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Norway's affiliation with European Research Programmes

Options for the future

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EXECUTIVE SUMMARY

The Norwegian Ministry for Education and Research (MER) commissioned Technopolis Group to conduct a study on Norway's affiliation to the EU Framework Programmes for Research and Technological Development. The main objective of this study was to analyse the available options for Norway's Future affiliation with the EU Framework Programmes, assess the consequences of various options and weigh this against the pros and cons for Norwegian research and innovation policy. The assignment was to develop a number of alternative – and realistic - scenarios for the future.

The first research question addressed in this report is *'what have been the benefits and drawbacks of the Norway-EU affiliation in RTI up to this moment?'*

Previous studies demonstrated that the effects of Norwegian participation in EU Programmes have been predominantly positive for research institutes, the higher education sector and the business sector. The business sector participants have emphasised that collaboration in European research have allowed them access to broader opportunities and networks. Importantly, these have been developed as neutral meeting places, and have as such been ideal for conducting industrial research. In addition, high-risk research has been shared among participants, and allowed projects that have been deemed too risky to undertake singlehandedly to be conducted between European partners. The synthesis of existing studies on the impact of the FPs and our interviews with stakeholders lead to the conclusions that

- The Framework Programme is the most important channel for international S&T cooperation in Norway. Norway's participation is strong and success rates are above EU average
- Norway's financial contribution to the Framework Programmes is growing faster than the financial returns that Norwegian participants have managed to secure, leaving a gap between the monetary value of the contributions to the EU versus the funding received in Norway
- Existing studies show a predominantly positive view on FP participation leading to benefits and impacts such as
 - Access to complementary and state-of-the art knowledge
 - Building networks with other European research organisations
 - Increasing international co-publications with European partners which generally have a higher scientific impact than national publications
 - Access to customers and suppliers through collaborative projects for firms
 - A positive effect on the higher education modernisation agenda
- Critical views are mostly concerned with the large administrative burden attached to the Framework Programme and the need for simplification to attract more participants
- Despite the fact that Norwegian success rates are above average, studies and interviews point out that there is still room for improvement, particularly by widening the pool of participating organisations (in particular universities and companies).

A second research question addressed is: *do the priorities of the European FPs match with the RTI policy priorities of Norway?*

Norway's national broad thematic priorities show considerable overlap with those of the consecutive FP programmes. There is an overlap in terms of the key technology areas such as biotechnology, ICT, new materials and nano-technology. There is also a synergy in terms of thematic areas and societal challenges such as energy, environment, food and marine and maritime areas. There is no complete overlap as

there are areas of specific interest to Norway that it does not share with many other EU countries, such as research related to oil and gas exploitation.

The fact that Norway is an associated country allows it to be at the decision table where the contents of these work programmes are influenced. Competition for EU grants helps raise the quality of research and provides a welcome exposure for Norwegian businesses to international technologies and standards, both challenges for the Norwegian system.

As increased internationalisation is a key element of Norway's research and innovation policy and the EU Framework programmes form the main mechanism for internationalisation, the alignment seems obvious. While stakeholders express an interest to reinforce relationships outside Europe, many see the European policy networks as a good basis to build up joint non-EU collaborations, for example with the larger emerging countries such as China and India.

Chapter 4 describes the recent developments in European research policy and its effects on the future affiliation with Norway. The new Lisbon Treaty, the Innovation Union and Horizon2020 have expanded the scope and role of the European Commission in the European Research Area (ERA). European research policy in the last five years has shifted from an extensive vehicle for R&D-project funding to a more strategic policy making forum, which includes coordination of policies between Commission, Member and Associated States in order to pool resources. While careful consideration has to be made of possible consequences of these changes, Norway's EEA Treaty provides a stable relationship with the European community. Nevertheless, with the changing European context there is no 'business as usual' scenario for Norway as the relation between EU and the Member and Associated States is very dynamic.

Chapter 5 addresses affiliation models between the EU and three other national states that potentially provide a better alternative to the current EEA model. The conclusions that we can draw from a comparison with industrialised countries with a different type of affiliation than Norway are as follows

- From a public management point of view the Norwegian EEA agreement is much more efficient and clear cut than the bilateral agreements that Israel and Switzerland have in terms of the time it takes to draw up the agreements and renew them
- Both Israel and Switzerland have similar financial arrangements to Norway and contribute to the EU based on their share of the GDP.
- The USA is taking part only as a relative outsider and their financial involvement is relatively small. According to US evaluations¹ this is –to a substantial extent– caused by a lacking U.S. strategy for FP participation. Having a bilateral affiliation means that US policy makers and researchers are not involved in any agenda setting or policy strategic process, similar to the situation that Switzerland was in before their affiliation status changed.

On the basis of our interviews and the analysis of existing affiliation models we have defined four possible scenarios for Norway's future affiliation. The following overview summarises the main advantages and disadvantages of these four scenarios.

¹ Manfred Horvat, Keith A. Harrap (2009). *Review of the Science and Technology Cooperation between the European Community and the United States of America 2003 – 2008*.

Main Advantages	Main Disadvantages
Scenario 1 R&D in core EEA	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA through EEA • Status as Associated Country • Potentially more political power as 'preferred' associated country • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • Heavy burden on foreign policy to renegotiate EEA • Long time needed before new EEA is fully operational • No possibility to opt out of specific ERA legislation • Financial contribution through GDP formula
Scenario 2 R&D in voluntary part EEA	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA through EEA protocols • Status as Associated Country • Potentially more political power as 'preferred' associated country • Adoption of ERA legislation with case-by-case procedures thus providing the possibility to opt out of ERA regulations • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • ERA regulation needs to be negotiated and politically decided case-by-case • Financial contribution through GDP formula
Scenario 3 Bilateral S&T agreement as Associated Country	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA bilateral S&T agreement • Status as Associated Country • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • Need to establish new stable legal framework for decision making in Norway • Need to renegotiate the S&T agreement for each new EU multi-annual FP • Risk for gaps in agreements between FPs • Seen as 'step back' in EU engagement by the European Commission • Financial contribution through GDP formula
Scenario 4 Bilateral S&T agreement as Third Country	
<ul style="list-style-type: none"> • Norway can be selective and only take part in thematic areas that are of interest to Norwegian stakeholders and policy makers • The budgetary contribution from the Government to the EU is considerably reduced • Opportunity to start large scale collaboration programme with non-EU countries • Researchers face less red-tape from EU programmes 	<ul style="list-style-type: none"> • Will damage EU-Norwegian foreign policy relations • Norway has no seat in European research policy committees such as ERAC, ESFRI, programme committees, ERA-working groups etc. • Participation in other inter-governmental R&D agreements in EU more complex • Parts of Horizon2020 not accessible (e.g. ERC) • Potential participants face bigger hurdles to join consortia • Norwegian organisations can not lead projects • Norway can not take part in ERA-type instruments • Overall level of participation in EU collaboration will drop • RTI internationalisation agenda will not be met

