3% objective – a discussion.....	67

4.4.1 The 3% target in a Norwegian context.....	67
4.4.2 Holding on to the 3% target.....	70
Interest-based arguments.....	71
Rule-based arguments.....	72
Idea-based arguments.....	74
5. CONCLUDING REMARKS.....	77
5.1 Main findings.....	77
5.2 Some theoretical implications.....	78
5.3 Scenarios for future research.....	80
LITERATURE.....	83

1. Introduction

Norwegian research and development (R&D) policies in the post-war period have been characterised by a large degree of consensus concerning priorities and policy decisions. There has been little political debate and disagreements related to research policies, even across the traditional cleavage lines of Norwegian politics and between political parties (Kaloudis 2004:8-9; Skoie 2005:265). This trend of domestic policy consensus is to a very large extent valid also for Norway's increasingly close relations to research performed in the European Union (EU) (Skoie 2005:259).

Europeanisation, the diffusion or transfer of policy practices and processes from the EU to the national level, can be one consequence of close coordination, cooperation and manifold linkages between Norwegian and European R&D policies (Gornitzka 2006:23). Policy transfer can be considered crucial for policy formation as it introduces new impulses, and thereby leads to innovative processes, practices and goals within national R&D policy. The rapprochement through diffusion takes place although developments at the European level leave considerable discretion to domestic actors and institutions and although the actual ability of the EU level to penetrate domestic institutions is neither perfect, universal, nor constant (Olsen 2002:936). The close ties can, rather, be seen as a result of adaptational pressure to conform with EU policies which can be seen as fairly strong not only in EU member-states but also in the Union's neighbouring countries (Trondal 2002:338).

The objective of increasing expenditures for R&D to 3% of GDP by 2010 which was decided upon by the EU-states at the Barcelona Summit in 2002 (European Parliament 2002:20), can be considered an innovation in the field of R&D policy. The innovativeness of this policy objective consists not only of its ambitiousness and concreteness. It is also a comprehensive objective as it

involves all EU member-states and demands their cooperation and the coordination of domestic R&D policies in order to be achieved. In the year 2005 the Norwegian Government decided to introduce the 3% goal into national R&D policy as well. Consequently, the policy objective was diffused into the Norwegian context. Since 1999 the Norwegian expenditures for R&D as a percentage of national GDP have varied between 1,53–1,73% (*NIFU STEP* 2007). Consequently, the Norwegian Government was far from reaching its former goal of R&D investments which was the average expenditures of the Organisation of Economic Cooperation and Development (OECD) of approximately 2,3% of GDP (OECD 1996a:10; *St.mld.*¹ 1998-1999:7). Therefore, the new R&D policy goal adjusted to EU standards, was a very ambitious one (Skoie 2005:250) and represented a landmark also in Norwegian context.

In order to understand Norwegian R&D policy-making, therefore, it can be seen as necessary to understand how and why policy innovation through diffusion happens. Consequently, it also becomes important to analyse the underlying mechanisms and factors motivating actors and shaping arguments in the process leading to policy adoption. This thesis will seek answers to these questions in the case of the adoption of the EU goal of increasing expenditures for R&D to 3% of GDP by 2010 into Norwegian R&D policy.

1.1 Research questions

The aim of this thesis is two-fold. I will conduct a case study of how the 3% objective became a goal in Norwegian R&D policy in order to investigate what processes can lead to policy transfer from the EU into the Norwegian context. I look at this process as a potential case of policy diffusion through Europeanisation. Therefore, in order to obtain a greater understanding of these policy processes, I will also review a broad spectre of theoretical perspectives drawn from the

¹ *St.mld.*, *Stortingsmelding*, Report to the Parliament (*Storting*). These reports are used when the Government wants to present issues for the *Storting* without proposing a decision. They often form the basis of a proposition (cf. footnote 9).

fields of Science and Technology Studies (STS) and Political Science. I aim at combining common traits from these theories to show how approaches to innovation and diffusion from both more technical and more political areas of study, can help explain the adoption of policy from the EU to the national level. Furthermore, I see it as important to consider the international context surrounding and contributing to diffusion of policies into the domestic sphere. Both the OECD and the EU can be regarded as vital communication channels for diffusion processes (Mörth 1998:43,46,50). I will, therefore, discuss R&D policy formation and developments in these two organisations and relate it to the Norwegian context. By combining the theoretical perspectives from STS and political science and keeping the international context of the OECD and the EU in mind, I will then analyse actors and arguments involved in adopting the 3% target, in order to discern the different mechanisms underlying and motivating the policy decision.

My research questions are

- why and how has the objective of the EU's Lisbon Strategy to increase R&D expenditures to 3% of GDP by 2010 become a Norwegian policy goal?
and furthermore
- what actors and arguments were involved in this policy adoption process?

1.2 The concept of the knowledge-based society

Today, economies of countries in what is considered the western world are increasingly based on gaining, holding and providing information and knowledge. A report published in 1996 showed that the economies of member-states of the Organisation of Economic Cooperation and Development were more than ever before depending on production, distribution, and use of knowledge (OECD 1996a:9). The same report estimated that more than 50% of GDP in major OECD countries was knowledge-based. The European Union defines a knowledge society as a society where “research, education, training and innovation are fully mobilised to fulfil the

economic, social and environmental ambitions of the EU and the expectations of its citizens” (European Commission 2007a). And Norwegian politicians use terms like ‘knowledge raise’, ‘knowledge economy’, and ‘knowledge society’ as part of their everyday language, and Norway even has its own ‘Ministry of Knowledge’ (*Kunnskapsdepartementet*² 2007, my translation).

The main reason for this rather new, enlarged focus on knowledge is that its relative importance as one of the main drivers of economic growth and creation of welfare both at the individual and the community level, has been recognised. Furthermore, some knowledge is a precondition for gaining more. There is a constant quest for increased knowledge about the world and the society we have created, and a need to adapt this knowledge to the ever changing environment. Consequently, R&D activities become vital as they not only enhance the knowledge base of society, but also supply economy and society with the means needed to handle new challenges and make progress. Investments into knowledge and R&D can raise the capacity of other factors of production, generate increasing returns, and thereby enhance economic growth (Frønes 2005). Because, as pointed out by professor Ivar Frønes, “productivity is no longer placed primarily in machines but in peoples’ heads”. However, he continues, “knowledge and education are much more than factors of production; the knowledge society refers to the cultural and social significance of knowledge as well” (ibid.:10, my translation).

Consequently, in addition to ensure investments into new knowledge through among others R&D activities, the spread of information and learning is considered crucial for building the new knowledge-based society. This can happen through diffusion and transfer of knowledge between firms, sectors, regions or countries (Hall 2005). The processes leading to the diffusion of research and development results and the new knowledge they create, are depending on a variety of actors and their efforts to develop and maintain society’s knowledge base. Systems and networks

² *Kunnskapsdepartementet*, Ministry of Education and Research.

created by these actors are of key importance both to the creation and the efficient distribution of knowledge and information. (OECD 1996b)

The realisation and recognition of the positive role played by knowledge has not only affected strategies concerning economic development, the personal strive for skills, investments into R&D and efforts to spread knowledge and information throughout society. The increased focus upon knowledge is also felt in the area of politics and policies as it furthers political change, shapes political debates, and influences the field of policy formation. This is among others seen as the field of R&D policy has gained importance and receives increased attention from central policy actors such as researchers, economists, scholars, politicians and other interest groups. As R&D activities create new knowledge, it can be argued that the actors involved and the ideas and interest reflected, in the formation of R&D policy goals will have the possibility to greatly influencing the basis of the knowledge society.

1.3 Outline of the thesis

The first part of this thesis has given a short introduction to the topic of my case study and outlined the research questions which will be addressed. Theoretical perspectives drawn upon in this study will be outlined in Chapter two. This chapter provides a review of the literature regarding different aspects of innovation related both to diffusion, organisations, systems and regulations, literature on policy transfer, as well as approaches treating policy formation through processes of Europeanisation. The review will identify the main bodies of literature and the main debates within the fields of innovation and studies of policy diffusion and Europeanisation, and locate my research within this theoretical area. Consequently, traits from the relevant approaches are combined into a theory frame forming the foundation of this thesis. The last part of Chapter two shows and discusses the methodological background used to answer my research question. Chapter three concerns the advent of the field of R&D policies in general, and more specifically

the development of R&D policies within the OECD, the EU, and the Norwegian context. This chapter thereby outlines international and national conditions under which policy diffusion might take place, that are relevant for the case of Norway's adoption of the 3% target. Chapter four contains my analysis of the processes leading to the transfer of the 3% goal into Norwegian R&D policy, including central actors and arguments. The theoretical framework created as a result of the literature review in Chapter two, will guide the analysis of the different actors' arguments and claims regarding the introduction of the EU goal. The last part of Chapter four will discuss the situation and debates in the area of R&D policy after the introduction of the 3% objective. Finally, Chapter five sums up the main findings, their theoretical implications and the study's relevance concerning future scenarios in the field of R&D policy.

2. Theoretical perspectives on innovation, diffusion and policy transfer – Literature review and conceptual building blocks

Policy change and the impact of European integration on domestic policies can be studied from a number of perspectives. Some focus on individual actors, others on organisations or institutions. Some emphasise external, others internal factors. Some claim the importance of political structures, network effects, models of rationality, learning and imitation, or diffusion as the main factors driving the innovation process (Black 2005b:16). These different explanations and understandings of innovation are, however, not necessarily mutually exclusive. Often they may be combined to generate new and deeper understandings of how the European sphere influences the national level. This chapter will address the following question: What insights from the field of STS, and what approaches to the study of policy change and Europeanisation can potentially contribute to the understanding of my case?

In the following chapter I will describe and discuss various theoretical approaches from the literature on diffusion and the different strands studying innovation. These are theory perspectives traditionally found, and extensively used, in the field of Science and Technology Studies. Furthermore, an overview of political science theories concerned with regulatory and policy innovation and Europeanisation of policies, is provided. This is done because when pursuing an answer to the question of how the EU 3% target became a Norwegian policy goal and what actors and arguments were involved in this policy transfer, both political science and STS theories can be considered useful. Not least it will be valuable to combine the approaches deriving from these two fields of theory. I will show how not only perspectives on policy innovation and Europeanisation, but also those occupied with innovation and diffusion from a more scientific and technical point of view, can contribute to the understanding of policy formation. Especially, the STS's focus upon the variables underlying diffusion of innovations,

organisational innovation and systems of innovation are of interest. A combination of STS and social science theories will reflect the complexity of the process of national adoption of European policies. Moreover, it is likely to increase, by both broadening and deepening, the understanding of how policy innovations at the European level become national policies.

2.1 Theoretical perspectives on innovation and diffusion

2.1.1 Innovation and diffusion

“[W]ithout diffusion, innovation would have little social or economic impact” (Hall 2005:459).

Diffusion can be seen as “the socially mediated spread of a policy or practice [and] its communication over time among members of a social system” (Rogers 2003:14). This includes both the adoption of a new, and the replacement of an old practice or process. Consequently, diffusion, also known as transfer or imitation, is an intrinsic part of the innovation process as are mechanisms of learning and feedback which enhance the original innovation and drive the diffusion process forward. This is the case also for policy formation and change happening through innovation, which often includes the transfer of policies and practices between countries. Major R&D policy goals such as enhancing social welfare and augmenting economic development and the amount of knowledge available to society, can be seen as dependent on diffusion and spread of information. As policy innovations are likely to improve conditions in the field where they are implemented, the decision to adopt an innovation is usually not seen as choosing between adopting or not adopting. Rather it is a question of adopting now or adopting later. (Black 2005a:7-9; Hall 2005:459-460,478-480)

The processes of innovation, the implementation of innovations and diffusion, are not as linear and uniform as it may seem after this description. They will take different forms depending on whether it is a product, a process or a policy that is diffused, and in what policy area it is taking

place (*ibid.*). Consequently, there are several conceptual frameworks trying to understand the diffusion of innovations, both why and how it happens. The most important of these can be seen as: Explanations used by sociologists and organisational behaviour theorists; views put forward by economists; and marketing literature on diffusion (Hall 2005:461-465). Although each of these theories seems to be linked to a separate field of study, insights from one explanatory framework can be used to understand diffusion mechanisms within several disciplines. As pointed out above, such a combination of theories will be important when answering the research question of this thesis.

Sociologists and organisational behaviour theorists often focus on the external environment when trying to explain the diffusion of innovations. One of the main contributions to this branch of literature, are Rogers' analytical categories classifying the attributes influencing potential adopters of an innovation (2003). Among these are the relative advantage of the innovation, the compatibility between the innovation and the current way of doing things and between the innovation and social norms, the ease with which the innovation can be tested and evaluated by a potential adopter. Moreover, the speed of diffusion can be crucial for the implementation of innovations and whether they are a success or a failure. This is among others determined by whether the decision to innovate is made collectively, by individuals, or by a central authority (*ibid.*). Furthermore, the norms, values, institutions and degree of interconnectedness of the social system in which the potential adopter is embedded, are also important (Hall 2005:462).

Economists' view of factors influencing innovation and diffusion often involve strategic calculations. The innovation and diffusion process is described as an aggregate result of a series of rational individual calculations that weigh the benefits of adopting the innovation against the costs of change. Consequently, actors' self-interests and goals play a major role. However, the environment in which calculations are carried out is characterised by uncertainty and limited

information. The rate of diffusion is thus not only seen as determined by individuals' rational decisions, but to a great extent influenced by external factors. Nevertheless, the economists' approach is often criticised for not taking social feedback mechanisms into account to the same extent as is done by sociologists. The main argument made by these critiques is that social connectedness and network effects will result in social feedback and consequently bandwagon effects, as the adoption of an innovation by one individual will encourage also others to innovate. (Ibid.:462-463)

The marketing literature on diffusion is first and foremost focused on the questions of how to encourage consumers to endorse innovations, and how to detect or forecast the success of these innovations in the marketplace. The role of media information, social networks, characteristics of the innovation and of its source, are often emphasised when mapping the factors that can be influenced in order to increase the number of actors willing to choose a particular innovation. (Ibid.:464)

Hence, the literature points out a crucial distinction between internal and external factors and the role they play in diffusion processes. In the case of Norway and the 3% target, this distinction implies considering characteristics of the external environment, including the international policy environment in general and more specific the EU's R&D policy, as the locus and source of innovation. Also, internal or local conditions such as the characteristics of Norwegian R&D policy and the national political context, are likely to be important.

2.1.2 Organisational innovation

“In a general sense, the term “organizational innovation” refers to the creation or adoption of an idea or behavior new to the organization” (Lam 2005:115). It involves “a complex mix of

individuals, organizational culture, organizational structure and organizational environment” (Black 2005b:20).

One of the main advantages of the organisational approach to innovation is that it allows great emphasis to be put on learning, creative change and innovation within the organisation itself. Moreover, it also includes the possibility that differences in organisational interpretations of, and responses to, external stimuli can affect the outcomes of change (Lam 2005:123-138). Consequently, theories on organisational innovation can be seen as relevant for the discussion of why and how the EU’s 3% objective for R&D expenditures became a Norwegian policy goal, as this process of policy adoption can be said to involve, among others, learning and innovation as a result of external influence. Alice Lam (*ibid.*:116) claims that there are two broad perspectives from which it is possible to reveal the relationship between organisations and innovative activity.

The first perspective described, is that of organisational design theories which consider how structural characteristics of an organisation are linked to its propensity to innovate (*ibid.*:117-122). This perspective’s emphasis on social networks can to some extent be compared to that found in the marketing literature on diffusion, as described above. The organisational design approach focuses on the micro-level and explains innovation as a result of organisational culture, structure and decision-making processes which are decentralised and highly flexible (Black 2005b:24). Accordingly, as among others described by Mintzberg (1979) and DiMaggio and Powell (1991), successful organisations have capacity to change and will therefore design their structure to match the environment which tends to become increasingly unpredictable and uncertain. A new structure including more organic and fluid forms of organisation may be crucial in order to overcome inertia and face arising challenges (Chandler 1962; Mohr 1969; Osborne 1998). This flexibility and tendency to innovate is, however, also a result of rational decision-

making and managerial strategic choice, and an effort to enhance and preserve an organisation's competitive advantage (Black 2005b:23).

Secondly, there are theories of organisational cognition and learning which focus on how organisations develop and exploit new ideas for problem solving and innovative activities. As opposed to the structural theories described above, this perspective portrays the ideal organisational innovation as a discontinuous, creative process. Innovations are not only the output of an organisation's structural features, but also a result of accumulated knowledge which enables organisations to acquire and exploit new knowledge. (Lam 2005:123; Cohen and Levinthal 1990:126-130) A challenge for all organisations that wish to evolve through learning, however, is to avoid letting core capabilities and inertial forces which provide stability, also turn into core rigidities and path dependencies which make the organisation resistant to change. Consequently, external sources of innovation can be crucial. It is also important to emphasise the role of differences in national institutional frameworks, created through possibilities and constraints arising from different societal contexts and institutions. As the EU's Barcelona target can be considered an external source, the extent to which the 3% objective is used as an argument in the national R&D debate constitutes an example of how external factors produce internal change. This is underlined by the assumption that without the EU's 3% goal such an investment target would not have been introduced domestically, and Norway would still have the OECD goal as its national R&D expenditure objective. In line with this, evolutionary theorists like Nelson and Winter (1982) argue that organisations accumulate knowledge as they develop and that organisational change usually occurs "as a product of the search for new practices in the neighborhood of an organization's existing practices" (Lam 2005:134). This also means that organisations to a greater extent are involved in changes which gradually enhance and enlarge their competence rather than radical changes and entrepreneurial activity (ibid.:135). The strategic adaptation theory is another strand of organisational cognition and learning theory which claims

that both continuity and creativity is needed to foster organisational development and change. While continuity creates a sense of identity, provides political legitimacy and increases the acceptability of change, creativity brings new elements into the development process. (Gersick 1991:14-21; Romanelli and Tushman 1994:1152-1166) Because of the focus on the micro-level and problem solving, this perspective of organisational cognition and learning can be compared to the economist view on innovation and diffusion. However, the fact that this second category of organisational innovation also involves cognition and learning, makes it similar to the sociologists and organisational behaviourists approach as well.

Regarding the theoretical perspectives of organisational innovation, some traits are of greater relevance for my case study than others. As for the innovation and diffusion approaches, awareness of external factors, networks between external and internal factors, as well as factors of cognition and learning, are considered important. Another similarity between the organisation oriented and the diffusion oriented strands of theory which is relevant for this thesis, is the focus upon the micro-level, including among others national actors' rational actions and strategic adaptation. I expect these actors to have been crucial for the adoption of the 3% target into Norwegian R&D policies. Also, I expect internal conditions, such as national institutional frameworks and the possibilities and constraints and problem-solving abilities involved in these, to be influential. This focus on both individual and networks of actors can be seen as pointing to how great flexibility and evolutionary processes are involved in policy adoptions.