Only a drastic change of the current affiliation model to Scenario 4 would have the benefit of lowering the annual financial contributions to the EU. It would also allow

Norway to selectively take part and pay for thematic research areas that are of interest to Norwegian stakeholders. However, this has a number of major disadvantages

- In foreign relationship terms it would damage Norway's position in the European Community
- In research policy terms it would cut Norway loose from many of the important decision tables and forums where common strategic research agendas are decided
- Norwegian institutions and government bodies would not be able to lead coordination actions such as ERA-NETs and Joint Programming Initiatives
- It would lead to a strong reduction of Norwegian participations in projects from both the public and the private sector
- It would prevent research performers from leading and coordinating research consortia and projects or hosting initiatives such as KICs or European research infrastructures
- It would most likely mean that Norwegian researchers cannot apply for grants such as ERC grants and Marie Curie fellowships
- All these would have a negative effect on Norway's policy priority to increase the internationalisation of R&D

The medium and long-term loss of international competitiveness and research excellence, that will most likely result from less international exposure, cannot be easily calculated in monetary terms. It will have a long-term structural impact on the Norwegian public research system and will damage the competitive position of companies and sectors that are now strongly involved in the European consortia. It will slow down the modernisation and quality improvement of the university sector.

The above conclusions lead the study team to make the following recommendations

1. A close integration of Norway with the future Framework Programme and European Research Area should be secured for the future. The decisions whether this is done through the route of Scenario 1 (integrating research and development in the core of the EEA) or Scenario 2 (remaining research and development in the voluntary part of the EEA agreement) relies on political and foreign policy considerations. The first scenario requires a renegotiation of the EEA while the second needs a Parliamentary decision on participation in Horizon2020. From a research policy perspective the key importance is that Norway endorses the European Research Area concept to be considered as a full partner country in order to fully benefit from Horizon2020.
2. Instead of focusing on the 'just retour' question that cannot be monetized by simply calculating the awarded grants, Norway should focus its attention on improving its FP participation rates. Studies suggest that this is not simply a question of improving the quality of the proposals that are submitted (apart from specific areas such as the ERC grants, Norwegian success rates are better than EU average). More important is to increase the number of researchers, research groups, companies and particularly universities that engage in European science and innovation collaboration. It is not within the scope of this study to assess whether the Norwegian policy priority to provide better support for EU participation has been implemented well, however further analysis of which improvements in EU participation would add most value to Norway could be done.

3. Norwegian research policy should engage in a political debate as to how the financial contributions to the EU can be better managed so that it does not lead to an erratic spending pattern in the science budget, leading possibly to a crowding out of other research funding. If Norway decides to participate in Horizon2020 at government level it should also develop financial arrangements at Treasury level to plan this spending for the whole period 2014-2020 on a multi-annual basis.
4. Norway should keep pushing the simplification message in all possible European policy platforms

1. Introduction

1.1 The background for this study

The Norwegian Ministry for Education and Research (MER) has commissioned the Technopolis Group to conduct a study on Norway's affiliation to the EU Framework Programmes and potential alternative scenarios for this affiliation in the future.

Norway became affiliated to the Framework Programmes (FPs) through the signing of the European Economic Area agreement. This report is intended to contribute to the debate on the future options for Norway's affiliation to the FPs. While the relationship between Norway and the European Union is strongly rooted in the EEA agreement, the necessary Parliamentary decision in 2013 on participation in Horizon2020 is a good moment in time to reconsider how the affiliation with the EU Framework Programme could be optimised. This report is written from the perspective of Norway's affiliation in the domains of, research, technology and innovation (RTI). The report has taken into account the changing context concerning the overall Norwegian policy debate on the EEA agreement, the developments in the European Research Area, as well as the global landscape of RTI collaboration.

1.2 The approach and methodology used

The main objective of the study is to analyse the available options for Norwegian affiliation with the EU Framework Programmes, assess the consequences of various options and weigh this against the pros and cons for Norwegian research and innovation policy. The assignment was to develop a number of alternative, and realistic, scenarios for future. While the main focus has been on the Norwegian side of this debate, an agreement is between two parties giving both sides rights and obligations. Thus as far as possible, we have also included the likely developments on the side of the European Community, again with a focus on RTI. The study started in October 2011 and was finalised in February 2012.

The first research question addressed in this report is *'what have been the benefits and drawbacks of the Norway-EU affiliation in RTI up to this moment?'* We have used existing study material to answer this question. In addition we have interviewed nearly 20 stakeholders in the Norwegian RTI community. These were representatives from RTI policy, public research organisations and universities, the social partners and individual businesses. A full list of interviewees can be found in Annex I.

A second research question addressed is: *do the priorities of the European FPs match with the RTI policy priorities of Norway?* This question has been answered by comparing key policy documents describing RTI priorities in Norway and in the European Framework Programmes. The question was also raised in the aforementioned interviews.

A third set of questions was *do affiliation models exist between the EU and other national states that provide a better alternative to the current EEA model?* What lessons can be learned from these other models that can help rethink the future affiliation with the EU research programmes? In addition *what would be likely alternatives in the view of the European Commission?* We have chosen to look at affiliation models with developed countries only to have a comparison with Norway. The bilateral affiliations between on the one hand the European Community and on the other hand Switzerland, Israel and the USA, were the most relevant comparisons. This part of the analysis was covered by desk research, interviews with representatives of these countries as well as with representatives of the European Commission.

On the basis of the existing framework of RTI affiliation models and interviews with representatives from Norway and the European Community we elaborated four possible scenarios for future affiliation, also taking into account the newest

developments in European research policy and the consequences that could have for Norway.