2.1.3 Systems of innovation

“Research and innovation policies [...] are transversal and systemic in nature” (Ugur et al. 2006:250). This description of R&D policies can be seen as taken into account in Norway's “plan for a ‘holistic’ innovation policy, with its emphasis upon network interaction and policy integration” (Remøe et al. 2004:31).

As shown in the discussions on innovation and diffusion, and organisational innovation, innovative activity seldom happens in isolation. Outcomes of R&D and innovation processes depend on the multitude of actors involved in these processes, and the relationships between the actors. Therefore, in order to shape R&D and innovative activities and create the desired results, it is important to understand who these actors are, and how they relate in their network of innovative activities (Edquist 2005:184-185,190-191). A system of innovation (SI) consists of “all the important economic, social, political, organizational, institutional, and other factors that influence the development, diffusion, and use of innovations” (ibid.:182). By employing an SI approach it will be possible to identify the variety of actors influencing the innovation process of interest, and get a grip on how the different components, they being organisations, firms or individuals, relate and combine to form relevant constellations.

The relationships between the different factors of an SI, influencing R&D and innovation, will usually include either competition, transaction, or networking. Also, a certain amount of interactive learning is crucial for the dynamic of innovation (ibid.:190-191). Becoming aware of these features of the SI approach, makes it applicable to and useful for, understanding the process of policy formation. This includes also the understanding of the development of R&D policy, and more specifically Norway’s adoption of the EU’s 3% goal. In this process, the constellations of actors and the significance of institutions become, as argued more extensively later on, especially pronounced.

The boundaries of a system of innovation can be sectoral, regional, national or even global. Consequently, the EU and its effort to integrate national R&D policies through the program for the establishment of a common European research area (ERA), can be considered one such innovation system. However, although international cooperation and the formation of systems across national borders are becoming increasingly important, the nation state still has a great

influence over what actual policies will be implemented in the field of R&D (ibid.:198-199). Therefore, national systems of innovations (NISs) are those most commonly focused upon in SI studies. A national system of innovation can be said to consist of those factors within a nation state influencing innovation and R&D processes. However, while most scholars agree on this rather vague definition, some disagree on what factors constitute the most important determinants of research, development and innovation. Bernt Lundvall (1992:10) has argued that the institutional set-up and the structure of production are the two most important dimensions defining a NSI. Nelson and Rosenberg (1993:5,9-11), on the other hand, claim organisations supporting R&D to be the main sources of innovation. Understanding what factors are determining R&D activities can be vital in order to enable the formation of effective policies.

I expect the SI approach to give valuable insight concerning my research question. On the one hand, the perspective directs attention towards the systemic level and network effects influencing innovation and R&D processes. On the other hand, its focus on different actors and the relationships and constellations among them which are characterised by both competition and cooperation, can be seen as relevant. Furthermore, learning processes and competence building taking place both within and between systems, are regarded as important. The SI approach seeks to reach a comprehensive understanding of the determinants of innovation, which I expect will be crucial also in this thesis.

These paragraphs have reviewed theoretical perspectives on diffusion and innovation drawn from STS, which can be seen to increased understanding of my research question. Furthermore, expectations about what factors and processes have influenced the adoption of the 3% target, have been outlined. In the following, theories from Political Science on policy and regulatory diffusion and innovation as well as theories on Europeanisation, will be discussed as these are also expected to be relevant for this case study.

2.1.4 Regulatory and policy innovation and diffusion

The concept of diffusion has its origins in biology and was later, as shown above, also applied to the transfer of technologies and innovations and processes in an organisational and systemic context. Furthermore, it can be of relevance for policy formation and decision-making, and the study of policy innovation and diffusion has become a major topic in political science (Tyran and Sausgruber 2003:2). The policy diffusion approach tries to understand what causes a government and other political actors to adopt and promote a new policy. This question is of major relevance to this thesis, and in the following paragraphs some theories of policy innovation and diffusion will therefore be considered. A theoretical approach to regulatory innovation is also included as this can be seen to assert great influence on both process and outcome of policy transfer. (Black 2005a,b)

First, however, I see it as important to draw a distinction between the concept of policy diffusion and policy translation. Translation refers to a process of change happening to ideas and practices as they travel from one country or social context to another. As pointed out by Gornitzka “[t]he definition of problems or solutions may change, or solutions become linked to other problems, and in this sense a transformation has occurred” (2006:22). This will happen because the actors involved want to shape the new ideas to make them fit into their own frame of reference (ibid.:20). In a process of diffusion, on the other hand, the policy adopted remains unchanged. This is the case although the context the policy is diffused and adopted into may be totally different from the one where the policy originated. I expect Norway’s adoption of the 3% target to be an instance of diffusion, as the objective can be said not to have changed in any significant way during this process.

Regulation can, according to Black (2005a:11), be understood as the “sustained and focused attempt to alter the behaviour of others according to standards or goals with the intention of

producing a broadly identified outcome or outcomes, which may involve mechanisms of standard-setting, information-gathering and behaviour-modification”. The aim of regulatory innovation, therefore, becomes to renew and thereby improve these standards and goals of behaviour (ibid.:3-4). As a result, this perspective is one commonly employed for the analysis of political decisions and policy implementation. The main approaches to regulatory innovations are, as described by Black, the individual, the organisational, the state and the global polity perspective. In the following I will concentrate on outlining the individual, the state, and the global polity perspectives of innovation as these are the most relevant for my further writing and since the organisational approach to innovations has been outlined above (2005a).

The individual perspective explains innovations as a result of the presence, actions and influence of one, or a small number, of key individuals, usually sharing certain personality and socio-economic characteristics. In the case of organisational, institutional or policy innovations it is also crucial that the actors occupy strategic positions with respect to the decision-making process. These policy entrepreneurs will try to win support for their views and ideas on what and how to innovate, and their strategies can vary between networking, shaping debates, identifying problems and building coalitions (Black 2005b:18-19). In a Norwegian context of innovation policy, such entrepreneurs can be crucial in order to gain a good understanding of innovation and realise policy visions (European Commission 2006a:17).

The main factor of analysis in the state perspective on innovation is government, “either taken as an aggregate, or occasionally a particular unit of government” (Black 2005b:25). The perspective has its origin in the field of political science, and most theories of public policy formation can therefore be of relevance to state innovation. However, especially two main strands of political science literature are relevant for innovation, namely that on policy diffusion and that on policy learning. For policy diffusion to happen, several internal and external factors of importance for a

state's innovative activity, have to be in place. Some scholars claim that it is the internal political, economic and social characteristics of the state that cause it to adopt a new program or policy. Among the external factors influencing the propensity to innovate, one of the most relevant is the motivation provided by role models. Berry and Berry (1999) are among those who claim that "states emulate each other's policies for one or more of three reasons: reasoning by analogy, competition, and public pressure". Following this view, decisions which lead to innovative action are not taken by states in isolation, but are strongly influenced by the decisions of other states. As opposed to this focus on the rate of adoption and convergence, scholars concerned with policy learning focus on the substance of policy decisions (*ibid.*). Bennet (1991, 1997) and Rose (1993) show how the literature on policy learning seeks to identify more closely the causes, motivations, mechanisms, types and degrees of policy formation and transfer. Furthermore, the actors involved in and the outcome of policy transfer, are crucial for explaining these processes. Policy transfer creates and shapes the political agenda, and involves searching for the most suitable policy solution, working against group pressure, or legitimating actions already made.

The global polity perspective on innovation focuses on decision- and policy-making by international organisations, institutions or networks. This approach is important as a supplement to the state perspective because states often let international organisations instruct them what actions to take and what decisions to make. Also, the decision-making system of states is sometimes bypassed when international organisations adopt policies which become operative at state-level without the state itself taking action to implement the policy. According to Black (2005b:33), innovation in the global polity environment can to a large extent be explained by actions taken by such international networks or webs of actors. Scholars such as Braithwaite and Drahos (2000:532-549) counter this claim by arguing that these communication networks are not enough to diffuse innovations. Instead they point out other mechanisms, such as modelling, considered to influence global policy innovation. Modelling or imitation

may begin as a proactive sequence, in which individual policy entrepreneurs enrol in the organizational power of other actors, or it may begin as a reactive sequence as governments seek to respond to public pressure generated by a disaster or scandal, and seek around for a policy to adopt.

(Braithwaite and Drahos:561-562)

Moreover, modelling can occur because of a fear to lag behind or be less successful than potential competitors.

Several traits drawn from the approaches to regulatory and policy innovation can be seen as important for this thesis. Concerning the individual perspective, I especially expect the influence of politicians and ministry employees, as well as other individual actors and policy entrepreneurs in the R&D sector, to play a major role. Also, the state perspective's focus upon internal factors, as the timing of political elections, and external factors, as the use of states as role models, can be seen as important. The same can be said regarding the processes of learning and identifying motivations and mechanisms involved in policy innovation and diffusion. Networks, institutions and international organisations emphasised by the global perspective, are also likely to be of relevance. Finally, I expect mechanisms such as standard-setting, behaviour-modification and modelling to have influence on the process of adopting the 3% goal into Norwegian politics.

2.2 Transfer and diffusion in a European political context - Europeanisation

Europeanisation is a multifaceted phenomenon. As a result, it is not easily described and defined. Olsen has argued that the term 'Europeanisation' is "applied in a number of ways to describe a variety of phenomena and processes of change" (2002:921). Furthermore, "[n]o shared definition has emerged". However, the different conceptions of Europeanisation do not exclude, but rather complement each other. In the following the perspective of Europeanisation as a specific case of policy diffusion and transfer will be described and discussed, in order to discern its implications for my research question.

Olsen (2007:70-71) describes five possible meanings of the term Europeanisation. These involve Europeanisation as: 1) Changes in external territorial boundaries. Here, the degree to which Europe as a geographical entity is turning into a single political space is considered. 2) Development of institutions of governance at the European level. 3) Domestic adaptation to central, international regulations involving a multi-level system of governance. 4) Exporting forms of political organisation and governance typical for Europe, beyond the European territory. This is a result of Europe's relatively strong impact on countries and processes in other parts of the world. 5) A political project aiming at a unified and politically stronger Europe.

Featherstone (2003:3) on the other hand, broadly classifies Europeanisation into two categories by arguing that

[i]n a maximalist sense, the structural change that [Europeanisation] entails must fundamentally be of a phenomenon exhibiting similar attributes to those that predominate in, or are closely identified with, 'Europe'. Minimally, 'Europeanization' involves a response to the policies of the European Union (EU).

Among the maximalist interpretations he includes the categories of Europeanisation as a historical and as a cultural diffusion process. On the other hand, among the minimalist approaches, Featherstone mentions the processes of institutional adaptation and the adaptation of policy and policy processes (ibid.:5-6). His classification can be compared with the third and the fourth of Olsen's meanings of Europeanisation.

Radaelli (2003:30) provides a more specific but at the same time comprehensive, definition of Europeanisation as

[p]rocesses of (a) construction, (b) diffusion, and (c) institutionalization of formal and informal rules, procedures, policy paradigms, styles, 'ways of doing things', and shared beliefs and norms which are first defined and consolidated in the making of EU public policy and politics and then incorporated in the logic of domestic discourse, identities, political structures, and public policies.

In short, he argues that the political, social and economic processes of the European Union become a natural part of domestic politics and policy processes. In the context of this thesis, Radaelli's definition has the advantage that it is applicable both to EU member-states and other countries, includes both organisations and individuals, and puts emphasis on policy-making.

The EU is becoming more and more a relevant and important point of political reference for actors, in the international arena as well as at member-state level. Furthermore, the effects of Europeanisation are claimed to be felt even outside current member-states (Grabbe 2003). Today, Europeanisation is mostly associated with the diffusion of structures, institutions and policies from the EU to a domestic level as result of mechanisms such as learning, and adaptational pressure coming directly or indirectly from Union membership. These acts of adoption usually involve changes in policy practices, but seldom entail major modifications. Shifts in cognition, discourse, and identity can, however, be part of the changes taking place (Featherstone 2003:7-9,20). What then, is encompassed in this concept of Europeanisation and what mechanisms are involved in this diffusion process?

2.2.1 Two main types of Europeanisation – vertical and horizontal

There are two overarching categories of Europeanisation, the vertical and the horizontal. The former emphasises the clear demarcation of the EU level where policies are made, as opposed to the domestic level where policies are put into practice. The latter sees Europeanisation as a process without pressure to conform to EU policy models, but rather an adjustment based on economic and social patterns (Radaelli 2003:41).

Vertical Europeanisation is mainly emanating from adaptational pressure, international regulatory competition and the exploration of policy opportunities. There is a real and perceived difference across levels of governance as to the content of policy which fosters Europeanisation of among

other research and educational policy (*ibid.*). The perspective can be divided into what Nedergaard (2006:424-425) calls the ‘compliance approach’ and the ‘opportunity structure approach’. According to this ‘compliance approach’, adaptational pressure will occur if there is divergence or misfit between the policies, politics or institutions at the European level and those at the national level. The degree of convergence and compatibility between EU and domestic policies is often conceptualised as ‘the goodness of fit’. When the distance between EU and state policies is low, adaptational pressure is low and ‘the goodness of fit’ is therefore high, and vice versa when the divergence between EU and national policies is high (*ibid.*; Radaelli 2003:44-46). This argument is very similar to those pointed out earlier proposed by Nelson and Winter and Rogers regarding evolutionary organisational change and the degree of compatibility between the innovation and the present way of doing things, respectively. ‘The goodness of fit’ argument thus echoes observations made in the general literature on diffusion and innovation. The ‘opportunity structure’ approach, on the other hand, points to more genuinely political arguments. Accordingly, Europeanisation can provide possible solutions in the national debate, alter expectations about the future, and thereby give domestic reformers the additional legitimacy needed to implement their otherwise controversial policies. In other words, Europeanisation can restructure strategic opportunities available to domestic actors (Nedergaard 2006:425; Radaelli 2003:38,43; Haverland 2006:140). This restructuring can be considered as related to the changed opportunity structure which economists claim will be available to market actors as a result of technical innovations. Consequently, Europeanisation can be linked to the economic approach to innovation and diffusion theories involving rational calculations of political costs and benefits.

Horizontal Europeanisation is taking place either directly through the diffusion of shared ideas and policy frameworks, or indirectly by the establishment of networks and institutional linkages. As argued by Trondal (2002:338), the links between EU and Norwegian institutions have grown, and policy reforms at the EU level can therefore be seen as leading to reform also in

corresponding national policies. Radaelli (2003:43) claims that the Open Method of Coordination (OMC) is the most important innovation among the means used for this kind of interaction and policy transfer. In short, the OMC involves agreeing on common goals for the Union. As these targets are not legally binding ones, it is left to each member-state to decide what strategies and means are to be used in order to reach the goals (*St.mld.* 2001-2002). The method is therefore also based on voluntary cooperation between the European states. The OMC mainly works through the mechanisms of learning from others, diffusion and ideational convergence as to what standards should be seen as appropriate, normative pressure making actors concerned about preserving their good reputation, and agenda setting (Gornitzka 2004:11-12). A similar strategy of diffusion of best practices and furthermore of technology, also has a long tradition in the field of innovation policy (Hauknes and Wicken 2002:27). Best practices can be seen as the results of policy discourses where preferences, expectations and ideas are displayed and debated. Discourse hereby becomes a prerequisite for the legitimisation of policy, and therefore for the diffusion of this policy as well as Europeanisation (Radaelli 2003:48-50; Nedergaard 2006:425). However, while this policy discourse and policy reforms can of course be geared towards actual action, it can sometimes only be meant as talk and symbolic signalling in order to create an image of political actors and decision-makers as vigorous, efficient, and in favour of changes, and not because the policy is actually wanted or needed. Similar trends can be observed in the innovation policy literature. Among others Hauknes and Wicken (2002:33-34) point out that “[p]olicy decisions influencing industrial development are made in many ministries and public agencies and there is no systematic co-ordination or attempt to analyse the consequences the various policy decisions have for industrialisation”. Consequently there is no guarantee that an effective innovation policy will be created. This may be seen as a result of innovation policies being favoured and endorsed on a broad, popular political basis. It can seem as though more emphasis is placed upon the actual policy decision favouring innovation policies, than upon its concrete content or outcome.

However, there are several problems and intervening variables related to both vertical and horizontal mechanisms of Europeanisation. When it comes to the ‘goodness of fit’ argument for instance, it is not valid for all cases of Europeanisation. Governments will change their behaviour and policy decisions not only as a result of adaptational pressure, but also because they have their own rational reasons for seeking domestic reform. In these cases, politicians will use European policy regulations as an opportunity to implement the same or similar regulations at home if this is favourable for their political objectives (Radaelli 2003:45-46). Also, the institutional capacity to produce and sustain change can intervene in the process of Europeanisation. This capacity depends among others on the number of veto points present in the decision-making system. The existence of a veto point can be said to involve the possibility for actors to reject a proposal and thereby block attempts at policy change. As seen from this, the Europeanisation process is highly influenced by the policy dimension of change (ibid.).

Also, it is very important not only to adopt a top-down view on Europeanisation. The process involves more than just adaptational pressure from the EU level to member or non-member-state level. It is not simply a question of whether a state will or will not adopt EU policies. Europeanisation is also a response to domestic needs, priorities and developments. This bottom-up approach sees the adoption of certain national policies as a response to the specific situation in and context of, a state (Radaelli 2003:50-51). Moreover, the coevolution of domestic and European structures should be closely considered (ibid.:52).

In the next part of this thesis I will combine aspects from the theoretical perspectives of STS and Political Science in order to create a theory frame suitable for the following analysis of actors and arguments related to the adoption of the 3% target.

2.3 Combining theories – Combining main expectations

In order to arrive at a theoretical framework adapted to the purpose of this thesis, the traits from the literature and theoretical approaches outlined above which I expect to be of important to my further research, will be combined. This combination of theories forms the basis of my assessment of why and how the EU's objective to increase R&D expenditures to 3% of GDP has become a Norwegian policy goal, and what actors and arguments were involved in this process. During my literature review I pointed out which factors from the different perspectives on diffusion and innovation, organisational innovation, systems of innovation, regulatory and policy innovation and Europeanisation that are considered relevant for my research question. When seeking to categorise these factors which can all be seen as influencing the actors and underlying the arguments involved in the adoption of the 3% target, I see them as falling into three main groups. The first concerns rational choice, strategic behaviour, actors' preferences and self-interest. The second is related to institutions, networks, systems, coordination, and common rules and norms. The third contains learning and other cognitive processes, imitation, common understandings and ideas. These three groups correspond to an analytical approach used by scholars discussing international cooperation and integration and the significance thereof for national politics and policy. The three perspectives are then often referred to as interest-based, rule-based, and idea-based (Gornitzka and Langfeldt, forthcoming:170; Olsen 2002; Claes and Tranøy 1999:7-10,65; Trondal 2002).