The study team was also supported by a reference group consisting of:

- Jan Wilhelm Grythe (Norwegian Ministry of Foreign Affairs)
- Pål Gretland (Norwegian Ministry of Trade and Industry)
- Yngve Foss (Research Council of Norway)
- Per Koch (Norwegian Ministry of Education and Research)
- Aris Kaloudis (Norwegian Ministry of Education and Research)
- Jesper W. Simonsen (Research Council of Norway)

The reference group has provided the team with ample advice and information. Combining all these elements the last chapter arrives at conclusions and recommendations that the study team consider important for the debate on Norway's future affiliation with the European Framework Programmes (to start with Horizon2020) and European research policy in more general.

1.3 The structure of this report

The report is structured as follows. Chapter 2 summarises the benefits and impacts of Norway's participation in European Framework Programmes based on existing studies and on interviews with Norwegian stakeholders. Chapter 3 looks at the match between Norwegian and European priorities in science and technology policies. In Chapter 4 we discuss recent developments in European research and innovation policy that have an impact on the affiliation with Norway. In search of alternatives for the formal association Chapter 5 describes the types of formal associations that the European Commission has in place. The four possible scenarios for Norway's affiliation are described in Chapter 6. The consequences of each of these scenarios for policy in general, for research and innovation policy and the research and innovation community are elaborated in Chapter 7. The main conclusions and recommendations are summarised in Chapter 8.

2. Norway and the European Framework Programmes today

2.1 Introduction

The purpose of this chapter is to understand the effects and impacts of Norway's affiliation with the European multiannual Framework Programmes for Research, Technology and Innovation up to today. The current ongoing Seventh Framework Programme (FP7) runs from 2007-2013. The previous Sixth Framework Programme (FP6) was in operation between 2003 and 2006. The proposed successor programme of FP7 is called Horizon2020 and is intended to be in operation between 2014 and 2020. There are benefits and drawbacks of Norwegian participation, for the research and innovation community, as well as for the wider Norwegian society. The overview will help us to understand how a change in Norway's affiliation model will impact on the Norwegian community. The chapter is based on a synthesis of existing studies and policy reports and enriched by stakeholder interviews.

2.2 Characterisation of Norwegian FP involvement

In the past decade Norway has evaluated its Framework Programme participation several times. The most recent 2009 NIFU-STEP FP6-7 evaluation has made a characterisation of this participation and looked at its impacts². Norway's FP performance has also been analysed as part of Nordic studies. The overall view of the studies has been predominantly positive, albeit with some concerns raised over falling Norwegian participation rates in the early part of FP7.

It must be noted that existing studies have not conducted a specific analysis of non-participants and their views on the FPs. Neither are studies available that compare Norwegian participants and non-participants in terms of for instance their scientific excellence, their degree of internationalisation or their international competitiveness. Thus the opinions on the FPs will be influenced (most likely positively) by the composition of the population of the studies.

Compared to FP6 the annual contributions of Norway for FP7 have increased considerably. The recently published report on Norway and the European Union gives an overview of the increasing financial contributions by MER on from 2005 to 2011 (see Figure 1).³ These contributions are allocated from the annual budget of the MER and the amounts may vary greatly from year to year. They constitute therefore an uncertainty factor and a challenging issue in the negotiations for the overall funding of research by MER in Norway's annual Fiscal Budget. As will be discussed in Chapter 4 the annual contribution will likely increase for the coming FP called Horizon 2020.

Figure 1 MER contributions to the Framework Programmes

	2005	2006	2007	2008	2010	2011
Million kronor	532.7	743.9	657.7	999.5	1235.8	1136.6

Source: Utenriksdepartementet, 2012 (no figures for 2009 given).

Although Norway contributes a substantial sum to the Framework Programme, and receives substantial funding to European projects, this remains a relatively small part

² Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

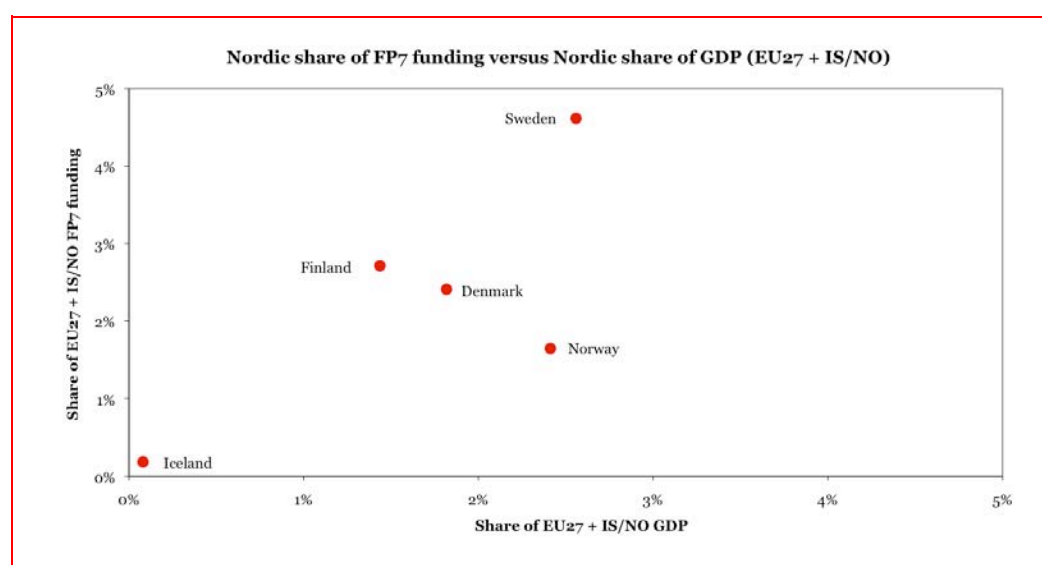
³ Utenriksdepartementet, 2012, Utenfor og innenfor, Norges avtaler med EU.

of overall R&D expenditure in Norway. The 2009 evaluation report estimates this to be around 1.3%, and that it represents in the region of 5-7% of total external funding for institutions depending on organisation type. Of course this varies a great deal across the sectors, as there is a high concentration of funding in a small number of institutions, so the impact of the funding varies quite considerably. In general Norway's participation is characterised by a high share of participation by research institutes and industry rather than universities.⁴

Nevertheless, FP funding does represent the major source of overseas funding for universities, at around 60% and about 30% for research institutes, who also receive large amounts of private sector funding from overseas. In terms of actual volume of activities FP participation remains the most important internationalisation channel for the Norwegian research system.

Overall, Norway's project participations in the FPs bring back significantly less money than Norway's contribution to the overall FP budget.