The three groups of factors are shown in the figure below, as is the theoretical context used to arrive at this categorisation. The process can briefly be described as follows: My point of departure was the perspectives on vertical and horizontal Europeanisation (Radaelli 2003) as outlined above. Horizontal Europeanisation takes place directly through diffusion of policies or indirectly through networks and institutions, while vertical Europeanisation mainly emanates from adaptational pressure and international regulatory competition. Drawing upon Nedergaard

(2006) as described earlier on, I divide vertical Europeanisation into a ‘compliance approach’ where adaptational pressure results from a misfit between policies at the EU and the national level, and an ‘opportunity approach’ involving rational choices and the restructuring of strategic opportunities. While the ‘compliance approach’ can be seen as involving idea-based arguments, the ‘opportunity approach’ entails interest-based claims. Horizontal Europeanisation, on the other hand, can be seen as rule-based. Finally, I consider the idea-based as well as the rule-based category to make up external factors, important for the process of Europeanisation. External factors influence domestic policy decisions without necessarily being a part of the national context, as shown by among others Hall (2005) and Black (2005a). The interest-based category on the other hand, can be considered as consisting of internal factors, directly involving national R&D actors in the process of Europeanisation (ibid.).

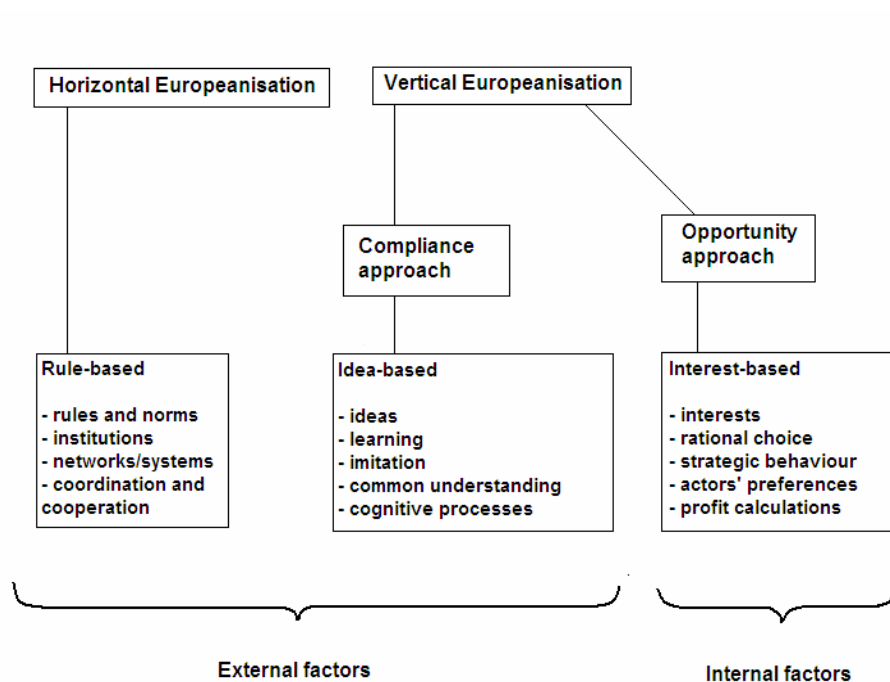


Figure of theoretical framework for the assessment of the Europeanisation of Norwegian R&D policy

Before proceeding to a description of categories of rational choice and self-interest, institutions and networks, learning and imitation, and outline some hypothesis regarding each of them, I will briefly return to the concept of Europeanisation. Based upon the literature review, some arguments from the scholarly debate will be used to portray how Europeanisation is taking place also in the Norwegian R&D policy area.

2.3.1 Europeanisation of Norwegian R&D policy

The vast body of scholarly literature on Europeanisation would support the argument that these processes of integration and diffusion are important for national policies. Several publications also mention mechanisms of learning, strategic adaptation, and coordination as exercising major influence. There is strong evidence to support the claim that Europeanisation is indeed taking place in the European policy sphere.³ Furthermore, the process does not only influence EU member-states, but also non-members which interact closely with and depend on the Union in several policy areas, like Norway. Consequently, I expect that Europeanisation is a major factor contributing to the adoption of the 3% objective into Norwegian R&D policy, although there will always be a risk of so called analytical oversight. This means that there is a chance of not seeing that integration effects, and policy diffusion can in fact be a result of broader forces like globalisation in stead of Europeanisation (Anderson 2003:51).⁴

In the debate about the degree and effects of Europeanisation it has also been assumed that “the degree of adaptational pressure is fairly *strong* in new EU member-states and in states that are

³ Among the scholars arguing that Europeanisation of national policies is taking place are Mörth (1998), Featherstone et al. (2003), Olsen (2002), Claes and Tranøy (2006), Trondal (2002). Although their conceptualisations of Europeanisation are not uniform, they are related to such an extent that I will treat them together. More specifically, however, I base my view of Europeanisation on Radaelli's (2003:30) definition which is found earlier in the paper.

⁴ This alerts on to the importance of critically examining 'Europe's' role as the only source of domestic policy change. This argument is underlined by Trondal's study which shows that Norwegian research and education policies seem to be more strongly affected by policies like those of the WTO and the Bologna declaration, than by EU adaptational pressure. However, there is no necessary contradiction between national policies being influenced by global policy trends and the adaptation to European policy objectives. Furthermore, the similarities between the thematic research priorities of the EU and the corresponding priorities of Norway, are increasing. In addition, research policies are argued to converge more easily towards EU standards than other policies (Trondal 2002:349). These are both trends which have important implications for my research question.

located at the institutional rim of the EU – like Norway” (Trondal 2002:338). This is to a great extent based on the fact that Norway’s participatory status in the EU through the EEA Agreement, resembles that of the member-states, at least within the field of research and education which is closely linked to R&D policies (EFTA 2005; *St.mtd.* 2001-2002). Furthermore, Berry and Berry (1999) show how policy learning and diffusion are more likely to take place when the receiving country shares borders and political and economic conditions with the sending country, as is the case for the EU and Norway. EU regulations and governance will thus be of great relevance to Norwegian national policies. Trondal (2002:348) also points out that Norwegian policy makers and documents are directing increased attention towards emerging EU policies of research and education. The perceived policy differences as well as the willingness to learn, will influence the degree of policy transfer in this case. Studies show that there is little evidence of symbolic policy convergence and cheap talk in Norwegian research and education policies, which most likely means that there is an actual willingness and perceived need among politicians and other involved actors to adopt EU policies (*ibid.*:351). Furthermore, there are hypotheses arguing that the pressure for policy convergence is even stronger in Norway than in established EU member-states (*ibid.*:338). The following part and the discussion at the end of this paper will aim at the factors involved in the process of Europeanisation as well as the degree to which the different factors have contributed to the diffusion of policy from the European to the national level.

2.3.2 Mechanisms of Europeanisation

As already pointed out, Europeanisation is a complex phenomenon. However, in order to structure my discussion, the outline of the mechanisms influencing and contributing to Europeanisation has been simplified in line with the figure and the three main categories sketched out above. The categories are described in greater detail in the following. Also, I will outline some expectations regarding the actors and arguments involved in the adoption of the 3%

target into Norwegian R&D policy. These expectations involve assessments on what claims are likely to be made by the Norwegian actors in the adoption process, based on whether their arguments can be considered as deriving from an interest-, a rule-, or an idea-based perspective.

Interest-based Europeanisation

If the adoption of the 3% target into Norwegian policy is to be seen as interest-based Europeanisation, the decision would stem from rational calculations of costs and benefits, the relative advantage and improvement, and the degree of enhanced status expected from the implementation of such a goal. Actors' interests and goals are often heavily involved, and consequently policy decisions can only be made after fierce negotiations where the outcome largely depends on resources inhabited by the different actors. According to such a perspective, the actors would use strategies and tactics in order to strengthen their own position in the relevant political arena relative to others (Rones 1995:165; Gornitzka and Langfeldt, forthcoming:170-171). These tendencies are characteristic of an interest-based perspective on Europeanisation.

What arguments will be observed in the debate about the adoption of the 3% goal if Norwegian actors are seen as rational, strategic and self-interested? In general, it first has to be considered whether the EU policy decision in question will affect Norwegian interests. If not, national policy actors do not necessarily react to it. If the decision affects national interests but does not conflict with domestic policies already in place, Norwegian authorities are likely to adjust to the Union's decision. However, if the EU policy decision is not compatible with Norwegian policies, the Government will have to take action. In this case, there are alternative rational reactions available. Norwegian actors can choose to disregard the policy decision, they can enter into negotiations trying to gain leverage and thereby an exception from the unacceptable parts of the EU decision, they can try to influence the EU policy to further changes favourable from a national point of

view, or the Norwegian Government can decide to veto the EU policy decision. (Schmidt and Radaelli 2004:186-187; Feragen 2005:30)

However, the 3% policy objective is not legally binding for Norway, nor for any of the EU member-states, and consequently the costs involved in non-adoption are not legal but potential social sanctions. Furthermore, the EU's 3% goal can not be seen as a contradiction, but rather an addition to already existing Norwegian R&D policy. As a result, it is likely to affect the national interests in a non-conflicting way. Reaching the OECD average 2,3% spending on R&D by 2005 is already a national policy goal, and the extension of this numeric goal to 3%, can seem a small and not very controversial policy alteration. Nevertheless, presumably several Norwegian policy actors adopted an interest-based perspective when considering the costs and benefits of adopting the 3% target. Actors interested in increasing expenditures for R&D can have pointed out how it would be necessary for Norway to adopt the 3% goal in order to follow European trends and standards for R&D. Furthermore, increased research activities were likely to create positive externalities for society as a whole. Emphasis on how benefits of adopting the 3% target would outweigh the costs, can therefore be expected to figure prominently in the debate about the policy adoption. One may also assume that rationalists mechanisms of shaming (Trondal 2002:337), setting the Norwegian Government in a bad light if it did not increase its R&D expenditures, have been used.

Rule-based Europeanisation

The importation of the EU's 3% objective can also be seen as determined by the national institutional R&D environment. In this case the adoption of the goal will be dependent on rules, procedures and trends of institutions within the area of R&D policy. These institutions both act restrictive on the actors behaviour as well as providing meeting points where networking activities can take place and ideas be discussed. Furthermore, networks, systems and institutions

which the actors take part in, give meaning to the environment and regulate cooperation, dependency and power. Consequently, these institutions can have a role of their own in the process of policy formation (Feragen 2005:32-33). Compared to the rational and strategic choice perspective described above, the interests of actors are considered of secondary importance to policy decisions according to this institution-based view (Olsen 1992:250). The importance of belonging to a system or a network of actors, be they involved in innovation as within the SI approach described above or with different policy fields such as in the European Union, is seen as vital. Actors will therefore often adapt their behaviour to fit the overall system framework instead of acting out of sheer self-interest. According to a rule-based perspective, it can be expected that actors involved in adopting the 3% objective would argue in favour of such a goal because Norway is a party to the EEA Agreement and already cooperates with the EU in several important policy fields. Thereby it becomes important also for Norwegian R&D actors to produce policy decisions in line with the broader EU values, visions and objectives. (Gornitzka and Langfeldt, forthcoming:171)

I expect arguments about the importance of networking, systems of innovation and R&D, institutions and common rules to have figured prominently among the actors involved in the process of transferring the 3% goal into Norwegian policy context. Norway's main relation to the EU is regulated through the EEA Agreement covering several policy fields. Consequently, Norwegian laws and regulations must be adjusted to changes made in the EU directives included in this agreement as these are legally binding and international law has priority over national law. Since Norway is not a member of the EU, the country is not participating in the decision-making processes potentially leading to alterations in the EEA Agreement (*St.mld.* 2005-2006). Nevertheless, studies show that Norway in total has adopted and integrated as many as 5300 legal acts from the EU (*ibid.*). Importing the 3% goal is one such example of voluntary policy adoption as this is an objective which is not legally binding within the EEA and neither in the

EU. The EU and the EEA can be considered Norway's most important and relevant international policy networks. The fact that Norway to such a large extent adopts EU regulations only adds to this argument and shows the great coherency between Norwegian and EU policy institutions and rules. I therefore expect national R&D actors to use arguments regarding the importance of close relations with the EU through the EEA but also through other means, in order to show the benefits of the 3% target in a national context. Also, I expect the actors to claim that Norway is already to such a large extent integrated in the European Unions R&D activities through the Framework Programs, the effort to establish ERA and other joint research projects, that it would only be reasonable also to adopt the numeric objective from the Barcelona meeting into national policies.

Idea-based Europeanisation

Transfer of the 3% goal into Norwegian policies can also be considered a result of cognitive processes, learning or imitation, and inspiration from new ideas in the R&D policy area. A common understanding of problem-solving and political solutions will often result from arenas available for political debates, and these factors can be crucial for successful decision-making. Consequently, it is possible for actors to alter their opinions and preferences following a discussion, and moreover opinions may change depending on the situation and time (Claes and Tranøy 1999:7). In line with one strand of argumentation within this approach, the adoption of the 3% target can be the result of actors viewing what is often described as low Norwegian R&D expenditures and innovativeness as a national problem, and consequently the EU R&D goal as a very attractive one (Claes and Tranøy 1999:10).

I expect learning, imitation and idea-based arguments to have played a major role among actors arguing in favour of including the 3% goal in national R&D policies. Learning from EU's best practices can result from the opinion that national policies are insufficient or unsatisfactory

means for reaching vital national goals. Moreover, if the Union's policy goals are viewed as more vigorous, effective and future oriented, the willingness to learn from and imitate them in the domestic policies, will increase. Consequently, Norwegian policy actors can be expected to have used both problem-based and solution-oriented argumentation when favouring the adoption of the 3% goal. The Norwegian economy is often portrayed as not being innovative enough and one lacking research efforts (OECD 2007). As a result, the Barcelona objective can be seen by policy actors as the solution to these problems. On the other hand, as already argued, practises adopted within the EU are often considered as pointing out general trends and prominent ideas in the international society which should be imitated or learned from in order to keep up with broader, global developments. Furthermore, mechanisms of idea-based Europeanisation can be said to be at work, if I am able to identify a conviction among Norwegian actors favouring the adoption of the 3% target, that this is a goal which fits the Norwegian context, just as it fits the general European one.

The Norwegian Government closely surveys the development within, and the actions taken by, the European Union because, as already argued, most EU policy decisions influence Norwegian policies. It is even assumed that countries outside the EU, such as Norway, face stronger pressure for adaptation to the Union's policies than do member-states (Trondal 2002:338). This also results from the fact that the Norwegian policy sphere is closely connected to the European one as Norwegian interests, institutions, values and ideas largely coincide with those of the EU. Consequently, transfer of EU policies can be seen to happen in all areas, including R&D policies (Gornitzka and Langfeldt, forthcoming:197-198). Consequently, the Government and other affected domestic actors will try to foresee how the Union will react and act in different situations in order to make an assessment of how this will affect their own position.

I will bring with me my outlined expectations, based on theoretical strands and traits, to my more thorough analysis of the arguments of the various actors in Norwegian R&D policies in Chapter 4 of this thesis. Based on articles, reports, interviews performed by others, as well as personal correspondence per e-mail expressing these actors' views, I will assess whether the theoretical basis of their claims, as outlined above, is in fact confirmed. First, however, I will give an overview over methods and data used, and the criteria upon which I have based my choices of theory.

2.4 Research methods, choice of theory and data

2.4.1 Qualitative research method

When using a qualitative research method, the analysing and collecting of data material is done in parallel sessions. Consequently, the data can be reassessed as new and surprising results may appear underway, or as new data material found is included in the analysis (Hellevik 1999:196). It may be argued that this method gives a deeper and more accessible understanding of the processes or objects studied (*ibid.*:13). The thesis is based upon a qualitative research method. It includes a case study and the tracing of the process leading to the adoption of the EU 3% goal into Norwegian R&D policy, and consequently allows for great focus upon actors and arguments and the underlying motivations, ideas, goals and preferences. The main research method is that of major policy documents, articles and reports. In cases where the different documents did not provide satisfying answers, I have to a limited but important extent included correspondence with persons crucial for the policy formulation process such as politicians, employees in the ministries and other actors important for R&D policies, in the data material.

2.4.2 Case study

A case study is an intensive study of one single case which builds its data collection and analysis on existing theory (ibid.:97; Yin 2003:14). My case involves the tracing of policy actors and arguments involved in the process of transferring the 3% goal from the EU level into the domestic R&D policy field. By combining traits from several theoretical perspectives I try to assess and understand the process of Europeanisation of Norwegian R&D policies.

2.4.3 Data material and questions of validity and reliability

My data material can broadly be divided into two parts, one more theoretical and one more empirical one. The former consists of major publications in the field of STS, studies of innovation, and literature on perspectives and approaches of political science. The latter part is mostly made up of policy documents and papers published both by the OECD, major EU institutions, the Norwegian Government, including the different ministries and their employees, the Research Council of Norway (RCN), the Confederation of Norwegian Enterprise (*NHO*), research institutes such as *NIFU STEP*⁵, and individual researchers and other individual actors in the field of R&D policy.

The validity of data is a question of how relevant the data material is when assessed against the research question posed (Hellevik 1999:183). In other words, it concerns the degree to which what is intended to be measured, is actually measured. As argued by Yin (2003:98), triangulation, that is the use of multiple sources of evidence, can lead to a higher validity and more accurate research results. As mentioned, I have conveyed different written sources and a variety of statistics. Also, as the theories used have traits which both complement and reinforce each others

⁵*NIFU STEP, Norsk institutt for studier av forskning og utdanning. Senter for innovasjonsforskning, The Norwegian institute for research and educational studies. Centre for research on innovation (my translation).*

assessment on policy diffusion from the EU to the national level, they can be argued to add validity to the results of my case study.

For the data to be valid it also has to be reliable, that is, it has to have a high degree of accuracy and consistency and be carefully collected. It may generally be hard to attain a high degree of reliability when using qualitative research method because it will always involve a certain extent of estimations, personal assessments and considerations (Hellevik 1999:53-54). This is the case also for the conclusions drawn from my thesis. However, I have added a complete list of literature and references which should enable the reader to check all the sources which this research and its conclusions are based on. This should at least to some extent increase the reliability (Yin 2003: 34).

When dealing with questions of validity and reliability, it is vital to consider the type of literature used, that is, if the literature sources are primary or secondary. A primary source is an original document containing firsthand information about a topic. Examples are interviews, most policy papers and statistics. These can be said to have a great degree of reliability. Journal articles are examples of secondary sources as these contain interpretations and a commentary or discussion of a primary source (Hellevik 1999:101-102). I have based the empirical part of my thesis on primary sources in order to increase the reliability of my research results. Consequently, I have used several documents called 'public', such as publications by the Government. Despite this public status, however, it is important to assess these documents in a critical way as their contents are often political and therefore most probably contain general as well as popular statements and promises. It is necessary to be aware of the great gap often existing between words and deeds in politics (Ugur et al. 2006:238).