Figure 2 – Nordic funding achieved from FP7 – factored by GDP (diagram)



Sources: FP7 participation data (E-CORDA, September 2009) and Eurostat (GDP data); cited from Nordforsk, Policy Brief 1. April 2010

The simple explanation usually offered for this is that compared with other European countries Norway has a GDP that is 'inflated' by oil and gas production (which are inherently not research-intensive activities), so it is difficult for Norway to have a 'normal' ratio of R&D capacity to GDP. This interpretation is supported by a comparison of success rates among the Nordic countries. Some 29.5% of applications including a Norwegian participation were successful in FP6, compared with an average of 26.5% for the Nordic countries. Up to September 2009, in FP7, 13.3% of proposals with Norwegian participation were successful – just under the Nordic average of 14.1%. Clearly, Norwegian applications⁵ tend to be up to scratch – there simply are not enough of them to repatriate all the money Norway contributes to the FP.

The fourth FP7 monitoring report published in 2011 shows a sustained strong Norwegian success rate in 2010 of 28.1% (compared to an average of 24% for the EU Member States, and 26% for the Nordic countries) only surpassed by Croatia (29.9%),

⁴ Helge Godø, Liv Langfeldt og Aris Kaloudis et al, *In need of a better Framework for Success: An Evaluation of the Norwegian Participation in the EU 6th Framework Programme (2003-2006) and the first part of the EU 7th Framework Programme (2007-2008)*, Rapport 22/2209, Oslo: NIFUSTEP, 2009;

⁵ These are all applications that (also) have Norwegian participants.

Sweden (29.1%), Switzerland (28.8%) and two very small countries (Lichtenstein and Montenegro) with only a handful of proposals.

The latest data published on the Research Council of Norway's website⁶ suggest that there is Norwegian participation in close to 6.5% of FP7 projects to date⁷. Norwegian participation reaches 20% or more – i.e. there is at least one Norwegian partner in 20% of the projects in that particular initiative – in a good number of FP7 programmes:⁸

- In Cooperation – Bio (20%), Energy (21%), Environment (26%), SSH (20%), Security (24%), and ERA-Net (21%), with the success rate being highest in ERA-Net, Space, NMP and Energy
- In Capacities – Norwegian participation reaches 22% in Research Infrastructures and 18% in the SMEs programme
- For ERC, the Marie Curie programme participation is much lower throughout and ranges from 1% (ERC) to 2% (Marie Curie).

Across the various FP7 programmes, the average Norwegian success rate is highest in Capacities (32.4%), followed by Cooperation (22.7%). Norwegian success rates for the Marie Curie programme and the ERC trail somewhat on 20% and 10% respectively.

2.3 Norway's success in specific parts of the FPs

Looking more closely at the fields of research carried out, in FP6 and 7, higher than expected Norwegian participation was found in **environmental** and **energy research**, and in the **Science in Society** programme. Norway has indeed shown a strong performance in energy and environmental research since FP4. Norwegian research organisations are also a prominent feature in Norwegian ERA-NETs but that is most likely also related to the funding provided by Norwegian research funders in these ERA-NETs in combination with the funding arrangements in the ERA-Nets.

There are also areas with specific room for improvement,

- In terms of thematic areas the most critical have been identified as Human Resources, ICT and Health⁹
- While SME-participation is relatively strong in the SME parts of the FP it is not so strong in the non-SME collaboration parts of the FPs
- Norway is not using the Marie Curie programmes well enough as was also confirmed in our interviews. Particularly outward mobility is low. Our interviews have indicated that a lack of foreign experience of Norwegian researchers becomes an obstacle for applying for ERC grants, where an international track record is expected
- In general, participation is weak in the bottom up parts (NEST in FP6 and ERC in FP7).

Participation in the European Research Council grants has been low compared to overall participation across Europe, but also in comparison with the Norwegian researcher population. The latest participation figures do show a slight increase, but it remains small (see Figure 3).

⁶ www.forskningradet.no/no/Norske_resultater/1253960389981

⁷ Incorporating data up to November 2011

⁸ For the complete table of data, please see the RCN website www.forskningradet.no/no/Norske_resultater/1253960389981

⁹ Godø et al.

Figure 3 Norwegian Participation in ERC grants (host institutions)

	2008	2009	2010	2011
Advanced Grants	2	3	7	n/a
Starting grants	1	0	3	5

Source: ERC data

Figure 4 illustrates the thematic strengths for FP6 and compares Norway with the other Nordic countries. The equivalent analysis for FP7 uses more thematic categories but shows the same effects¹⁰.

Figure 4 – Nordic countries' (ranked) share of all FP6 participations, by Priority Area

Nordic rank	Priority	DK rank	FI rank	IS rank	NO rank	SE rank
1	Support for the coordination of activities	3	1	1	1	3
2	Sustainable development, global change and ecosystems	4	7	5	3	5
3	Food quality and safety	1	13	4	6	14
4	Euratom	16	2	15	11	1
5	Life sciences, genomics and biotechnology for health	5	9	8	16	2
6	Policy support & anticipating scientific and technological needs	2	6	6	7	12
7	Citizens and governance in a knowledge-based society	7	11	13	5	10
8	Horizontal research activities involving SMEs	8	8	3	4	16
9	Research and innovation	11	4	2	8	15
10	Support for the coherent development of R&I policies	14	16	15	2	4
11	Science and society	6	10	9	13	9
12	Nanotechnologies and nanosciences	10	3	14	14	8
13	Information society technologies	12	5	11	10	13
14	Human resources and mobility	9	14	7	12	11
15	Research infrastructures	13	12	12	9	7
16	Aeronautics and space	17	17	15	15	6
17	Specific measures in support of international cooperation	15	15	10	17	17

Source: FP6 participation data (E-CORDA, September 2009); cited from NordForsk, Policy Brief 1, April 2010

Questionnaires to Nordic FP6 and FP7 participants showed no meaningful differences in the extent to which the themes or the instruments used were relevant to them¹¹. In the absence of a control group, of course, it remains possible that there is a pool of rejected- or non-applicants who feel the instruments and themes are irrelevant to them but in this case we would also have expected to see greater differences among those accepted in the different Nordic countries.

2.4 Impacts on the public research system

According to the literature, Norwegian FP collaboration was at its highest during FP6, although at this moment we do not yet have the full picture for FP7 as it is still ongoing. The FP6 saw Norwegian actors participating in 840 projects, which is about

¹⁰ Nordforsk *Enhancing the Effectiveness of Nordic Research Cooperation: Nordic participation in the EU Framework Programmes – best practices and lessons learned*, Policy Brief 1, Oslo: Nordforsk, April 2010

¹¹ Nordforsk *Enhancing the Effectiveness of Nordic Research Cooperation: Nordic participation in the EU Framework Programmes – best practices and lessons learned*, Policy Brief 1, Oslo: Nordforsk, April 2010

10% of total FP projects. However, in proportional monetary terms, Norway's competitiveness has slightly decreased. Financial contributions to Norwegian researchers as share of the Framework Programme budget was around 2% for FP5, 1.7% for FP6, and had decreased to 1.6% during the early period of FP7¹².

Norway's participants stemmed from independent research institutes (35%), private companies (30%), and the HE sector (23%). Geographically, Norwegian participation is concentrated in the region of Oslo and Akershus (including the University of Oslo, parts of the SINTEF group, and Telenor), which accounted for around 50% of total Norwegian participation.¹³ In all, an estimated 3,500 Norwegian researchers were part of FP6, which is calculated to be almost 10% of Norwegian researchers.¹⁴

When taking a longer-term viewpoint, the European Framework Programmes have had an extensive impact on Norwegian research policy.

The general picture is that Norway's performance in FP5 was reasonably successful, but – unsurprisingly – with room for improvement. *Inter alia*, it was recommended that Norway make efforts to better couple or integrate national R&D and innovation programmes with the European research to maximise synergies vis-à-vis research efforts, funding schemes and also improve Norway's capacity to absorb the research conducted as part of EU-projects.¹⁵ In contrast, the FP6-7 study notes that European thematic priorities in the FP6 and FP7 align quite well with Norwegian equivalents.¹⁶ This will be discussed in more detail in Chapter 3.

On a political level, Framework Programme collaboration priorities have become more specifically articulated. In 2010, the Minister of Research and Higher Education concluded that the importance of EU-Norwegian research was increasing. Norway was as such in need to reflect on their participation in EU research and ought to develop clear priorities to make the most of EU collaboration¹⁷.

The FP evaluations have underlined synergies – and lack of synergies in this area too: *“Accounting for only 1.3 per cent of Norway's total R&D expenditure, the Framework Programme would not normally be expected to have large impact on Norwegian research. However, national and institutional co-funding of the Framework Programme co-opts substantially more research resources than the EU contribution to the FP projects. At the overall policy level there is a good match between the Framework Programme priorities and Norwegian research priorities, and apparently a good basis for synergies. It is however, hard to discover these synergies at the research-performing level”*¹⁸.

As for the research performing FP participants, in 2007 European funding made up 60% of international funding for the Norwegian HE sector, making Framework Programme money the most important funding source stemming from outside of Norway for the universities.

¹² Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

¹³ www.forskningsradet.no/en/Newsarticle/Norwegian_success_in_the_EU_Sixth_Framework_Programme/1236685399276

¹⁴ The EU strategy – Norwegian Ministry of Education and Research

¹⁵ NIFU, STEP and Technopolis Evaluation of Norway's participation in the EU's 5th Framework Programme

¹⁶ Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

¹⁷ Speech by Minister of Research and Higher Education Tora Aasland at the EU research conference March 2010

¹⁸ Godø et al.

“From the perspective of Norwegian researchers, participation in FP6 and FP7 is a success in terms of network building, research performance, achieving project objectives and as a starting point for acquiring new R&D projects. Participants also report extensive impacts of their projects on their R&D capabilities and activities, and significant long-term effects. The EU projects explore new research areas of significant importance for the participants’ future research/innovation activities. A substantial number of researchers state that the EU projects they participated in had positive effects on research and innovation capabilities, and long-term cooperation links. Because of this, research activities are becoming more collaborative, international and organised in larger projects.

These positive findings should really not come as a surprise because in general, research benefits from international collaboration. However, this fits well with the intentions expressed in Norwegian research policy on the high priority of internationalisation of Norwegian research. Although Norway’s rate of success is slightly lower than its Nordic rivals, it is still above the EU average, which is also an indicator of success. For these reasons, it is in Norway’s interest to continue participation in EU FPs – it should even be increased in order to obtain more benefits. This is the main recommendation of this evaluation.”¹⁹

Norwegian FP participants have, through studies, articulated a number of benefits that European collaborations have brought and that may bear longer-term impacts. As part of the FP6-7 evaluation the most prominent motivations for Norwegian FP participants were identified to be access to research networks, expertise, scientific excellence and funding, something echoed in 2011 Nordforsk brief on Nordic FP participation²⁰. There was also widespread recognition that FP participation could form an integrated part of an organisation’s internationalisation strategy.

Consultations with FP participants have revealed a number of results. Conclusions from participant surveys and interviews (FP6-7) underlined both positive effects on research and innovation capabilities and long-term cooperation links, as well as new ways of conducting research. Indeed, 21% of FP6 participants providing feedback for the NIFU STEP study reported that participation has changed the nature of their research activities in general. Forty-one per cent of Norwegian FP6 participants responding to the evaluation survey reported FP collaborations had led to further international projects, including beyond the FP. Similarly, 33% of responding participants had since FP collaboration, partaken in larger collaborative projects, also these beyond the Framework Programme.

Comparing the Nordic countries’ FP participation, a 2011 study consulting FP participants found that Icelandic and Norwegian participants rated their FP experience the most highly.²¹

Looking more closely at impacts relating to changes in collaborations between Norwegian and international researchers, these are also visible when analysing scientific co-authorships in the period 1988-2007 as undertaken in the Norwegian FP6-7 study. Its findings indicate a strong growth in Norwegian researchers’ co-publications with EU countries – from 15% in 1988 to 37% in 2007. This increase has been larger than the equivalent collaboration between both North American and Nordic countries, although co-publications have grown in number here too.

Despite the study conclusions not articulating why this change in collaborations had taken place, the data furthermore indicated the Framework Programme was a major reason for at least accelerating the changing geographical location of collaborators. Although Norwegian-EU collaborations have increased in the overall period between 1988 and 2007, specifically growth has been steep during the first years of Norwegian

¹⁹ Ibid.

²⁰ NIFU, Technopolis, Enhancing the Effectiveness of Nordic Research Cooperation: Nordic participation in the EU Framework Programmes – Best practices and lessons learned, Nordforsk Policy Brief 1, April 2011

²¹ NIFU, Technopolis, Enhancing the Effectiveness of Nordic Research Cooperation: Nordic participation in the EU Framework Programmes – Best practices and lessons learned, Nordforsk Policy Brief 1, April 2011

FP participation. The years 1995-1998 saw co-publications increase from 22 to 29%. Echoing the original findings, these data would indicate that the boosted European collaboration is part of an overall internationalisation of research, thus possibly intensified thanks the Framework Programmes.