2.4.4 Limitations

There are several limitations involved when performing a case study, and several of these concern the research method and the collection of data material. The first limitation concerns the difficulties with generalising from my case study of Europeanisation in the field of R&D policy, to the broader processes of policy formation and diffusion. These difficulties arise because, by conducting only one case study, it will hardly be possible to determine whether the conclusions drawn are valid only in the context of this study, or will be valid also for some or all similar cases (Andersen 2003:132-135). However, I believe that my qualitative approach will add some perspectives to the research results which would be lost in a quantitative analysis which, on the other hand, this would allow for several case studies.

In order to secure precise and more detailed information vital for the understanding of the research question, some of the actors considered important for the adoption of the 3% target were contacted per e-mail. Some problems occurred when trying to reach the interviewees as some did neither respond to the e-mails nor return my phone calls. However, I will argue that those actually replying were among the most relevant actors in the political context at the time the EU goal was adopted, and that this relevance weighs up for the smaller number of interviews carried out.

Furthermore, including an even greater amount of literature would have added to the depth and scope of the study. This has first and foremost been a question of having enough time to read a larger amount of all the literature available concerning the theoretical, practical and political aspects of my research topic. More time would also have allowed me to do a more systematic assessment of literature and consequently of the process of Europeanisation, the research question, the case study, and its implications. As the time schedule for this thesis is rather tight I have tried to select the most relevant publications, and I will argue that I have managed to

include a quite large amount of actors and arguments in the case study and the discussion related to it. Concerning the different actors, I have concentrated less discerning the different strands of each actor's claims and points of view, and more on portraying a greater variety of actors and their main arguments in the process of introducing the 3% target into Norwegian R&D policies.

It may also be seen as problematic to base a study to such a large extent on theoretical analysis. As theories are ideal pictures or models of how the world works, or is supposed to work, it can sometimes be difficult to see the relation between a case study and the wider theoretical perspective or framework. Also, it is important not only to comment on the instances where the theory fits practice, but also admit and point out when there is a misfit and maybe even suggest an alternative theoretical explanation to the new development or instance revealed and experienced. My effort to avoid these pitfalls involves choosing those traits from variety of theoretical approaches which I see as most suitable for my case study, and combine them in order to gain a better understanding of the Europeanisation of Norwegian R&D policy.

The following chapter will be concerned with the topic of R&D and, moreover, the formation and development of R&D policies both in international arenas like the OECD and the EU, and in a Norwegian national arena. This can be seen as important in order to understand the context in which the 3% target was adopted by Norwegian R&D actors.

3. R&D policy - why national and European policy for R&D?

3.1 What is R&D?

The document ‘Standard Practice for Surveys of Research and Experimental Development’, also known as the Frascati Manual, was created in the context of the OECD in 1963. In the Manual it is argued that

[t]he basic criterion for distinguishing R&D from related activities is the presence in R&D of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty, i.e. when the solution to a problem is not readily apparent to someone familiar with the basic stock of commonly used knowledge and techniques in the area concerned.

(OECD 2002a:33)

When elaborating on this conception of R&D, it can be described as a systematisation of creative work. Furthermore, its objective can be seen as the process of increasing and improving the stock of knowledge in e.g. a firm, an industry or a society, and then using this new knowledge to devise new applications. Although this may seem a rather broad and all encompassing definition of R&D, it allows for the distinction between R&D and similar activities like education, training, market research, and industrial activities related to acquisition of products and licenses (Smith 2005:154). A slightly different definition focusing more on the economic parts of the R&D process, is put forward by Edquist (2005:190) arguing that R&D can create a base for innovations through the development of economically relevant knowledge. Thus, research and development can provide the financing of the commercialisation of such knowledge, that is, its transformation into innovations. Together, these characteristics form a picture of the R&D process which gives a satisfactory description for the purpose of my thesis.

3.2 R&D Policy - The need for a separate policy field for research and development

The very initial activities related to science, research and technology were the result of human curiosity and a need to solve problems faced and meet new challenges arising. At all times we have searched for new knowledge, and this has resulted in a process of development on a personal as well as on a societal and economic level. The history of R&D activities is a long one. Nevertheless, the following paragraphs will be concerned with the way from the initial concepts of research and development to the separate field of R&D policy which we attach so much importance to today.

Early theorists of economics, including Marx, Harrod, Domar, Kaldor, Solow and Arrow (Fagerberg 2002:98) solely emphasised the importance of capital accumulation as a factor leading to growth. They were very sceptical towards the view that innovation and research were causally related to economic growth. Schumpeter was one of the forerunners in bringing attention to the qualitative driving forces of growth when he claimed that economic development is “a process of qualitative change, driven by innovation, taking place in historical time” (Schumpeter in Fagerberg 2005:6). However, the real breakthrough of the idea of innovation and R&D as driving forces of economic development, did not come until after World War II, not least as a result of the Minerva-debate (Hauknes and Wicken 2002:14). This was also the point when the importance of research and development, and policies related to these activities, was generally accepted. Not only was this view of R&D one widely agreed upon by politicians, but it also became an area given high priority on the OECD agenda, one of the major international organisational actors of the time (Skoie 2005:23). Several conditions lead to the awakening of R&D as a separate policy field. As pointed out by Hans Skoie (*ibid.*:11), both national and international investments into R&D were increasing and gaining legitimacy among policy actors. This was not least because the war had shown how research and technology were crucial in order to create new jobs, improve

peoples' health and increase living standards (Bush 1945). Furthermore, the Cold War and the arms and space race which developed between the USA and the Soviet Union after 1945 emphasised even further the crucial position held by R&D as a means to enhance national as well as international security. However, the arguments which might have gained the widest acceptance in society were those concerning the possibilities of increasing economic growth and welfare.

Consequently, the first few decades following the war showed an almost exclusive focus on the economic benefits of innovation and R&D activities.⁶ As analysis follows reality and empirical research, the new trends lead to a revision of several theories and models on economic and technological development. Bell (1999) writes in length about the coming of the post-industrial knowledge society. He claims that technology has been one of the main driving forces from the past to this current knowledge-based society. Also, he points out how economic innovation and change are directly dependent upon new technology. Laestadius (2003) claims that acts of research and discovery underpin innovation which furthers economic development and growth. Other scholars such as Galbraith, Goodwin and Hirschman have followed up and modernised the Schumpeterian ideas concerning the relationship between innovation and economic productivity. Economists like Romer and Grossman have contributed to the development of what is called New Growth Theory. This is only one, though one of the most influential, theories that tries to explain the forces driving the increase in long-term economic productivity (OECD 1996a:11). New Growth Theory explores the relationship between the traditional and the new, knowledge-based economic perspectives. More specifically, it points to the importance of factors such as investment in R&D, education and training, and new managerial work structures for economic development (ibid.:3,7). Fagerberg (2002:93) refers to Romer's second framework for growth theory which explains how innovations contribute to the advance of scientific and technological knowledge and thereby improve society's capability to produce new innovations in

⁶ See among others Fagerberg et al. (2005) and Bell (1999).

the future. This continuous improvement in innovation capability prevents decreasing and indeed leads to increasing returns on investments into R&D. As a result, long-run economic growth can be explained by imperfect competition which enables companies to make profits from their R&D investments, combined with spillovers from these investments to society's knowledge base and its capability to continue with innovative activities in the future (ibid.:93-97).

As a result of the increasing interest in and importance of innovation and R&D as both furthering growth and increasing society's knowledge base, policy in these areas has become a more and more important issue on the domestic policy agenda (ibid.:94). Arguments in justifying research and development efforts and activities are therefore also to a much larger extent guided by broader societal needs as compared to simply economic ones. And it is among these societal arguments in favour of increasing the focus upon, and investments into, research and development, that most of the answers to why there should be a separate policy field concerned with R&D, are found. Society is in a process of continuous change and development. Consequently, we face challenges, and in order to meet these challenges we need new insights based on scientific research and new knowledge. The creation and attainment of new knowledge through R&D activities becomes, therefore, crucial. R&D spurs critical thinking and better solutions. Also, investments into research and development are profitable, both in a business and a society perspective. As a result, several countries have set as their goal to increase the R&D effort to ensure future profits and value added (*St.mtd.* 2004-2005:7-9). The increased exchange of knowledge and know-how across borders is only one trait in this development.

The OECD, the European Union, and also the national Norwegian Government, have all recognised the need for increased investment into R&D. This investment is partly seen as the responsibility of the whole of society as its scientific results will be a public good, i.e. something that benefits all members of society rather than selective groups. However, those gaining the

greatest benefits from R&D activities are those firms and businesses which can apply the R&D results directly in their production of goods or services and thereby enhance their revenues. Therefore not only governments but also private firms and enterprises, should grant money to research or engage in R&D activities themselves (Dickson 2005:1).

Already, there is a multitude of institutions engaged in R&D. Firms, research centres, universities and other institutions of higher education, as well as enterprises all interact with science and technology in some way. As most of these different institutions operate under different rules, laws and regulations, all governments wanting to increase the social and economic gains from science and technology will have to ensure that there nevertheless exists some degree of coherency between the different institutions. As Dickson (*ibid.*:2) points out, “[t]his usually means establishing a single framework for the rules, laws and decisions that have an important influence on [R&D]. In other words, creating an R&D policy.”

Hence, today not only researchers themselves and research institutions are concerned with R&D activities. Governments, political parties, non-governmental organisations (NGOs), and private firms and investors see ever more clearly the correlation between R&D on the one hand, and societal gains and creation of public goods on the other. Consequently, methods for measuring R&D are needed as the results of these activities have to be easily assessable, not only by the researchers performing R&D but also by those persons and interest groups potentially benefiting from it.

3.2.1 Measuring R&D

“Measurement implies commensurability” (Smith 2005:149).

For a long time it was claimed that innovation was impossible to quantify and therefore also impossible to measure. Today, however, there are several indicators for inputs and outputs of

innovation, and R&D efforts and expenditures. While many of these are sector specific, some are also economy-wide and therefore especially well suited for cross-country and larger international studies (ibid.:148).

The first attempts to measure the effort and results of science by relating R&D expenditures to national income, were conducted in England by Bernal in the 1930s. Through his work he became strongly convinced that increasing the R&D effort would lead to economic growth and welfare. In 1945, the internationally known Vannevar Bush report 'Science The Endless Frontier', stated that investments into science could have large, positive impacts both on the economy and welfare (Bush 1945). In the late 1950s-60s Christopher Freeman played a vital role in developing the analytical basis of science, technology and innovation policy. His contribution to the OECD Frascati Manual of 1963, which enabled national authorities to measure R&D and compare the R&D effort across countries, was among his most important achievements (Lundvall and Borrás 2005:604-605,616). As this Manual has been continuously modified through the years, it is still the key OECD document on the collection of R&D statistics (Smith 2005:153). The Manual also provides a definition of R&D. And although this definition is not totally watertight it makes it possible to draw a line between R&D and related activities, thereby distinguishing activities which should be measured when looking for changes in R&D efforts from those which should not.

One of the indicators most commonly used when measuring the amount of research and development conducted, is "R&D intensity" which is the ratio of R&D expenditure to some measure of output. On country level, this is usually the ratio of gross expenditures on R&D to the Gross Domestic Product (GERD/GDP). The ratio of R&D to GDP can be used to characterise industries, and a high ratio is said to signify that the business is involved in high-tech activities. Similarly, a country with a high ratio of gross expenditure on R&D to GDP is seen as an innovative, knowledge creating, and technological progressive one (ibid.:155). The OECD was

among the first international organisations collecting data on GERD/GDP ratios to create statistics showing the distribution of R&D intensities across countries. This is probably also the reason why the OECD average for GERD/GDP was long treated as a goal which all advanced countries were trying to approach. Also Norway had until 2005 the OECD average as its objective for national expenditures on R&D.

Measuring R&D is of great importance not only for researchers conducting the actual R&D, but also for those actors depending on the effects of such activities. Among others, R&D policy actors need indicators telling them whether their actions of promoting or discouraging R&D have been successful. Furthermore, comprehensive measuring methods are crucial in order to assess whether and how policy can be used to extract the desired results from R&D. Consequently, the methods for measuring R&D have implications for this study of the Europeanisation of Norwegian R&D policy as national policy actors will be interested in measuring how the implementation of European R&D objectives affect national R&D efforts.

3.3 The international dimension of R&D policy – the OECD and the EU

3.3.1 Research and development policy and the role of the OECD

The OECD has been the major actor among international organisations when it comes to the diffusion of ideas about innovation policy. In addition to having a vital role in the evolution of the understanding of science policy, technology policy, and innovation policy, the organisation has contributed to the merging of these three policy fields into one single perspective of science, technology, and innovation (STI) policy. This field has close links to that of R&D policy as research and development can be said to have their background in the scientification of innovation (Smith 2005:150). Consequently, the OECD is one of the best sources of internationally comparable data on science, technology and innovation. Following the policy

discourse in the organisation is of great interest to most actors and stakeholders in the area of R&D policy as it reflects new ideas and developments likely to shape future decisions and outcomes of policy discourses. The following phases can be said to characterise the development of the OECD's R&D policy (OECD; Lundvall and Borrás 2005:603).

The Pigagnol Report published by the OECD in the early 1960s strengthened the link between technological development and economic growth and stressed the need for national and rational planning of R&D investments. Moreover, the importance of more systematically gathered and measured data on R&D and the possibilities of formulating more systematic policy, were seen as interlinked. The Frascati Manual published later that decade, set out standards for internationally comparable measures of scientific and technological activities relevant to policy making. Both the Manual and the Report, increased the legitimacy of R&D policy. This is an example of how international organisations can function as teachers of norms, a view prominent in constructivist theories. Finnemore (1993) points out how international organisations can constitute examples for states and show states the value of policy organisations as well as encourage them to take part in policy coordination, for instance in the field of science policy. The world economy experienced a slump in the 1970s, and a rise in expenditures for science and R&D was seen as one measure to solve the problems. Furthermore, the OECD report 'Technical Change and Economic Policy' from 1980 directed the attention to diffusion of policy, important for society's capacity to absorb new technology.

An OECD report from 1990 emphasised national innovation systems, network formation, and the importance of improving the absorptive capacity of firms in order to ease their adaptation to a changing environment (Lundvall and Borrás 2005:603). In the latter half of the decade came the first Science, Technology and Industry Scoreboard which gathered the latest internationally comparable data on economic trends. The indicators used, captured the changing relationship

between science, innovation and the economy, argued to be vital for policy makers and their ability to measure and evaluate their country's performance relative to others. Furthermore, the Scoreboard stressed the importance of investment in knowledge as this would lead to scientific and technological innovations which were important drivers of economic growth, industrial competitiveness and realisation of societal objectives. (OECD 2001) Increasing R&D investments is a vital part of creating a knowledge-based society. And the ability of policy makers to find new methods to improve creation, absorption, diffusion and application of knowledge, is seen as an intrinsic part of this process (OECD 2002b).

3.3.2 Research and development policy and the role of the EU

While the OECD for a long time was almost the only international organisational actor in the field of R&D policy, the European Union is today challenging and to a large extent taking over the OECD's lead in this area. This is not least because of the Union's broader focus, considering R&D efforts not only from an economic and a growth perspective, but to a larger extent including political and social arguments to justify and speak in favour of increased investments into research and development activities. Also, as the international society has recognised the importance of both gaining and creating new knowledge, the EU has become aware of the need to manage research more proactively and coherently. If Europe as an actor in the global economy as well as in the international society is going to keep up with its main competitors, the U.S. and Japan, it has to drastically speed up its knowledge production (Busquin 2002). Today, the EU overall research effort represented 1,96% of GDP compared to 3.12% for Japan and 2,59% for the USA (European Commission 2007b). However, the process from the first efforts to set research and development issues on the EU agenda to arriving at the suggestion of creating a common European Research Area, has not been a straightforward one. Rather, as for the OECD, it can be described as having developed through different stages.

The Treaty of Nice ratified in December 2000 stipulates that “the Community and the Member States shall coordinate their research and technological development activities so as to ensure that national policies and Community policy are mutually consistent” (European Union 2006:122). However, the focus on integrating research and development policy within the EU was established well before this. Already in 1965 a committee made recommendations for areas of joint actions as well as methods for comparing and coordinating national research policies. This effort was followed up by the creation of the Directorate General for Research in 1973 and the Committee on Science and Technical Research (CREST) the year after. Moreover, in 1984 the EU launched its first Framework Program for research. These four year programs contributed strongly to the coordination of research policies as well as the strengthening of Europe’s industrial basis. The legitimacy of European integration in the field of R&D was further increased by the Treaty of Maastricht stating that “[t]he Community shall have the objective of strengthening the scientific and technological bases of Community industry and encourage in to become more competitive at international level” (1992:Article 130f(1)). Nevertheless, the road towards a fully coordinated R&D policy within the European Community has been and to some extent still is, full of twists and turns. The European integration effort itself has experienced periods of stagnation, not least because of difficulties caused by low economic growth, unemployment and social problems like poverty. Furthermore, broader, more global trends and developments, such as the economic recessions of the 1970s and 80s, the increasing globalisation, and the growing importance of information and communication technologies, have influenced the possibilities for cooperation in the field of R&D within the EU (*St.mld.* 2001-2002).

However, the initiative in January 2000 to create a European Research Area (ERA), brought the issue of policy coordination back on the daily political agenda of the Union. The idea of ERA was put forward as a result of the realisation that “research in Europe suffers from three weaknesses: insufficient funding, lack of an environment to stimulate research and exploit results,

and the fragmented nature of activities and the dispersal of resources” (CORDIS 2007a). Moreover, ERA was expected to result in a greater impact of national initiatives through multilateral efforts, more efficient use of resources, and therefore added value for the member-states. The vitality of achieving a European Research Area was further emphasised at the Lisbon Summit in March 2000. There, the Heads of States and of Governments agreed that “EU shall in the next ten years be turned into the most competitive and dynamic knowledge based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion” (European Parliament 2000). Although the research policy is one of those areas which has not yet been specifically and legally coordinated by the EU, the Lisbon Meeting was an important step in the direction of such coordination (Skoie 2005:249). The endorsement of the concept and ideas of ERA, can be seen as the next step in this policy coordination effort. The European Commission’s Green Paper published on the topic states that ERA is now a major reference for research policy in Europe, although there are still vital challenges that must be overcome in order to create, implement and reach full integration also in this policy field (European Commission 2007a:2).