These benefits are also noted in a 2010 publication by the Confederation of Norwegian Enterprise (NHO) which added that “through European research facilitates Norwegian companies and other R&D environments have access to scientific and technological resources far beyond Norwegian [domestic] capacity and breadth”.²² Going full circle, this is a benefit pointed out in the FP6-7 study too: “A more interesting indicator from a policy point of view is the total R&D cost of all the FP6 projects with Norwegian participants. This value is close to € 4900 million. This is an indicator that the Norwegian funding gives the Norwegian participants access to research and technology activities worth more than 13 times the Norwegian contribution”²³.

Our interviews with stakeholders confirmed these strong benefits from EU projects. An effect that is difficult to measure in quantitative terms, but was strongly expressed in interviews with representatives from the Higher Education sector was that EU participation functions as a ‘quality driver’ for the universities. It has exposed to universities to excellent research in other countries, it has strengthened the view on the importance of international publications in refereed journals and it has demonstrated that to win for instance ERC grants, Norwegian researchers need to be better prepared. The latter has again also caused a greater attention at the leading universities for career development of their (young) researchers including the stimulation of international experience. The lack of international experience and publications of Norwegian researchers has shown to be a factor in the earlier years of not doing well in ERC calls.

2.5 Specific impacts on industry R&D

Overall, the studies conducted and consulted have not always distinguished between public or private FP participants, but rather looked at the themes or scientific disciplines where Norwegian researchers have been involved in FP research. Yet, a couple of industry specific outcomes and impacts have been recorded²⁴.

As for the Norwegian business sector and its participation in the Framework Programmes, evaluations show that the highest number of Norwegian participations in FP7 so far has been in the SME programme. The NIFU-STEP evaluation looking at FP6-7 indicated a ‘large number’ of SME participations, especially in the areas of transport and ICT. Larger Norwegian businesses also participate in these two themes, and in addition, their participation is also particularly noticeable in the areas of nanosciences, energy, and security. Judging by the literature consulted here, Norwegian private sector participation is comparatively high, even across Europe. Nevertheless there is a general concern, not only in Norway, that relative industry participation is decreasing, mostly due to the administrative burden of taking part.²⁵

As and when consulted, business sector participants have emphasised that collaboration in European research provided them with the opportunity to access

²² EU forskningen – Hva må til for å løfte norsk næringslivs deltagelse? NHO (Næringslivets Hovedorganisasjons) Perspektiv Innovasjon, March 2010

²³ Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

²⁴ Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

²⁵ See for instance European Commission, Interim Evaluation of the Seventh Framework programme, report of the Expert Group, Brussels, 2010

broader networks and grasp new opportunities. Importantly, these have been developed as neutral meeting places, and have as such been ideal for conducting industrial research. In addition, high-risk research has been shared among participants, and allowed projects that have been deemed too risky to undertake singlehandedly to be conducted between European partners.

As a result of participation, a quarter of FP6-7 private sector participants have reportedly gained new suppliers, with 43% believing they will gain new clients. Almost one-third reported a strengthening of their position vis-à-vis competitors.

Our interviews with stakeholders from industry also strongly supported the close interaction with the European Framework programmes. As 80% of Norway's export goes to Europe it seemed common sense to all interviewees that the relationship with Europe is essential for Norway as a society and for business. While there are of course similar complaints as in other countries about the administrative burden and the need for simplification, this is not a reason to disengage from the Framework Programmes and in the future also from Joint Programming activities. Industry and social partner representatives were equally positive about the importance to stay closely affiliated to the European research and innovation initiatives.

2.6 Critical views

While the positive views on benefits seem to have a strong upper hand, evaluation studies and policy papers have also pointed towards a number of disadvantages of taking part in European research programmes and projects.

One issue in the policy debate is the financial gap between Norway's contribution to the EU Framework Programme and the financial returns from taking part in contracts as was discussed in section 2.2. While the evaluation studies argue that 1) the benefits of FP participation for Norway can not be easily be translated in monetary terms and 2) participation has a strong leverage effect as it gives Norwegian organisations access to research activities of much larger magnitude than the Norwegian research activities (and thus funding) alone. Nevertheless this concern is one reason to elaborate a scenario where Norway does not have an 'automatic' funding arrangement for the FP based on the current EEA agreement.

A second concern, which is not specific to Norway, but a widely voiced criticism of the FPs is the level of bureaucracy involved in European initiatives. This is particularly true for newcomers to the FPs not used to the specific demands of European proposals. The Norwegian FP6/FP7 evaluation stated that this was particularly a problem for universities with weak administrative support structures and for companies. The report also showed that coordinators, who face a larger administrative burden, are on average more positive about the results of their participation than non-coordinators. This could suggest that the bureaucracy forms less of a bottleneck, and that more experienced participants learn how to 'play the European game'.

Although simplification has been on the European agenda for quite a while and some progress has been made in FP7, administrative burdens are still considered a big hurdle for participation. Researchers make comparisons with the more efficient and easy applications for Norwegian research funding through for instance RCN. However, national funding programmes do not offer the opportunity to work directly with international partners.

It was also stated in the evaluation study and in our interviews, that for specific large companies the interest in the FP has faded, mainly due to a change in the contents of the Framework Programme. This was particularly mentioned in relation to the ICT domain, where consecutive Framework Programmes have refocused their activities to specific application domains and/or have become more oriented to fundamental research and 'upstream' enabling technologies. According to our interviews with the social partners and industry representatives, these are indeed specific cases, but do not reflect the majority view of the private sector.

Other concerns expressed in the FP6/7 evaluation are:

- A lack of synergy between the European funded research projects and the Norwegian funded research projects, although there is a variation by research domain with stronger synergies in the areas Environment and Health²⁶
- The large consortium sizes of some European projects making them ineffective because of the many partners involved
- Unclear and unattractive cost models. Particularly institutes with low basic funding have difficulties to co-fund the projects and cover the complete costs.