One of the follow ups to the Lisbon meeting, the Barcelona summit in 2002, was an effort to both widen and deepen R&D policy integration. In order to make the policy goals more concrete and also measurable, the participants at the summit proposed to increase the EU’s global research expenditures from less than 2% to 3% of GDP by 2010 (Busquin 2002). The objective especially aims at encouraging private investments. These should make up 2/3 of the 3% while the last 1/3 should be public expenditures. The 3% goal was set to further increase employment, knowledge and competence in society, as well as macro economic stability (*St.mld.* 2001-2002).

4. Norway and the 3% decision

In this chapter I will first give a short description of today's Norwegian Research system. I believe this will add to the understanding of national R&D policy history which will be described in the second paragraph. The main objective of this chapter is to show how Norway's activities in the area of R&D have changed through the decades after World War II, and how this development has resulted first in the goal of reaching the OECD average of R&D expenditures, and then in the adoption of the EU 3% goal for R&D. Furthermore, I will show what actors, arguments and mechanisms of Europeanisation have been involved in the case of the transfer of this 3% objective into national policies. The chapter's final paragraphs will deal with how the 3% goal is handled in everyday political life in Norway and a discussion of today's scenario in the field of R&D related to this goal.

4.1 Short description of the Norwegian research system

The current R&D policy in Norway is founded on the Government's White Paper on research, *Vilje til forskning*,⁷ presented in spring 2005. Main topics in this document are international cooperation in the field of R&D policy, the importance of the quality of research, innovation, and ethical considerations related to R&D (*St.mld.* 2004-2005:3-5).

The Norwegian research system can be divided into three different, although highly connected, levels: the political, the strategic and the performing level (Klitkou et al. 2005:5). The political level, the *Storting* and the ministries, sets out the main objectives for the Norwegian research and development policies. While today's Education and Research has an overall responsibility for policies concerning R&D and acts as a supervisor of the formulation, implementation, coordination and financing of these policies, each ministry has a special interest in and therefore

also a special responsibility for, research in its respective area (Hauknes and Wicken 2002:16; Klitkou et al. 2005:6). The main actor on the strategic level is the Research Council of Norway. It is entitled to fund research, formulate policy and act as a government advisor in R&D policy issues, thereby forming a link between the political and the performing level. Finally, the performing level is often divided into the industry sector, the institute sector and the higher education sector. The first sector accounts for nearly half of Norway's R&D expenditures and mostly consists of industries based on raw materials. The second sector accounts for slightly more than 40% of the total national R&D investments, while more than 25% of Norwegian research take place in the sector of higher education, mainly within universities (Klitkou et al. 2005:6-7). With this basic structure in mind I will now give an overview of the history of Norwegian R&D policy which forms the background to the three level system just described.

4.2 The history of Norwegian R&D policy

After World War II it was necessary to revive national science, technology and research activities also in Norway. There was broad political agreement that domestic R&D activities should be prioritised, and a separate research sector was established. Political parties, the Government and its institutions, major firms and enterprise, research laboratories, and individual engineers and researchers were among the actors favouring this policy. It was seen as important to participate in the international technical and scientific development to build a modern state, to increase R&D investments and efforts to create economic and welfare benefits, to enhance the sustainability of the Norwegian regions, and develop national research institutions and universities. For a small country like Norway, research cooperation across national industry sectors was important. And as seen among others in the oil and gas sector, foreign expertise was a crucial source of knowledge for the rebuilding of Norway's R&D sector. Both experience gained by individuals spending time

⁷ 'Commitment to Research' (translation from the home page of *Trend Chart. Innovation Policy in Europe*, available at: http://www.trendchart.org/tc_country_list.cfm?ID=14).

abroad during the war, as well as the direct import of foreign technology and knowledge, played a vital role (Skoie 2005:25-27,31).

The increased willingness to invest into R&D activities was among others reflected by the establishment of research councils for several different disciplines during the first two post-war decades. Through these councils, public authorities were to a larger extent included in the financing of Norwegian R&D. And although this method of granting money was a more indirect one, the results were not necessarily less effective (Skoie 2005:30). Research was also treated specifically in the Governments long-term program set up in 1953 (*St.mld.* 1953). It stressed that Norway's R&D effort should focus on areas of national interest, areas seen as important and as creating possibilities for domestic industries, and areas where research carried out in other countries was not satisfactory. However, emphasis was also put on taking advantage of international research results and innovations by adapting them to, or diffusing them into, a Norwegian context (Skoie 2005:30). This strategy of diffusion of technology, best practices and R&D gained political legitimacy from the late 1980s onwards (Hauknes and Wicken 2002:20).

A question which was on the agenda in several countries in the post-war period, was whether public R&D should be considered as a policy field demanding separate treatment and therefore ought to be coordinated within its own ministry. The alternative view favoured a decentralisation of R&D policy, making it the concern of the different sectors of society and the corresponding government ministries.⁸ In Norway, especially the decision about whether or not to establish a separate ministry for R&D, provoked fierce debate (Skoie 2005:32-33,43). The degree of independence of R&D policies in Norway has varied through the years, however the decentralised alternative has been most common solution (*ibid.*:58-60).

⁸ For a more thorough overview and description of the different strands of arguments in the debate, cf. Skoie (2005:43-60).

The late 1970s and the 1980s were characterised by increased focus upon R&D and innovation as sources of national income. This was not least because economic and technological development had stagnated in several important industries, and because Europe was perceived as lagging behind both the U.S. and Japan. Consequently, R&D expenditures in the industry sector were reassessed, and evaluation and feedback about the actual quality and social impact of national research, was requested. These issues were among others addressed by the Thulin Commission in 1980 (ibid.:32; Hauknes and Wicken 2002:11-12,14-18).

One of the largest alterations in the R&D sector in the 1990s was the merging of the five different research councils which had been established through the years, into the Research Council of Norway. The new Council became responsible for the funding of research, and was furthermore entitled to formulate policy and give advice regarding national R&D and innovation policies (Hauknes and Wicken 2002:16). There were also several reforms within the university and college sector during this decade, as well as an increase in publications of government papers and other political documents concerned with R&D (Skoie 2005:32-33). The attention of policy makers was increasingly directed towards diffusing and transferring R&D results and objectives throughout the national system of innovation. A network perspective was employed because R&D activities affected a variety of sectors both directly and through externalities, and policies in these sectors therefore had to be seen as interlinked (Hauknes and Wicken 2002:13,17). Most of these processes show the relatively large role played by the Norwegian Government and major political actors in supporting, providing and arguing in favour of augmenting expenditures for R&D (Skoie 2005:36-38,278). This is underlined by statistics revealing that although private R&D funding has increased since the mid-1970s, the public expenditures for R&D are still much larger (Hauknes and Wicken 2002:26). The Government's role can furthermore be seen as reflected in the ambitiousness of first adopting the OECD 2,3% goal, and then transferring the EU 3% objective into national R&D policies.

These numeric goals are among the factors pointing out how Norwegian R&D activities have been and still are, to a very large degree following and dependent on international developments within this policy sector. As described above, the OECD was for a very long time the major organisational actor in the field of R&D. In 2001 the member-states spent on average 2,3% of their total GDP on R&D activities. Norway was an OECD-member, however, expenditures on R&D were only 1,6% of the national GDP and Norway's effort was therefore seen as lagging behind (Cappelen et al. 2004:29). Consequently, the Norwegian Government decided to increase national investments into R&D to the OECD average by 2005. The decision was based on the White Paper *Forskning ved et tidsskille*, arguing that Norway had to "strengthen research and development in a way that brings [the country] in line with the OECD-countries making the strongest bid for it" (*St.mld.* 1998-1999:7, my translation; *St.prp.* 2000-2001:36), and furthermore, on discussions in the Norwegian Parliament in February 2000 (OECD 2002c).

However, national attention was to an increasing extent also directed towards Europe and the R&D development within the EU. This was not only a result of the Union augmenting the amount of resources devoted to R&D, but also because cooperation in general was increased between the Nordic countries and the EU. The trend was furthered by an agreement on research collaboration signed between Norway and the EU in 1987. Norwegian participation in several of the EU committees and programmes⁹ concerned with R&D has been made possible by the European Economic Area (EEA) Agreement. Furthermore, there was a more frequent focus upon European cooperation within technology, science and research in several important Norwegian Government papers,¹⁰ not least because international cooperation was seen as vital to increase the success and effect of national R&D policies. (Skoie 2005:224,254-255) "The 'Europeanisation' of Norwegian knowledge policy has until recently been most noticeable in the area of national research policy" (Gornitzka 2006:23).

⁹ Among others, Norway has participated in the EU Framework Programmes since 1994.

4.3 The adoption of the 3% target

4.3.1 Outline of the road from the OECD to the EU goal of expenditures

The OECD cooperation within the field of R&D, was one of the first Norwegian institutional bonds with the North American research area after World War II. As shown in Chapter 3, the OECD was the largest and most important organisation in this policy field for several decades. It created an international forum for discussion and development of ideas and processes of great importance to all countries by linking research, science and technological efforts to economic cooperation, growth and welfare issues. Furthermore, earlier chapters have described how several OECD reports did not only lead to the distribution of innovations, but spurred new research activities, pointed out possibilities and alternatives in the R&D area, and encouraged scientific and technological efforts in member-state countries (Lundvall and Borrás 2005). Consequently, the Norwegian decision made in the year 2000 to increase national R&D expenditures in order to reach the OECD average of 2,3%, can be seen as a response to international trends of the decade. Similar arguments are valid when considering the adoption of the EU 3% target in 2004-2005.

Several reasons for the shift in Norwegian focus from the OECD to the EU in the area of R&D policy have already been pointed out in earlier descriptions of the development of OECD and EU research and development policies. Among these, are the broader focus of the Union, including not only economic and technological but also social aspects of R&D. Furthermore, the EU's geographical proximity to Norway plays an important role, as does the country's close relation to the Union through among others the EEA Agreement and the EU's Framework Programmes for research. As Norway is a small country it has to a large extent also been necessary to concentrate its R&D focus on a few sectors and choose whether the largest

¹⁰ E.g. *St.mld.* (1988-1989), (1998-1999) and not least *St.mld.* (2004-2005).

investments should be made in the Nordic region, the EU, or in collaboration with North America. The Nordic region remains rather limited in size and scope although it has received renewed attention in the latest decades. Moreover, it is greatly influenced by the developments in European integration (Skoie 2005:260; Gornitzka 2006:24) Consequently, cooperation with the USA and Canada and especially the EU, has been more attractive for Norwegian R&D actors.

Although Norway is not an EU-member, trends in the EU's R&D sphere can be seen to influence national policies strongly (Gornitzka, forthcoming:198). Therefore, it is often considered necessary to follow the Union's development to keep track with international fluctuations and enhance the competitive advantages of Norwegian R&D actors. This is not least a consequence of the fact that European integration is being deepened and broadened. The fear that non-membership will make Norway lag behind in the R&D area thereby is increasing. Numbers portrayed by Skoie (ibid.:256,261) show that cooperation with the EU accounted for nearly 1/3 of Norwegian expenditures for international research collaboration in 2002, and these investments have not decreased since. These expenditures can largely be seen as justified because data and evaluations regarding the EU's 6th Framework Program show that the Norwegian participation approximately corresponds with the participation fee paid, and that applications with Norwegian participation have a great rate of success (CORDIS 2007b; *St.mld.* 2004-2005:19,49-50; Langfeldt 2006). In addition to the fact that these close connections to European researchers, institutions, and not least the innovations resulting from R&D activities, are useful for Norway, the close contact with the Union also furthers the general collaboration between Norway and Europe (*St.mld.* 2004-2005:49). Skoie (2005:261) points out that this can be a way for Norwegian policy actors, including the national Government, to show that although Norway wishes to remain outside the Union, there is still a great interest in keeping close contact with the EU, follow its development, and contribute to the common goals of wealth and welfare for the region.

It is in this context that the adoption of the 3% goal has to be considered. It can be seen as a national response to the very ambitious policy goals set out by the EU at the Barcelona meeting in 2002. The EU 3% goal was officially transferred into Norwegian R&D policy through the adoption of the Government White Paper on research, *Vilje til forskning*, in March 2005. This document clearly shows how Norway's focus also in the field of research, was mainly directed towards Europe and EU R&D activities (*St.mld.* 2004-2005). The internationalisation of research was furthermore established as one of the Government's main priorities. Since World War II, Norwegian R&D policies have been largely characterised by consensus among actors involved in policy decisions (Kaloudis 2004:8; Skoie 2005:265). This was also the case for the process leading to the adoption of the EU 3% target (*St.mld.* 2004-2005). However, although the goal itself was largely agreed upon by the actors involved, the reasoning behind their arguments in favour of it varied, as will be discussed in the following. The actors focused on in this discussion will be the Norwegian Government, and relevant ministries, the Confederation of Norwegian Enterprise (NHO) and the Research Council of Norway. Because as Skoie argues “[t]he initiative for action has mainly been with the central administration and researchers and administrative organs in the area of R&D” (2005:265, my translation).

4.3.2 Actors and arguments involved in the diffusion and adoption of the 3% goal

In this section I will consider the arguments of the actors pointed out above and discuss what tactics and claims they used in order to make their voices heard in the policy debate. Through all of this discussion, the different actors' arguments are combined with the theoretical framework based on theories of diffusion and Europeanisation sketched out above.

The Norwegian Government and the Ministries

The Government White Paper on research, *Vilje til forskning*, published in 2005 stated that

to lift Norway to the position of a leading research nation the Government [among other things] wants to go in for that the joint research effort increases to 3% of GDP within 2010, where of 1% of GDP is to come from public sources.

(St.mtd. 2004-2005:17, my translation)

Furthermore, it was argued that Norway was among the countries which had increased its public R&D expenditures the most during the last five years as well as made important policy decisions enhancing R&D activities. Nevertheless, Norway was still seen as facing challenges as the country was "still a considerable distance below OECD-average with regard to joint research effort as share of GDP" (*ibid.*:18-19, my translation).

As to the 3% goal, the White Paper discussed several reasons why Norwegian R&D policies ought to be ambitious. According to the Paper, increasing R&D would further an open and enlightened public debate and lead to economic growth both for industry and enterprise, and society as a whole. Several indicators also pointed out that knowledge gained through R&D activities could solve main societal challenges concerning e.g. social security, environmental issues and unemployment. The Government furthermore argued that "the need to contribute to and utilise other countries' research activity is an important argument to let the national research effort follow the development in other countries", and therefore the current goal for Norwegian R&D activities should take the international development into consideration (*ibid.*:20-21, my translation). Regarding future efforts and goals, the following was emphasised by the Government: It was not seen as advisable to undertake major changes in present policy objectives. "The increasing internationalisation of research was to have real consequences for national priorities" (*ibid.*:24, my translation). Moreover, the Government regarded it as crucial to devote more resources to R&D activities in order to secure Norway's participation in the next EU Framework Programme, as the former ones had proven to be of vital national importance (*ibid.*). "The realisation of priorities and the following up of the resource target are the Government's main strategy to raise Norway to a leading research nation" and the goal "is to be

followed up by concrete means and realised through dialogue with research environments, social life as well as industry and commerce”. However, while “research environments have optimal conditions to give priority among concrete projects [...], the superior decision on priorities and joint evaluation of national needs and precedences should be taken on the political level” (ibid.:30-31, my translation).

As already pointed out, the politicians and employees in the ministries also have great influence on national R&D policies (Skoie 2005:265,278-279). More specifically, as argued by Kaloudis (2004:8), “the Ministry of Trade and Industry, and in particular, the Ministry of Research and Education under the leadership of the energetic minister Kristin Clemet, has as one of their primary policy goals the need to enhance innovation and R&D investments”. The following paragraphs will therefore briefly discuss how the 3% target was assessed by the ministries most concerned with R&D policies, the Ministry of Trade and Industry, the Ministry of Finance, and the Ministry of Education and Research (*St.prp.* 2005-2006c), and major policy actors within these.

The Ministry of Trade and Industry

Of the 3% increase in R&D expenditures set out as the new goal for national R&D policy, 2% are to derive from investments made by private firms and enterprises. This was and still is considered the most challenging part of the 3% objective (*NOU*¹¹ 2005). The challenge was recognised by the Ministry of Trade and Industry which is responsible for the national administration of the Lisbon Strategy, and has published several reports concerning Norway’s fulfilment of the Strategy.¹² The ministry argued that “a central challenge linked to this ambition

¹¹ *NOU, Norsk Offentlig Utredning*, Official Norwegian Reports. These reports concern different aspects of society and are publications of the result from government or ministry working groups and committees.

¹² Cf. among others the reports from the Ministry of Trade and Industry (*Nærings- og handelsdepartementet*) from 2004 and 2006. These reports recognise the need for increasing private investments into R&D and, furthermore, show the shift from the OECD objective to the EU 3% goal of R&D expenditures.

target, is to trigger off and to stimulate business' own R&D-effort" (*St.prp.*¹³ 2005-2006a:19, my translation). Larger public spending on research was considered necessary in order to trigger private firms and enterprise to increase R&D expenditures (*ibid.*:30). Also other means planned to increase R&D investments from the private industry sector were pointed out (*ibid.*; Yrvin 2006). Therefore, although the 3% goal was a challenging one in a national context with relatively small private R&D investments and a largely resource-based industrial structure, it was supported by this ministry. As stated already in 2004, "[i]nnovation is an important motive force behind business' competitive ability and profitability, being a premise for the formation of values. An economy targeted R&D is one main component of a well acting innovation policy" (*St.prp.* 2004-2005:21-22, my translation).

The Ministry of Finance

The Ministry of Finance's main reaction related to the adoption of the 3% goal was to suggest larger public R&D expenditures, as well as new measures for increasing private R&D investments (*St.prp.* 2005-2006a:118). This indicates that the ministry had a favourable attitude towards the objective to increase Norwegian R&D. When the 3% goal was adopted in 2005, the Ministry of Finance was headed by Per Kristian Foss. He claims that the adoption of the 3% target into Norwegian R&D policy was a result of "ambitions and opinions shared by the political parties in Government at the time and the Norwegian Labour Party/the Socialist Left Party, that the Norwegian research effort had to be increased". Furthermore, he claims that it was "a broad political wish that also Norway shall follow up the targets of competitive EU countries in the Lisbon strategy. Also, the influence from organisations as NHO and LO has been conducive" (Foss 2007, my translation).

¹³ *St.prp.*, *Stortingsproposisjon*, Proposition to the Parliament (*Storting*). These propositions are used when the Government asks the *Storting* to make a decision that is not related to a law.

The Ministry of Education and Research

As the Ministry of Education and Research is the one most directly concerned with Norwegian R&D efforts and the one with the largest expenditures for research activities (*St.prp.* 2005-2006c:30-60), it can be considered the most important ministry for the process of transferring the EU 3% policy target into national policies. The vision of Norway as one of the world's leading nations in the area of research and development figures prominently in a variety of documents¹⁴ and is also used to justify the ambitious 3% objective. This ministry stressed the need for increasing private business R&D investments (*St.prp.* 2005-2006b:215), and furthermore supported a long-term plan for national R&D activities from 2006-2010, which aims at enhancing the public research effort (*ibid.*:221). This plan, promoted by the Parliament and adopted in Government, indicates that broad political support was given to increasing national R&D expenditures to 3% of GDP by 2010. The 3% target, its broad political foundation, and its great importance for Norway, has also been emphasised several times since 2005, not least in the present Government's Soria Moria-Declaration and by the present Minister of Education and Research (2005:49; Djupedal 2006). Also Espen Solberg (2007), senior advisor in the ministry's research department, underlines that both public and private R&D actors were in favour of adopting the 3% objective.

In 2005, when the 3% goal was transferred into Norwegian R&D policy, the Ministry of Education and Research was headed by Kristin Clemet. When asked about the decision to adopt the EU policy goal she answered:

I believe the process to have been quite simple: We saw no good reason for Norway not to adopt the same goal as the EU member-states, given the EU's significance for Norway both economically and in the area of research. In addition, we thought there were several reasons in favour of increasing the Norwegian R&D efforts: Considerations relating to competitiveness, welfare policy, our global responsibility etc. We also

¹⁴ Cf. among others *St.prp.* (2005-2006a, b, c), *St.mld.* (2004-2005), chapter 5 in *St.mld.* (2003-2004), Clemet (2007) and Solberg (2007).

believed that an ambitious goal would help the politicians prioritise those issues they said they wanted to give priority to, and contribute to the necessary structural changes in the area of trade and industry.

(Clemet 2007, my translation)

The main arguments of the Norwegian Government, the ministries and central actors within these, related to the adoption of the 3% goal can be understood from an interest-based perspective. As shown, it was claimed that the realisation of the ambitious 3% objective would not only increase private R&D investments, contribute to making Norway one of the world's leading countries in the area of R&D, enhance the possibilities to make use of other countries research efforts and results, and increase income of firms and enterprise, but also create positive externalities beneficial to the society as a whole. These are arguments based on Norwegian national interests. However, traces of rule-based arguments can also be found in the Government debate concerning the 3% goal. The ambitiousness of the EU objective did not represent something totally new, but can be regarded as an extension of the OECD goal already adopted into Norwegian R&D policies. Consequently, the transition between these targets did not represent a great shift in rules and institutions and can be seen to indicate an adaptation to common European R&D practices and institutions. By increasing the Norwegian R&D effort the 3% objective would also contribute to greater national involvement in the international system of research activities such as the EU's Framework Programmes. Moreover, an idea-based perspective can be seen as underlying the argument that there was no reason for Norway not to adopt the same R&D policy goal as most other European countries. Norway is a part of Europe and already cooperates closely with the EU in many areas. The arguments of the government actors indicate that it was seen as only natural that Norway shared the Union's understandings and ideas about what policy objectives should be pursued.

The Confederation of Norwegian Enterprise (*NHO*)

The Confederation of Norwegian Enterprise was clearly in favour of adopting the 3% R&D objective into Norwegian policy. They were conscious of the development of EU governance and that the use of ‘soft power’ methods, such as the OMC already described, had increased (*NHO* 2000:3). Consequently, Norway and other non-members did not have such easy access to decision-making processes through the EEA Agreement as they might have had before. For the *NHO*, close Norwegian follow-up of and contribution to the Lisbon strategy, was important to increase national involvement in EU developments for Norwegian firms and enterprise (*ibid.*). The *NHO* argued that “Norway has most to gain from a voluntary adaptation to EU’s activities in fields where Norwegian interests and compatibility are involved” and that Norway had not only to “create parallel national programs with similar directives and references, but establish identical indicators for concrete comparisons with the 15 EU-countries on fields defined by the Lisbon-strategy” (*ibid.*, my translation). Furthermore the Confederation stated that

[N]orwegian R&D contribution must be brought up to the level of our leading competitor countries. It is EU’s goal that within 2010 3% of GDP shall be used on R&D, industry and commerce being the source of 2/3 of the growth. We should not have lower ambitions than our competitors within EU.

(*NHO* 2004:44, my translation)

And also, “Norway has to follow up [the Lisbon-process] closely, and involve itself where this is possible. We have to share its ambitions” (*ibid.*:51, my translation). According to the Ministry of Education and Research, conversations were taking place between the ministry and central actors from Norwegian private businesses and their organisations in advance of the decision to adopt the 3% target. These concerned the goals for Norwegian R&D policies. Here, the industry actors expressed that the 3% goal was ambitious but suitable for Norway (Solberg 2007).

The arguments of the *NHO* can be explained by using an interest-based perspective. Arguments like “Norway has the most to gain from adapting to EU’s activities in areas concerning national

interests”, “Norwegian R&D efforts have to be increased to reach the levels of our main competitors”, and “we have to be just as ambitious as the EU” (*NHO* 2000:3, my translation), underline this. Furthermore, they indicate that the *NHO* as the largest Norwegian organisation for enterprise interests, was concerned by the prospects of Norwegian industries lagging behind European firms because of a lack of R&D investments. The fact that enterprise’s expenditures for R&D had increased steadily from 1970-2001, but then dropped from 51,5% in 2001 to 46% in 2005 (*NIFU STEP* 2005b), may have added to these worries. According to the 3% goal, 1/3 of the increased research expenditures should result from public, and 2/3 from private investments. As the R&D effort of Norwegian private firms is relatively low compared to other European countries, the goal will demand a substantial strengthening of privately induced research. This is especially a challenge for countries with a resource-based industrial structure like Norway’s (Skoie 2005:231-232; European Commission 2006a:18). *NHO*-members’ interest in enhancing Norwegian industry’s competitiveness and thereby maximise profits and secure long-term economic growth can be seen as underlining the focus on goals, preferences and rational, strategic calculations of benefits in the Confederation’s argumentation.

As pointed out above, the *NHO* stressed the need for Norway to be as ambitious as the EU. This argument also fits into an idea-based perspective, because it can be said to indicate how Norway’s imitation of the 3% goal is the result of a tendency to let political surroundings determine the policies adopted. The *NHO* claims that it is necessary to adopt not only similar but identical indicators to compare Norway with the EU countries in their effort to fulfil the Lisbon objectives. Consequently, EU policies which are seen as beneficial and as the right policy instruments also for the national context, will be imitated.

Finally, the *NHO*’s arguments can be claimed to imply an effort to enhance systemic cooperation and networking, and the development of common institutions. The relationship between Norway

and the EU is considered to be largely one-way, from the Union to the national level. Consequently, the Norwegian follow-up of the Lisbon strategy can be regarded as a means to enhance national involvement in, and thereby also influence upon, the institutional environment and the EU network of policy actors. The focus upon the EU as a crucial stakeholder in the European policy sphere, has made the *NHO* deem Norwegian participation in this system, through among others adopting the 3% goal, necessary. Furthermore, participation can be seen as vital considering the position the *NHO* wishes to create for Norway in the international society.

The Research Council of Norway (RCN)

In May 2004 the Research Council of Norway provided its recommendations and inputs for the forthcoming Government White Paper on research, *Vilje til forskning*. Based on assessments of the major societal benefits, the RCN argued that the Norwegian R&D effort had to be increased. The private industry sector was seen as crucial in the process, as its R&D effort was lagging most behind both when compared to other Nordic and OECD countries. Also the EU was seen as a role model because of its vigorous debate about R&D policies and its very ambitious goals for the R&D effort. And although the RCN expressed that “[a]s to Norway, the OECD-goal is, nevertheless, ambitious. An increase to an average for OECD-countries, measured as R&D in percentage of GDP, will render possible the realisation of many ambitions on the field of Norwegian research and the formation of values”, it continued by saying that “the OECD-goal is a minimum goal” (*Norges Forskningsråd*¹⁵ 2004:3, my translation). In a comment made just after the White Paper on research was published, the RCN stated that the 3% goal is a very ambitious one, but nevertheless “a correct and attainable goal” (*ibid.* 2005a:1, my translation). However, an increase in public expenditures for research was seen as crucial in order to reach the goal. According to the RCN it was necessary to

as quick as possible establish a concrete and binding economic stepping up schedule which the granting authorities, expert environments and enterprises are able to adjust their efforts to. Should this essential condition fail now, good and right ambitions will cause more harm than profit.

(Stene-Larsen and Hallén 2005, my translation)

The RCN saw a need of increasing the national R&D effort and therefore of having ambitious R&D goals. At the same time, however it emphasised the necessity of realistic policy objectives. It recognised the importance of coordinating Norwegian R&D policy targets with the targets of large international organisations as the OECD and the EU. Consequently, the argumentation of the RCN is in line with idea-based perspectives of Europeanisation. As the Council pointed out how other OECD and EU countries as well as other Nordic countries increased their R&D effort relative to Norway, it expressed a wish of learning from and cooperating with, these other nations. Furthermore, this signalled how the RCN shared several of the ideas underlying European R&D policies, and to a great extent had adapted to the common European understanding of policies in this area.

Also, the RCN's argumentation can be regarded as based upon the perspective underlining the importance of networks, institutions and common rules for policy formation. The Council claimed that the 3% goal suited the Norwegian context well. At the same time, however, it stressed the importance of coordinating the national economic effort with that of the different actors in the R&D policy sector in order to realise the goal. This shows how national networks of actors and their linkages to larger international systems of R&D actors, were considered crucial when the RCN favoured the adoption of the 3% target. The RCN's claims can also be seen as rule-based, as common institutions and rules are vital parts of such networks and systems.

As the RCN has a role as national research policy adviser, its opinions and recommendations are expected to represent and favour Norwegian R&D interests. However, in the debate concerning

¹⁵ *Norges Forskningsråd*, Research Council of Norway (RCN)

the 3% goal, the traits of interest-based claims were less visible than the idea- and rule-based arguments described above. At the same time as the Council wanted to set out ambitious objectives for the national R&D policy, it is likely to have favoured realistic goals, as its effort to increase domestic R&D efforts otherwise would risk criticism.

4.4 Living with the 3% target – a discussion

4.4.1 The 3% target in a Norwegian context

What has the development in Norwegian R&D policies been since the adoption of the 3% target in 2005? In 2005 Norwegian R&D expenditures were at their lowest level since 1985 and only constituted 1,53% of GDP (*NIFU STEP* 2006:3). Consequently, Norway was far from fulfilling its goal of reaching OECD average expenditures for R&D of 2,3%. And although official reports on the national budgets for 2006 and 2007 showed that this number was increasing, estimations concluded that the augmentation would not be enough to reach the 3% objective by 2010 (*ibid.* 2005, 2006). According to *NIFU STEP*, investments would have to be more than doubled if the EU goal was to be attained (*ibid.* 2006:3). The report for 2006 states that “the new goal for growth is different from the previous one by, among others, being even more ambitious” (*ibid.* 2005:4). Several other reports and research papers characterise the 3% target as “impossible” to reach (*ibid.* 2006:3), “unrealisable in the short term” (*Norges Forskningsråd* 2007), “arbitrary” (Maurseth 2006:4), and “totally unrealistic” (European Commission 2006a). Also, Skoie argues that the EU has itself given up on its goals for 2010 (2005:252). Consequently, based both on the numeric estimations, arguments made by central actors in the R&D policy field, and structural conditions, it can be claimed that the 3% objective does not fit into the Norwegian context (*NIFU STEP* 2004a:3).

There are several reasons why the goal can be difficult to realise in Norway. The most important is considered to be Norway's large and continuously growing GDP (ibid. 2006:3, European Commission 2006a:18). As GDP grows, the amount of money which has to be spent on R&D in order to reach the 3% target also increases. Norway is a small country with a limited amount of firms, industries, research institutions and other areas where successfully and usefully to invest into R&D. Expenditures equal to 3% of GDP can therefore be considered too high. This, and the fact that Norwegian industry to a large extent is considered to be low R&D intensive, makes it especially difficult to reach the objective (*St.mld.* 2004-2005:22). Regarding the Norwegian industrial structure, Smith (2005:155) points to the problem that the R&D intensity of a country to a large extent depends on its industrial mix and whether its industry is high- or low-tech. If the ratio of business expenditure on R&D to the total production (BERD/GDP) in an industry in one country is high, this does not necessarily show that this industry is more R&D intensive than another industry in another country. Rather it may reflect the fact that industrial structures differ across countries (ibid.; Fagerberg 2004:9). The Norwegian economy is to a great extent depending on what is often considered low-tech industries in the oil and gas sector, as well as a large number of small and medium sized enterprises (SMEs) (European Commission 2006a:5-6; Castellacci 2007:16). Consequently, "Norwegian businesslife is dominated by business which in all countries has a relatively low content of R&D related to production value" (Skoie 2005:227-228). And it will be difficult to augment R&D expenditures measured as a share of GDP as long as "as one is content to expand existing trades" (ibid.). Furthermore, "the level of education and competence in the Norwegian workforce is higher than in other countries" (Maurseth 2006:5, my translation). This is also the case for those workers who are not engaged in R&D activities. Therefore, the ability to innovate and make use of new technologies is enhanced. "Consequently, important considerations forming the basic reason for high R&D efforts, are likely to be taken care of in other ways in Norway" (ibid., my translation). According to these arguments, "[f]irst and foremost a significant drop in prices in the petroleum sector and/or something close to a

collapse in Norwegian economy in general, would be able to efficiently reverse the negative trend” and lead to the fulfilment of the 3% target (*NIFU STEP* 2006:4, my translation).

Consequently, a paradox is underlying the main reason why Norway lags behind regarding the 3% objective: “Norway’s weak results as to the GDP-target [are motivated by] Norway’s success in what the EU does not succeed with and what is the very aim of the Lisbon- and Barcelona-goals: high and stable economic growth” (*ibid.*, my translation). Moreover, it is said that “there is no reason to believe that Norwegian industry – as it is today – need such levels of R&D investments even in the long run” (European Commission 2006a:18). Nevertheless, as has been shown by describing actors and discussing arguments as well as central R&D related documents involved in the adoption of the 3% target into Norwegian R&D policy, it can be claimed that there is both a wish for and a need to increase Norway’s R&D expenditures. What can be questioned, however, is the argument that this increase should correspond to 3% of GDP. Such growth-related goals have “given unstable, approximate and evidently unrealistic goal/figures” and furthermore, contributed to giving Norwegian R&D policies a one-sided focus upon growth alone (*NIFU STEP* 2006:4, my translation; Skoie 2005:282-283). This can lead to a situation where no concrete tasks are outlined for future R&D efforts and investments, which can both be seen as a situation characterised by indifference and not least, a contradiction to the official policy document on R&D (Skoie *ibid.*; *St.mld.* 2004-2005). According to Fagerberg (2004:8) it is important to view innovation in the context of the wider set of factors influencing it, and not exclusively as a result of the amount of R&D investment.

These arguments were reinforced by the debate arising in the wake of the OECD report ‘Economic Survey of Norway 2007’, published in January (Castellacci 2007; Hauknes 2007; Moen 2007; Kallerud 2007). This type of report, dealing with OECD assessments and recommendations on the main economic challenges of each member-state, is published every

1½-2 years. However, the report from 2007 was introduced to a national context where the importance of factors such as innovativeness, R&D effort and economic performance and not least the mechanisms underlying them, were stressed more than ever. Consequently, the conclusions of the OECD turned out to be rather controversial. It can be said to rightly point out that Norwegian investments into R&D are relatively small compared to other countries, and that Norwegian private firms and enterprises do not innovate as much as their European counterparts. Consequently, Norway does not fit into any known theoretical framework about innovation and R&D processes and policies. However, the report does give any alternative interpretations to answer the 'Norwegian puzzle' (ibid.; OECD 2007). Contrary to the OECD report, the fourth Community Innovation Survey (CIS4) published at more or less the same time by the EU, shows a quite different story where the Norwegian high-technology industries are among Europe's most innovative (Castellacci 2007). This can be said to underline both how different measures of innovativeness as well as varying industrial structures across countries can influence on statistics and reports concerned with R&D investments and activities. Furthermore, the discussion indicates that it can be useful if not to replace then at least supplement, quantitative measures of R&D efforts with qualitative ones.

4.4.2 Holding on to the 3% target

Why, if it can be argued that the 3% goal will be both very difficult to reach and that its realisation will not necessarily be desirable in a Norwegian context, did it nevertheless become a national R&D policy goal? Several arguments used by a variety of actors have already been discussed. These were shown as mainly falling into three categories: interest-based, rule-based and idea-based. In the following I will outline what can be seen as the main general arguments for the transfer of the 3% objective from the EU to the Norwegian policy level. Just as for the arguments of the actors above, I will divide these claims into three theoretical categories. This will not only contribute to the understanding of the factors underlying the different arguments,

but also tie these arguments to the theoretical framework of this thesis as well as to the broader theoretical perspectives in the field of Science and Technology Studies and political science reviewed in Chapter two.

Interest-based arguments

As stated by the European Commission in their annual innovation policy report on Norway,

there might be political reasons for choosing [..the 3%..] objective, even if it is unrealistic. [...] Even if Norway is not a member of EU it is hard for a rich country like this one to demonstrate weaker ambitions than the EU average.

(2006:18)

In line with this claim, the EU R&D policy goal can be argued to have a status-enhancing effect (Hall 2005:469-70). Because, “once a critical mass of states ha[ve] adopted a [new and innovative] policy, it be[comes] a badge of legitimacy or credibility to have one” (Walker 1969:890). On the one hand, therefore, the transfer of the 3% goal can be seen as beneficial for Norwegian science and technology development. Furthermore, however, it can be said to increase Norway’s political capital and leverage internationally by showing the Norwegian interest in the progress of Europe as a whole. Therefore, while the 3% goal has been characterised as unattainable and an insufficient solution to the perceived problem of low Norwegian R&D investments, it can nevertheless be seen as an example of solution-driven diffusion and consequently be an answer to a political challenge. It shows how actors in the Norwegian R&D sector are willing to commit to ambitious policy goals, and this commitment to increase Norwegian R&D efforts can turn out to be more important than actually reaching the 3% goal. Also the domestic legitimacy of the actors favouring such ambitious and popular targets can be enhanced from the adoption of the 3% target. It is argued that “the motivation to innovate stems from the desire by politicians to win elections, and whether they will adopt popular or unpopular innovations depends on their degree of electoral security” (Black 2005b:26). Consequently, a policy decision to innovate can

depend on how close the time of adoption is to the next political election (ibid.; Walker 1969; Mintrom 1997). As the Government White Paper establishing the 3% objective as a Norwegian policy goal was published in March 2005 and the following Parliamentary elections were in September 2005, this claim can be considered valid also in the Norwegian context. However, this may also imply that the issue of internationalisation and Europeanisation of research policies, and thereby the adoption of the 3% goal, is merely an objective for lip service (Meulen 2002:262). This can also be taken as an example of the distinction often made between words and deeds or the loose coupling often found between talk and action.¹⁶ As pointed out by March (1994:196) “the act of supporting a policy with appropriate symbolic meaning can be more important to decision makers than its adoption, and its adoption can be more important than its implementation”. Consequently, adoption does not necessarily lead to implementation and policy change, but rather can be only superficial and political propaganda (Black 2005b:28). This also shows how freely pursued goals, as the 3% target, will need commitment from the actors adopting them in order to be reached (Citi and Rhodes 2007:12-13).