2.7 Summary

A number of conclusions can be drawn from the above analysis:

- The Framework Programme is the most important channel for international S&T cooperation in Norway. Norway's participation is strong and success rates are above EU average
- Norway's financial contribution to the Framework Programmes is growing faster than the financial returns that Norwegian participants have managed to secure, leaving a gap between the monetary value of the contributions to the EU versus the funding received in Norway
- Norway has a relatively strong participation in the thematic areas environment, energy and the social sciences
- Existing studies show a predominantly positive view on FP participation leading to benefits and impacts such as:
 - Access to complementary and state-of-the art knowledge
 - Building networks with other European research organisations
 - Increasing international co-publications with European partners which generally have a higher scientific impact than national publications
 - Access to customers and suppliers through collaborative projects for firms
- Critical views are mostly concerned with the large administrative burden attached to the Framework Programme and the need for simplification to attract more participants
- Our interviews confirmed a strong positive balance of benefits versus drawbacks of participation in the FPs. The positive effect on the higher education modernisation agenda was stressed as an important indirect effect that is clearly visible in the universities
- Despite the fact that Norwegian success rates are above average, studies and interviews point out that there is still room for improvement, particularly by widening the pool of participating organisations (in particular universities and companies).

²⁶ Godø et al (2009), page 119.

3. The interaction between Norwegian and EU research policies

3.1 Introduction

This chapter looks at the alignment of Norwegian policy priorities and the priorities of the European Framework Programmes. The first paragraph describes the priority setting in Norwegian research policy over time. The chapter continues to compare the thematic priorities with those in the Framework Programme. In the third paragraph we discuss internationalisation as an explicit priority in Norwegian research policy. The fourth paragraph connects specific Norwegian challenges with the role that EU participation can play in overcoming these challenges.

3.2 Priority Setting

There is a consistency in Norway's thematic research priorities over time (Figure 5), which derives ultimately from the structure of the economy and the political desire for high levels of welfare. The marine and maritime area –in terms of fish, ships, shipping and more recently the engineering for offshore activities that is founded on shipbuilding and related engineering – is a central and enduring theme. The same is true of energy, which has been for the last 20 years or more increasingly coupled to environment. Materials and biotechnology emerged as priorities during the 1980s, as they did in most other countries, and have persisted since that time (with materials most recently metamorphosing into nanotechnology).

Management and culture were introduced as priorities in the mid-1980s in response to pressure from the social science and humanities research communities, while medicine was given priority in part to respond to pressure from the medical establishment. These new priorities have persisted to the present day. The most recent additions to the priorities are tourism (which has long been economically important for Norway, though it is hardly a research-intensive business) and the acceptance of the idea of 'grand challenges' in the most recent White Paper, aligning Norway with the European policy discussion about future thematic priorities at the European level.

Figure 5 Norwegian Research White Papers, 1975-2009

Norwegian Title	Translation	Thematic priorities
St.melding nr. 35 (1975-1976) Om forskningen i Norge	On research in Norway	None. Focus on organisation, finance, international cooperation, key research tasks, setting up a social planning research council, ethics and research careers
St.melding nr. 119 (1980-1981) Om utviklingen i forskningens organisering og finansiering	On developments in the organisation and funding of research	None. Focus on organisations responsible for making research policy, funding, human resources and careers, the conditions for contract research workers and the need to establish research in the regions
St.melding nr. 60 (1984-1985) Om norsk forskning	On Norwegian research	The government had previously signalled that IT, marine, materials and off-shore technology should be priorities. The White Paper proposed 5 'Main Priorities' – IT, biotechnology, oil and gas, organisation and management and research for transmitting culture and traditions – to be implemented as cross-council initiatives.
St.melding nr. 28 (1988-1989) Om forskning	On research	Signalled a significant increase in funding, with the aim of bringing Norwegian R&D investment more into line with that of leading OECD countries. The 9 thematic 'Main Priorities' were: Biotechnology, Fishing and aquaculture (Havbruk), Health, environment and the quality of life (HEMIL), Information technology (IT), Culture and research on the preservation and communication of traditions (KULT), Management and organisation (LOS), Oil and gas, Materials technology and Environmental technology
St.melding nr. 43 (1991-1992) Et godt råd for forskning. Om endringer i forskningsrådsstrukturen	A good research council. On changes in the structure of the research councils	Proposed the merger of NTNF with all the research councils to form the Research Council of Norway
St.melding nr. 36 (1992-1993) Forskning for fellesskapet	Research for the community	Focus on research quality and improvements in researcher training. Increased funding should be provided to basic research rather than applied research. This White Paper highlights four horizontal priorities (recruitment of researchers, basic research, business-oriented research and research on environmental protection) as well as nine thematic priorities (ICT, Biotech, Material technology, Marine, Oil and gas, Leadership, organisation and governance, Culture, Health and living conditions and eco-technologies)
St.melding nr. 39 (1998-1999) Forskning ved et tidsskille	Research at the beginning of a new era	Thematic foci: marine, ICT, medicine and health, research at the interface between energy and environment. These had been proposed in RCN's first strategy (1996), based on an internal consultation in the research council (external stakeholders were not involved) and were adopted by the education ministry in drafting the national thematic priorities. The White Paper sets no targets for increased funding and warns that other activities' priorities will not be reduced.
St.melding nr. 20 (2004-2005) Vilje til forskning.	Commitment to research	Structural priorities: internationalisation of research, basic research, research-based innovation Thematic: energy and environment, oceans, food, health Technologies: ICT, new materials (nanotechnology), biotechnology
St melding nr 30 (2008-2009) Klima for forskning	Climate for research	Strategic goals: Global challenges, welfare and research-based professional practice, industry-relevant research in the areas of food, marine, maritime, tourism, energy, environment, biotechnology, ICT, and new materials/nanotechnology, improved health and health services, knowledge-based industry across the whole country

Norwegian Title	Translation	Thematic priorities
		Overarching goals: high quality research, a well functioning research system, increased research internationalisation and efficient use of research funding and results

The 1989 White Paper²⁷ set a target of increasing R&D spending by 5% a year in real terms. Following several years of campaigning by the new Research Council of Norway, the 1999 White Paper (St. meld. nr. 39, 1998-1999) set a target of increasing the share of GDP devoted to R&D until it reached the OECD average (then at a little over 2%). Subsequently, Norway adopted the Barcelona goal of 3%.

The priority setting process is consultative. Many of the key actors have their own priorities determined for them by their parent ministries, which are also engaged in the consultations about priorities. It can reasonably be argued that the White Paper priorities **reflect** rather than cause the wider set of research priorities in the Norwegian system. This is certainly consistent with the visible tendency to increase the number of priorities over time, rather than to take some of the priorities off the list.