Rule-based arguments

In several policy areas, including research policy, the EU is the most relevant international institution in Norway’s political environment and has great influence on Norwegian policy decisions (Claes and Tranøy 1999:1-14). It is claimed that Norwegian participation in the EU research arena is “in the process of acquiring a rulelike status” (Gornitzka and Langfeldt, forthcoming:196). Norwegian policy actors considering the Union as a role model can therefore be seen as arguing in favour of keeping up with EU standards and member-state requirements (Black 2005b:28). Norway’s geographically rather peripheral position combined with the fact that the country is not an EU-member, can be said to imply also political periphery (Gornitzka

¹⁶ See among others March (1994:195-198), Elster (1989:37-38), or Gornitzka, Kogan and Amaral (2005:7-9) for an elaboration on this and related issues.

2006:22-23). As a result, it becomes important to follow international rules and common practices of the European R&D community as well as show the ability to contribute to the common cause (Gornitzka and Langfeldt, forthcoming:196). Moreover, it is claimed that a higher degree of integration will ease the innovation process and enhance the sustainability of competitive advantages (Hall 2005:118-121). Political actors in favour of cooperating closely with the Union will therefore focus on how adopting EU policies increases Norwegian innovativeness, competitiveness and its connectedness to the European continent, as shown for the different actors in the discussion above. Furthermore, actors are likely to use the Lisbon Strategy as an acknowledged, international point of reference. In this context, the 3% goal can be seen as an international indicator of what constitutes an appropriate R&D expenditure level. The effect which the 3% target has as a mobilising factor rather than just being a quantitative target for research policy, is stressed by among others the Scientific and Technical Research Committee of the EU (CREST 2006). Also, the Lisbon Strategy has a clear and official position in the Norwegian R&D policy community as it stands for a specific political development which to a great extent fits the Norwegian policy structure and Norway's national goals (Gornitzka 2006:29,35). In addition, the fact that Norway is already extensively involved in the Union's general policy coordination and shaped by its actions and regulations, can explain the adaptation taking place.

The adaptational pressure resulting among others from real and perceived differences across countries, will be important for processes of policy transfer (Trondal 2002:337). In the case of the 3% target, the perceived differences between Norway's goal of reaching the OECD average expenditures for R&D and the EU objective, are likely to have been large enough to foster adaptation. At the same time, however, it can be argued that the compatibility between the two numerical policy goals eased the adaptation process. Furthermore, the already mentioned argument made by Nelson and Winter's (1982) regarding the tendency for organisations to search

for new practices in the vicinity of present practices, and the importance of both continuity and creativity for the innovation process, can be seen as relevant for this policy goal transition. The OECD goal can be said to have made the area of R&D policy accustomed with high, and arguably also unrealistic, quantified targets. And while building on the OECD target represents continuity, the EU 3% objective can be regarded as the novel element in the innovation process.

Idea-based arguments

It has been argued that the Bologna Declaration on higher education cooperation in Europe, simplified the choice for Norwegian actors regarding which practices to adopt in the policy field of education (Gornitzka 2006:29). A similar trend, which can be regarded as based upon common understandings, processes of learning and transfer of ideas, can be seen in relation to the Lisbon Strategy and the adoption of the 3% target. The possibility for Norway to participate in and have access to, policy arenas within the EU can be seen as very important as the opposite “would entail not only a lost opportunity for promoting a national interest, but also being cut off from circulation of ideas and information” (Gornitzka and Langfeldt, forthcoming:198). Norway’s commitment to the EEA Agreement, to developing the ERA, as well as participation in the EU’s Framework Programmes can be seen in light of this argument. Moreover, it underlines the common understanding of R&D policy objectives between the EU and Norway shown in the Norwegian policy-making community, even across party political dividing lines (Skoie 2005:259). The linkage between the development of the ERA and the 3% target can be seen as strengthening the legitimacy of adopting such a policy goal.

As already mentioned and as described by among others Gornitzka and Langfeldt (forthcoming:171-172), idea-based adaptation may involve the transfer of policy objectives from the international to the national environment. Such transfer does, however, not necessarily include the instruments needed to attain the adopted goal (ibid.). In the context of Norway’s

adoption of the 3% objective, these instruments can be said to involve the national industrial structure and the political will needed to sufficiently increase R&D expenditures. The lack of these factors can, consequently, be used to explain the Norwegian difficulties of attaining the goal. It is also necessary to keep in mind that for the EU the 3% target is a goal for the Union as a whole. Consequently, several of the member-states have opted for national R&D expenditure targets which are substantially lower, but arguably more realistic, than 3%. The reason why Norway has, nevertheless, adopted the 3% objective can be related to those countries, including among others the Nordic EU member-states, that have actually endorsed the Lisbon target (European Commission 2006b). As these are countries with political, economic and social structures similar to Norway's, they can be seen as those most relevant for comparison. The adoption of the 3% objective can therefore be said to express a Norwegian wish to 'be like the others' in the field of R&D policy, the others here being the EU member-states.

Furthermore, idea-based arguments favouring the 3% target can be based on considerations of the 'goodness of fit'. As already mentioned, according to the 'compliance approach' and literature on organisational and institutional innovation, a low 'goodness of fit' can result in learning and imitation (Radaelli 2003:44-46, Nedergaard 2006:424-425). "If countries adopting EU models provide a critical mass, the remaining countries can feel the force of attraction of the EU 'centre of gravity' and join in" (Radaelli 2003:42). The degree of imitation and learning, its exact form and thereby the impact of Europeanisation will, however depend largely on institutional factors which can differ greatly from country to country. As a result, the 'compliance approach' usually distinguishes between the Europeanisation happening through enforcement and that happening because of management decisions. An example can be an EU member-state as opposed to a country which is not a Union member. A great deal of the decisions made at the EU government level result in regulations which are mandatory for the member-states to implement. This type of Europeanisation therefore happens through enforcement. On the other hand, certain non-

member countries, such as Norway, have a tendency to adopt several EU laws and regulations without being legally obliged to do so. This type of adaptation can be seen as a consequence of management decisions taken because they are believed to ease the management of processes in different policy areas. Such decisions are especially easy to make in cases where ‘the goodness of fit’ is high, as it can be argued to have been for adoption of the 3% target. (ibid.: 44-46)

5. Concluding remarks

This thesis has investigated the question of why and how the objective of the EU's Lisbon Strategy to increase R&D expenditures to 3% of GDP by 2010, has become a Norwegian policy goal. It does so by drawing on literature about diffusion and organisational and systemic aspects of innovation from Science and Technology Studies, and theories on regulatory and policy innovation and Europeanisation from Political Science. Furthermore, actors and arguments involved in this process of policy adoption have been analysed. This chapter resumes the thesis' main findings, gives a short account of its theoretical implications and discusses its relevance for future research.

In short, this case study can be said to indicate that the adoption of the 3% target into Norwegian R&D policy was indeed a result of policy diffusion. Furthermore, it points out how the identification of actors' interest-based, idea-based, and rule-based arguments can be vital for understanding the process leading to the transfer of this EU policy goal.

5.1 Main findings

As shown in Chapter three, the establishing of a separate policy field for R&D was a result of among others increased focus upon and recognition of research, innovation and diffusion as important driving forces not only for development within the R&D sector, but also for economic, societal and political processes. More attention was, therefore, directed towards R&D also in international organisations like the OECD and the EU. Furthermore, national R&D policies were clearly shaped by and depending on, developments taking place within these organisations. As described and discussed in the first parts of Chapter four, Norwegian R&D policies were no exception. Consequently, the adoption of the 3% objective can be seen as a result of Europeanisation, that is, policy diffusion from the EU to the national policy sphere.

In order to answer the question of how and why the 3% target became a Norwegian policy objective, it was also important to identify and analyse central actors and arguments involved in the adoption process. This was done in the latter parts of Chapter four. Drawing on the broad theoretical foundation and the combination of theories established in Chapter two, I found the actors' claims to fall into three categories according to the motivating factors underlying them. These categories consist of interest-based, idea-based, and rule-based arguments which can all be seen as highly related to, and providing increased insight into, Europeanisation of national policies and the adoption of the 3% objective. Furthermore, this study shows how a policy goal such as the 3% target can be said to benefit and therefore be favoured by different interest groups, not only those receiving the direct advantages of increased R&D expenditures.

In the last part of Chapter four the development in Norwegian R&D policies after the adoption of the 3% target, was discussed. Factors like the size of Norwegian GDP and the national industrial structure were pointed out as reasons for why this policy goal has been difficult to reach in a Norwegian context. Moreover, arguments for why Norwegian R&D actors have chosen to hold on to the EU goal were pointed out. When these were related to the established theoretical frame from Chapter two, also these arguments were seen to fall into the categories of interest-based, idea-based and rule-based claims. This can be seen as increasing further the explanatory power of my combination of theories.

5.2 Some theoretical implications

The study of the adoption of the 3% objective into Norwegian R&D policies shows how it is possible to augment the explanatory power of theory by combining theoretical aspects from different fields of study. In this case, the combination of approaches to diffusion and innovation drawn from STS and Political Science outlined in Chapter two, can be said to imply increased understanding of how and why policy diffusion from the EU to the national level takes place.

This is not least because theories from both disciplines can be seen to point out interest-, idea- and rule-based mechanisms and motivating factors at work in transferring the 3% target. Furthermore, the extensive review of literature resulting in a broad theoretical foundation for this thesis, shows how actors' arguments can be analysed and understood in the light of a variety of theoretical perspectives.

There are some weaknesses to be considered concerning the relevance of this study's findings. First, it can be noted that the division of arguments involved in the adoption of the 3% target into interest-based, idea-based, and rule-based claims, was not a straightforward one. Several motivating factors can be seen as underlying the same argument, and consequently the dividing lines between the three categories to some extent became blurred. Also, the ability to generalise from a single case study, which was briefly discussed in part 2.4.4 on limitations of this research, should be regarded. The adoption of the 3% target was found to be an example of policy diffusion through Europeanisation, and the theoretical combination and categories of interest-based, idea-based and rule-based arguments were relevant in this case. However, these explanations will not necessarily be valid for other studies, although their topic may be related.

Furthermore, while the combination of diffusion theories contributed to the understanding of the adoption of the 3% objective, the theories' explanatory power can be seen as reduced when trying to assess the implementation, or lack of implementation, of this R&D policy goal. As pointed out in the first part of Chapter four, the 3% objective is often regarded as unsuitable for the Norwegian domestic context. Clearly, therefore, other mechanisms were at work when adopting what can be seen as 'the talk', than are needed to be able to 'walk the walk'. Consequently, alternative theoretical perspectives, such as that of policy translation, can be considered more apt for analysing the processes taking place after the adoption of the EU goal.

Policy translation theory takes into account the changes imposed on policies when they meet the national R&D environment and are translated in order to fit in.

5.3 Scenarios for future research

The application of policy translation theory to the case of implementation of the 3% target, can therefore be seen as one possibility for further research. Case studies of R&D policies in other countries which have adopted the 3% target, as well as comparative analysis involving several countries, could also be of interest. Such studies may contribute to knowledge both about policy diffusion and the implications thereof. It could also be interesting to conduct a study similar to this case study of the 3% objective, in later years to address the degree to which the target was actually attained and the processes underlying this development.

This case study of the adoption of the EU R&D policy goal also shows how policies can be used to attain several goals, not only those stated explicitly. While the 3% target has not been reached and is said to be both unrealistic and unrealisable, it has nevertheless created debate and increased focus upon R&D policies, actors and arguments. This renewed focus may not only direct attention towards the needs to increase R&D expenditures, but furthermore enhance the interest in processes of policy diffusion through Europeanisation and how they contribute to policy innovation and formation.

Literature

- Andersen, S. S. (2003) *Case-studier og generalisering. Forskningsstrategi og design*, Bergen: Fagbokforlaget.
- Anderson, J. J. (2003) 'Globalization and Europeanization: A Conceptual and Theoretical Overview', in K. Dyson and K. Goetz (eds) *Germany, Europe and the Politics of Constraint*, Oxford: Oxford University Press and British Academy.
- Bell, D. (1999) 'The Dimensions of Knowledge and Technology: The New Class Structure of Post-Industrial Society', in D. Bell (ed.) *The Coming of Post-Industrial Society. A Venture in Social forecasting*, Special Anniversary Edition, New York: Basic Books.
- Bennett, C. J. (1991) 'Review article: what is policy convergence and what causes it?', *British Journal of Political Science*, 21: 215-233.
- Bennett, C. J. (1997) 'Understanding ripple effects: the cross national adoption of policy instruments for bureaucratic accountability', *Governance*, 10 (3): 213-233.
- Berry, F. S. and Berry, W. D. (1999) 'Innovation and diffusion models in policy research', in *American Journal of Political Science*, 38: 855-859.
- Black, J. (2005a) 'What is regulatory innovation?', in J. Black, M. Lodge and M. Thatcher *Regulatory Innovation. A Comparative Analysis*, Cheltenham/Northampton: Edward Elgar.
- Black, J. (2005b) 'Tomorrow's worlds: framework for understanding regulatory innovation', in J. Black, M. Lodge and M. Thatcher *Regulatory Innovation. A Comparative Analysis*, Cheltenham/Northampton: Edward Elgar.
- Braithwaite, J. and Drahos, P. (2000) *Global Business Regulation*, Oxford: Oxford University Press.
- Bush, V. (1945) *Science the Endless Frontier*, report from the Director of the Office of Scientific Research and Development to the President on a Program for Postwar Scientific Research, July 1945, Washington, [On-line], available at:
<http://www.nsf.gov/od/lpa/nsf50/vbush1945.htm>

- Busquin, P. (2002) 'European Research Area – and Beyond', *ERCIM News*, 49, April 2002, [On-line], available at: http://www.ercim.org/publication/Ercim_News/enw49/keynote.html
- Cappelen, Å., Hægeland, T. and Møen, J. (2004) 'Bør OECD-målsettingen i norsk forskningspolitikk opprettholdes?', *Økonomiske analyser*, 2/2004, Oslo: Statistisk Sentralbyrå.
- Castellacci, F. (2007) 'Tilbake til fremtiden', *Forskningspolitikk*, 1/2007: 16-17.
- Chandler, A. D. (1962) *Strategy and Structure: Chapters in the History of the American Industrial Enterprise*, Cambridge, MA.: MIT Press.
- Claes, D. H. and Tranøy, B. S. (1999) 'Norsk politikk og påvirkningen fra EU – hvor mye og hvordan?', in D. H. Claes and B. S. Tranøy (eds) *Utenfor, annerledes og suveren? Norge under EØS-avtalen*, Bergen: Fagbokforlaget.
- Clemet, K. (2007) *Norske forskningspolitikk*, personal correspondence with K. Clemet, 25 June 2007.
- Cohen, W. M. and Levinthal, D. A. (1990) 'Absorptive Capacity: A New Perspective on Learning and Innovation', *Administrative Science Quarterly*, 35: 123-138.
- CORDIS (2007a) *European Research Area. ERA – The concept*, [On-line] available at: <http://cordis.europa.eu/era/concept.htm>
- CORDIS (2007b) *Norway R&D and Innovation: Norway in the EU and FP6*, Community Research and Development Information Service, [On-line], available at: http://cordis.europa.eu/norway/eu_en.html
- CREST (2006) *Lessons for R&D policies on the basis of the national reform programmes and the 2006 Progress Reports*, CREST 1211/06, Brussels, 4 December 2006.
- Dickson, D. (2005) 'R&D policy is essential for effective science', *Science and Development Network*, accessed 26 August 2007, [On-line], available at: <http://www.scidev.net/Editorials/index.cfm?fuseaction=readEditorials&itemid=154&language=1>

- DiMaggio, P. J. and Powell, W. W (1991) 'Introduction', in W. W. Powell and P. J. DiMaggio (eds) *The New Institutionalism in Organizational Analysis*, Chicago: Chicago University Press.
- Djupedal, Ø. (2006) *Kunnskapsstrategier for Norge*, speech at the *Lerchendalkonferansen 2006* in Trondheim, 10 January 2006, [On-line], available at: <http://www.regjeringen.no/nb/dep/kd/Ryddemappe/kd/norsk/tema/forskning/Lerchendalkonferansen-2006.html?id=417265>
- Edquist, C. (2005) 'Systems of Innovation' in J. Fagerberg, D. C. Mowery and R. R. Nelson *The Oxford Handbook of Innovation*, New York: Oxford University Press.
- EFTA (2005) *Letter from the Norwegian Prime Minister to the President of the European Commission*, correspondence between Mr. Bondevik and Mr. Juncker, 9 March 2005, available at: <http://www.regjeringen.no/upload/kilde/ud/red/2004/0034/ddd/pdfv/240301-aud-hellstrom.pdf>
- Elster, J. (1989) 'When Rationality Fails', in *Nuts and Bolts for the Social Sciences*, Cambridge: Cambridge University Press.
- Europaportalen (2007) *Lisboa-strategien*, [On-line], available at: <http://www.regjeringen.no/nb/sub/Europaportalen/Europatemaer/Europa-Naringsliv-og-handel/Lisboastrategien-2.html?id=409992>
- European Commission (2006a) *European Trend Chart on Innovation. Annual Innovation Policy Trends and Appraisal Report. Norway*, a publication from the Innovation/SMEs Programme, European Commission: Enterprise Directorate-General.
- European Commission (2006b) *Erawatch Research Inventory Report: Current EU policy issues*, [On-line], available at: <http://cordis.europa.eu/erawatch/index.cfm?fuseaction=ri.home>
- European Commission (2007a) *Green Paper. The European Research Area: New Perspectives*, presented by the Commission, COM(2007) 161 final, Brussels, 4 April 2007.
- European Commission (2007b) *Increase and improve investments in Research and Development*, [On-line], available at: http://ec.europa.eu/growthandjobs/areas/fiche05_en.htm

European Parliament (2000) *Lisbon European Council 23 & 24 March 2000*, [On-line], available at:

http://www.europarl.europa.eu/summits/lis1_en.htm

European Parliament (2002) *European Council 15 and 16 March 2002 Barcelona. Presidency Conclusions*,

[On-line], available at: http://www.europarl.europa.eu/bulletins/pdf/01s2002_en.pdf

European Union (1992) 'Treaty on European Union', *Official Journal of the European Union*, 92/C191/01, 29 July 1992, Maastricht, [On-line], available at:

<http://eur-lex.europa.eu/en/treaties/dat/11992M/htm/11992M.html#0001000001>

European Union (2006) 'Consolidated versions of the Treaty of the European Union and of the Treaty establishing the European Community', *Official Journal of the European Union*, C 321 E/1.

Fagerberg, J. (2002) *Technology, Growth and Competitiveness. Selected Essays*, Cheltenham: Edward Elgar.

Fagerberg, J. (2004) *What do we know about innovation? Lessons from the TEARI project*, report No. 1 from the TEARI project, 2nd draft, 20 September 2004, University of Oslo: Centre for Technology, Innovation and Culture.

Fagerberg, J. (2005) 'Innovation. A Guide to the Literature', in J. Fagerberg, D. C. Mowery and R. R. Nelson (eds) *The Oxford Handbook of Innovation*, New York: Oxford University Press.

Fagerberg, J., Mowery, D. C. and Nelson, R. R. (eds) (2005) *The Oxford Handbook of Innovation*, New York: Oxford University Press.

Featherstone, K. (2003) 'Introduction: In the Name of Europe', in K. Featherstone and C. M. Radaelli (eds) *The Politics of Europeanization*, Oxford: Oxford University Press.

Feragen, G. B. (2005) *Europeisering av norsk gasspolitikk. Fra ignorant stormakt til lovlydig monsterelev*, ARENA Report No. 4/2005, Oslo: ARENA.

Finnemore, Martha (1993) 'International organizations as teachers of norms: the United Nations Educational, Scientific and Cultural Organization and science policy', in *International Organization*, 47(7): 565-597.

- Foss, P. K. (2007) *Spørsmål om norsk FoU-politikk*, personal correspondence with P. K. Foss, 14 July 2007.
- Frønes, I. (2005) 'Kunnskapsindustri og kunnskapssamfunn', *Horisont*, 2/2005, Oslo: Næringslivets Hovedorganisasjon.
- Gersick, C. J. G. (1991) 'Revolutionary Change Theories: A Multilevel Exploration of the Punctuated paradigm', *Academy of management review*, 16(1): 10-36.
- Gornitzka, Å. (2004) *Europeanising Education and Research Policy through the Open Method of Coordination? The OMC in Principle and Practice*, project sketch, Oslo: ARENA, Centre for European Studies.
- Gornitzka, Å. (2006) 'What is the use of Bologna in national reform? The Case of Norwegian Quality Reform in Higher Education', in V. Tomusk (ed.) *Creating the European Area of Higher Education*, Dordrecht: Springer.
- Gornitzka, Å., Kogan, M. and Amarald, A. (2005) 'Introduction', in *Reform and Change in Higher Education. Analysing Policy Implementations*, Dordrecht: Springer.
- Gornitzka, Å. and Langfeldt, L. (forthcoming) 'The internationalisation of national knowledge policies. Promoting interests, following rules, or learning from abroad?', in Å. Gornitzka and L. Langfeldt (eds) *Borderless knowledge?*, Dordrecht: Springer.
- Grabbe, (2003) 'Europeanization Goes East: Power and Uncertainty in the EU Accession Process', in K. Featherstone and C. M. Radaelli (eds) *The Politics of Europeanization*, Oxford: Oxford University Press.
- Hall, B. H. (2005) 'Innovation and Diffusion' in J. Fagerberg, D. C. Mowery and R. R. Nelson *The Oxford Handbook of Innovation*, New York: Oxford University Press.
- Hauknes, J. (2007) "There is a puzzle about Norway..."", *Forskningspolitikk*, 1/2007, Oslo: NIFU STEP, 18.
- Hauknes, J. and Wicken, O. (2002) *Innovation policy in the post-war period. Trends and Mentalities*, preliminary version, STEP Group, June 2002.

- Haverland, M. (2006) 'Does the EU *Cause* Domestic Developments? Improving Case Selection in Europeanisation Research', *West European Politics*, 29 (1): 134-46.
- Hellevik, O. (1999) *Forskningsmetode i sosiologi og statsvitenskap*, Oslo: Universitetsforlaget.
- Kallerud, E. (2007) 'Hvem sa hva?', *Forskningspolitikk*, 1/2007: 20-21.
- Kaloudis, A. (2004) *Innovation in innovation policy practices: The case of the tax credit scheme to promote R&D activities in Norwegian private companies (SkatteFUNN)*, Oslo: STEP.
- Klitkou, A., Solum, N. H., Olsen, T. B., Kallerud, E. and Søgne, R. (2005) 'Priorities, strengths and comparative advantages in Norwegian research, viewed in relation to the cooperation with South Africa, *NIFU STEP Working Paper*, 25/2005, Oslo: NIFU STEP.
- Kunnskapsdepartementet (2007), terms related to the Ministry of Education and Research, [Online], available at: <http://www.regjeringen.no/nb/dep/kd.html?id=586>
- Laestadius, S. (2003) *Measuring Innovation in the Knowledge Economy*, paper presented at Pavitt Conference on Innovation, SPRU, Sussex, 13 November 2003.
- Lam, A. (2005) 'Organizational Innovation' in J. Fagerberg, D. C. Mowery and R. R. Nelson *The Oxford Handbook of Innovation*, New York: Oxford University Press.
- Langfeldt, L. (2006) *Norske deltakeres erfaringer med og utbytte av EUs 6. rammeprogram*, Working Paper 31/2006, Oslo: NIFU STEP.
- Lundvall, B.-Å. and Borrás, S. (2005) 'Science, Technology, and Innovation Policy', in J. Fagerberg, D. C. Mowery and R. R. Nelson (eds) *The Oxford Handbook of Innovation*, New York: Oxford University Press.
- March, J. G. (1994) 'Ambiguity and Interpretation', in *A Primer on Decision Making. How Decisions Happen*, New York: The Free Press.
- Meulen, B. van der (2002) 'Institutional Innovation and Europeanization of Research', *Innovation: The European Journal of Social Science Research*, 15(4): 261-264.

- Meyer, J. W., Boli, J. and Thomas, G. M. (1994) 'Ontology and rationalization in the western cultural account', in W. R. Scott, J. W. Meyer and associates (eds) *Institutional Environments and Organizations: Structural Complexity and Individualism*, Thousand Oaks, CA.: Sage.
- Ministry of Trade and Industry (2004) *The EU Lisbon Strategy – A Norwegian Perspective*, report, 23 November 2004, [On-line], available at:
http://www.regjeringen.no/upload/kilde/nhd/rap/2004/0010/ddd/pdfv/219319-nytt_eu_lisboa_nn.pdf
- Ministry of Trade and Industry (2006) *The EU Lisbon Strategy – A Norwegian Perspective*, report, 30 January 2006, [On-line], available at:
<http://www.regjeringen.no/upload/NHD/Vedlegg/Lisboa06.pdf>
- Mintrom, M. (1997) 'Policy entrepreneurs and the diffusion of innovation', *American Journal of Political Science*, 42: 738-770.
- Mintzberg H. (1979) *The Structuring of Organization*, Englewood Cliffs, NJ: Prentice Hall.
- Moen, E. (2007) 'Norge en suksesshistorie – men hvilken?', *Forskningspolitikk*, 1/2007: 19.
- Mohr, L. (1969) 'Determinants of innovation in organizations', *American Political Science Review*, 75: 111-126.
- Mörth, U. (1998) 'Policy Diffusion in Research and Technoogical Development. No Government is an Island', *Cooperation and Conflict*, 33(1): 35-58.
- Nedergaard, P. (2006) 'Which Countries Learn from Which?: A Comparative Analysis of the Direction of Mutual Learning Processes within the Open Method of Coordination Committees of the European Union and among the Nordic Countries', *Cooperation and Conflict: Journal of the Nordic International Studies Association*, 41(4): 422-442, [On-line], available at: <http://cac.sagepub.com/cgi/content/abstract/41/4/422>
- Nelson, R. R. and Winter, S. G. (1982) *An Evolutionary Theory of Economic Change*, Cambridge, Mass.: Belknap Press.

- Nelson, R. R., Peterhansl, A. and Campat, B. N. (2002) *Why and How Innovations Get Adopted: A Tale of Four Models*, New York: Columbia University.
- NIFU STEP (2003) *Evaluation of Norway's participation in the EU's 5th Framework Programme*, Oslo: NIFU, STEP and Technopolis.
- NIFU STEP (2004a) *Statsbudsjettet 2005. Forskning og høyere utdanning i budsjettproposisjonen for 2005*, Working Paper 6/2004, Oslo: NIFU STEP, [On-line], available at: http://www.nifustep.no/norsk/publikasjoner/statsbudsjettet_2005
- NIFU STEP (2005a) *Statsbudsjettet 2006. Forskning og høyere utdanning i budsjettproposisjonen for 2006*, Working Paper 37/2005, Oslo: NIFU STEP, [On-line], available at: http://www.nifustep.no/norsk/publikasjoner/statsbudsjettet_2006
- NIFU STEP (2005b) *FoU-statistikk 2001-2005*, Oslo: NIFU STEP, [On-line], available at: http://www.nifustep.no/index.php/layout/set/print/norsk/innhold/statistikk/fou_statistikk
- Norges Forskningsråd (2004) *Forskningsrådets innspill til Regjeringens kommende stortingsmelding om forskningspolitikk*, 19 May 2004, [On-line], available at: http://www.forskningsradet.no/CSSStorage/Flex_attachment/InnspillTilForskningsmeldingen2005.pdf
- Norges Forskningsråd (2005a) *Forskningsrådets kommentarer til stortingsmelding nr. 20 (2004-2005)*, [On-line], available at: <http://www.rcn.no/servlet/Satellite?c=GenerellArtikkel&cid=1108644073866&pagename=ForskningsradetNorsk%2FGenerellArtikkel%2FVisMedHovedtilhorighet>
- Stene-Larsen, G. and Hallén, A. (2005) 'Store muligheter for norsk forskning', feature article concerning the Governments White Paper on research: 'Stortingsmelding nr. 20 (2004-2005)', *Dagbladet*, 18 April 2005.
- Norges Forskningsråd (2007) *På tide å reformulere forskningsmålene*, [On-line], available at: <http://www.forskningsradet.no/servlet/Satellite?c=GenerellArtikkel&cid=1182237396363>

[p=1138650412157&pagename=ForskningsradetNorsk%2FGenerellArtikkel%2FVisMedHovedtilhorighet](http://www.regjeringen.no/p=1138650412157&pagename=ForskningsradetNorsk%2FGenerellArtikkel%2FVisMedHovedtilhorighet)

Norsk Offentlig Utredning (2005) *Industrien mot 2020 – kunnskap i fokus*, NOU nr. 4/2005, Nærings- og handelsdepartementet, [On-line], available at: <http://www.regjeringen.no/nb/dep/nhd/dok/NOU-er/2005/NOU-2005-04/5.html?pid=390119>

NHO (2000) 'Lisboa-strategien: Økt vekst, sysselsetting og velferd.', *Fakta-ark om Europa*, 7/2000: 1-3.

NHO (2004) *Skape. En helhetlig næringspolitikk frem mot 2009*, NHOs næringspolitiske plattform, [On-line], available at: https://www.nho.no/files/Naeringspolitisk_plattform.pdf

NHO (2006 [2004]) *Strategi for NHO – fellesskapet 2004-2013. Med mål for perioden 2006-2008*, originally published 2004 and revised 26 June 2006, [On-line], available at: http://www.nho.no/files/NHOs_strategidokument_juni_2006.pdf

OECD (1996a) *The Knowledge Based Economy*, General Distribution OCDE/GD(96)102, Paris: OECD Head of Publication Services.

OECD (1996b) *Technology, Productivity and Job Creation*, Paris: OECD Head of Publication Service.

OECD (2001) *Measuring Science and Technology. STI Scoreboard 2001*, OECD: Directorate for Science, Technology and Industry, [On-line], available at: http://www.oecd.org/document/54/0,3343,en_2649_34451_1900342_1_1_1_1,00.html

OECD (2002a) *The Measurement of Scientific and Technological Activities. Proposed Standard Practice for Surveys on Research and Experimental Development: Frascati Manual*, Paris: OECD.

OECD (2002b) *OECD Science, Technology and Industry Outlook 2002*, OECD: OECD Publishing.

OECD (2002c) *STI Outlook 2002 – Country response to policy questionnaire. Norway*, [On-line] available at: <http://www.oecd.org/dataoecd/59/51/2762696.pdf>

OECD (2007) *OECD Economic Surveys. Norway*, Volume 2007, Issue 2, OECD: OECD Publishing.

- Olsen, J. P. (1992) 'Analyzing institutional dynamics', *Staatwissenschaften und Staatspraxis*, vol. 3: 247-271.
- Olsen, J. P. (2002) 'The Many Faces of Europeanisation', *Journal of Common Market Studies*, 40(5): 921-952.
- Olsen, J. P. (2007) *Europe in Search of Political Order*, Oxford: Oxford University Press.
- Osborne, S. P. (1998) *Voluntary Organizations and Innovation in Public Services*, London: Routledge.
- Radaelli, C. M. (2003) 'The Europeanization of Public Policy', in K. Featherstone and C. M. Radaelli (eds) *The Politics of Europeanization*, Oxford: Oxford University Press.
- Remøe, S. O., Fraas, M., Kaloudis, A., Mariussen, Å., Røste, R., Ørstavik, F. and Aanstad, S. (2004) *Governance of the Norwegian innovation policy system*, contribution to the OECD MONIT project, rapport 6/2004, Oslo: NIFU STEP.
- Rogers, E. M. (2003) *Diffusion of Innovations*, 5th edn., New York: The Free Press.
- Romanelli, E. and Tushman, M. L. (1994) 'Organizational Transformation as Punctuated Equilibrium: An Empirical Test', *Academy of Management Journal*, 37(5): 1141-1166.
- Roness, P. (1995) 'Struktur og handling ved organisasjonsendringar', in *Norsk statsvitenskapelig tidskrift*, 11 (3): 159-186.
- Rose, R. (1993) *Lesson Drawing in Public Policy*, Chatham, NJ.: Chatham House.
- Scott, W. R. and Meyer, J. W. (1983) 'The organization of societal sectors', in J. W. Meyer and W. R. Scott (eds) *Organizational Environments: Ritual and Rationality*, Beverly Hills, CA: SAGE.
- Skoie, H. (2005) *Norsk forskningspolitikk i etterkrigstiden*, Kunnskapspolitiske studier, Oslo: Cappelen Akademiske Forlag.
- Smith, K. (2005) 'Measuring Innovation', in J. Fagerberg, D. C. Mowery and R. R. Nelson (eds) *The Oxford Handbook of Innovation*, New York: Oxford University Press.
- Solberg, E. (2007) *Spørsmål om 3%-målet*, personal correspondence with E. Solberg from the Norwegian Ministry of Education and Research, 10 September 2007.

- Soria Moria-Declaration (2005) *Plattform for regjerings samarbeidet mellom Arbeiderpartiet, Sosialistisk Venstreparti og Senterpartiet 2005-09*, 13 October 2005, Soria Moria, [On-line], available at: <http://www.regjeringen.no/upload/kilde/smk/rap/2005/0001/ddd/pdfv/260512-regjeringsplattform.pdf>
- Stortingsmelding nr. 62, (1953) *Langtidsprogrammet 1954-57*, Oslo: Kirke- og utdanningsdepartementet.
- Stortingsmelding nr. 28 (1988-89) *Om forskning*.
- Stortingsmelding nr. 39 (1998-1999) *Forskning ved et tidskille*, Oslo: Kunnskapsdepartementet.
- Stortingsmelding nr. 27 (2001-2002) *Om EØS-samarbeidet 1994-2001*, Oslo: Det kongelige utenriksdepartementet.
- Stortingsmelding nr. 42 (2003-2004) *Status for IT- og kunnskapssenteret på Fornebu*, Oslo: Nærings- og handelsdepartementet.
- Stortingsmelding nr. 20 (2004-2005) *Vilje til forskning*, Oslo: Det kongelige utdannings- og forskningsdepartementet.
- Stortingsmelding nr. 23 (2005-2006) *Om gjennomføring av europapolitikken*, Oslo: Det kongelige utenriksdepartementet.
- Stortingsproposisjon nr. 1 (2004-2005) *Nærings- og handelsdepartementets budsjettproposisjon 2005*, Oslo: Nærings- og handelsdepartementet.
- Stortingsproposisjon nr. 1 (2005-2006a) *Nærings- og handelsdepartementets budsjettproposisjon 2006*, Oslo: Nærings- og handelsdepartementet.
- Stortingsproposisjon nr. 1 (2005-2006b) *Utdannings- og forskningsdepartementets budsjettproposisjon 2006*, Oslo: Utdannings- og forskningsdepartementet.
- Stortingsproposisjon nr. 1 (2005-2006c) *Statsbudsjettet. For budsjettåret 2006*, Oslo: Det kongelige finansdepartement.
- Stortingsproposisjon nr. 84 (2000-2001) *Tilleggsbevilgninger og omprioriteringer i statsbudsjettet medregnet i folketrygden 2001*, Oslo: Det kongelige finansdepartementet.

- Teece, D. J. (1998) 'Design Issues for Innovative Firms: Bureaucracy, Incentives and Industrial Structure', in A. D. Chandler Jr., P. Hagstrom and O. Solvell (eds) *The Dynamic Firm*, Oxford: Oxford University Press.
- Trondal, J. (2002) 'The Europeanisation of Research and Higher Educational Policies: Some Reflections', *Scandinavian Political Studies*, 25 (4): 333-351.
- Tyran, J.-R. and Sausgruber, R. (2003) 'The Diffusion of Policy Innovations. An Experimental Investigation', Discussion Paper, 14 May 2003, University of St. Gallen: Department of Economics.
- Ugur, M., Corvers, F., Delanghe, H., Dratwa, J., Heimberger, D., Sloan, B. and Vanslebrouck, S. (2006) *A New Deal for an Effective European Research Policy – the Design and Impacts of the 7th Framework Programme*, Dordrecht: Springer.
- Walker, J. L. (1969) 'The diffusion of innovations among the American states', *American Political Science Review*, 63: 880-899.
- Undervisnings- og forskningsdepartementet (2004) *Strategi for norsk forsknings- og teknologisamarbeid med Nord-Amerika*, Oslo: Undervisnings- og forskningsdepartementet.
- Yin, R. (2003) *Case study research. Design and Methods*, 3rd edn, Thousand Oaks: SAGE Publications.
- Yrvin, K. (2006) *Ny regjering. Ny næringspolitikk*, speech at the congress of the Norwegian Labour Party's section in Kristiansand, 28 January 2006, [On-line], available at: http://www.regjeringen.no/nb/dep/nhd/Ryddemappe/Kan-ikke-plasseres/ny_regjering-ny_naeringspolitikk-.html?pid=113431