While the priority setting process is elegant, it is also circular. It both reflects and tries to guide the priorities of the national actors and stakeholders. As a result, it risks lock-in – and this risk may have become more important since successive governments have decided to earmark the Research and Innovation Fund. That means that all national resources are part of the planning system – there is no safety valve or source of unplanned opportunities. Correspondingly, it is hard for this priority-setting system to make radical changes in direction. That is both a virtue and a potential weakness. It certainly means that there is limited freedom to shape a unified national strategy for internationalisation or for relating to the Framework Programme.

3.3 Thematic priorities

In terms of thematic priorities, the new Research Council of Norway took the initiative in the mid-1990s and identified four thematic priorities in its 1996 strategy, which the government took over in its 1999 White Paper. However, these had no budgets attached to them. The two subsequent White Papers have added to these priorities – in part by increasing the number of themes and in part by highlighting other desirable characteristics of the research system. Those of the 2005 White Paper²⁸ are shown in Figure 6.

Figure 6 Thematic Priorities of the 2005 Norwegian White Paper, *Vilje til forskning*



²⁷ St. meld. nr. 28, 1988-1989

²⁸ St. meld. nr. 20 (2004-2005), *Vilje til forskning*

The latest White Paper *Klima for forskning* prioritises five ‘strategic’ and four ‘over-arching’ sets of goals. The strategic goals are largely (but not entirely) thematic.

- Strategic goals
 - Meeting global challenges, with a particular emphasis on the environment, climate change, oceans, food safety and energy research.
 - Better health, levelling social differences in health, and developing high quality health services.
 - Addressing social challenges and providing research based practice in the relevant professions
 - Knowledge based industry in all regions
 - Industry oriented research within the areas marine, maritime, tourism, energy, environment, food, biotechnology, ICT, and new materials/nanotechnology
- Over-arching goals
 - High quality research
 - A well functioning research system
 - Increased internationalisation of research
 - Efficient use of research funding and results

None of these priorities is attached to a specific budgetary commitment because Norway formally only budgets annually, though in the detailed discussion of each priority there is a list of actions to be undertaken, often involving the launch or strengthening of a research programme or funding stream. At the overall level there is similarly no commitment to a total budget, although there is a reaffirmation of Norway’s pursuit of the Barcelona 3% goal and a discussion of the need to supplement this R&D/GDP indicator with others in order to achieve a good performance.

Compared with previous sets of priorities, those of the 2009 White Paper have an increased societal content – themes are no longer defined only in terms of disciplines and industries but also in terms of meeting wider social needs as well as the state’s responsibilities in managing the knowledge infrastructure.

While MER’s strategy for FP participation said that RCN should strengthen national R&D programmes in order to develop broad synergies with the FP, in practice, many of the ‘large programmes’ launched by RCN during the 2000s (such as RENERGI, NANOMAT, NORKLIMA and HAVBRUK) turned out to be strongly aligned to FP6 themes, even though their conception and motivation was purely national. FP7 priorities similarly coincide reasonably well with Norwegian priorities established in *Klima for forskning*.

There are of course still systematic differences between Norwegian national R&D strengths and needs, on the one hand, and what the FP offers on the other. Norway is especially strong in social sciences, which play a relatively minor role in the FP. Issues relevant to oil and gas exploration and production have far more interest in Norway than in the rest of Europe, though where energy-related issues are more generic there can be strong common interest. A very visible example is carbon capture and storage, where Norway plays an important role in the European effort.

If we compare this to the new Horizon 2020 programme there is a strong but not complete connection between the Norwegian priorities and, for example, the Grand Challenges that are the driver for Europe’s research investments. The broad categories of Horizon2020 (outside Euratom) include:

- ‘*Excellent Science*’ (ERC, Future and Emerging Technologies, Marie Curie Actions and research infrastructures) with a proposed budget of €24,5 billion
- ‘*Industrial Leadership*’ (including enabling and emerging technologies such as ICT, micro- and nanotechnologies, advanced materials, biotechnology and space) with a proposed budget of almost €18 billion
- ‘*Societal Challenges*’ with a proposed budget of €31,7 billion including:

- Health, demographic change and wellbeing (€8 billion)
- Food security, sustainable agriculture, marine and maritime research and the bio-economy (€4.1 billion)
- Secure, clean and efficient energy (€5.7 billion)
- Smart green and integrated transport (€6.8 billion)
- Climate action, resource efficiency and raw materials (€3.1 billion)
- Inclusive, innovative and secure societies (€3.8 billion)

Horizon2020 topics such as Energy, Health, Food Security, Marine and Maritime Research are also high on the policy agenda in Norway. However, mapping and comparing broad thematic areas of both Norway and Horizon2020 has a limited value, as the real comparison should be made at the level of work programmes, where the specific research themes and topics are defined and which are not yet finalised and published. It is influencing the FP at this more operational level, which has become an important role for representatives of national states (representatives of ministries, agencies, stakeholders) in committees, strategic platforms and other decision tables. Norway's status as an Associated Country is in this respect very important, as it gives access to opportunities, in which to influence the contents of these work programmes.

In addition, a large share of Horizon2020 is allocated to bottom-up funding that is in principle relevant to the whole public research sector and universities in particular.

3.4 Internationalisation

The White Papers in both 2005 and 2009 emphasised the importance of internationalisation in Norwegian research policy, both in order to strengthen the relevance of Norwegian research and to access that done abroad via

- Active participation in the European Research Area
- Strengthening bilateral cooperation
- Norway as an attractive location for research
- Norway as a global partner in research

Klima for forskning made a particular point that Norwegian policy for FP participation should become more proactive. This was followed up by MER in a strategy document outlining a large number of measures for supporting participation in and use of the FP²⁹. Key among these was to allocate RCN the task of drafting strategy documents for participation in each FP and coordinating these with the ministries that fund RCN. This is in principle eased by the fact that all National Contact Points (NCPs) for the FP are located within RCN. They therefore have links with both the operations of RCN and the strategies of the funding Ministries. In practice however, the connections between Ministry strategies and the FP remain loose as the Ministries tend not to take any particular position on the FP when writing their own research strategies³⁰. Equally, there is no explicit mechanism for focusing Norwegian effort on particular parts of the FP – as in other countries it appears to be wholly demand-driven. In the absence of other mechanisms, we would expect the pattern of demand from potential Norwegian applicants to the FP to mirror the strengths and weaknesses of the Norwegian R&D communities. There is patchy evidence that, given the proliferation of instructions from the Ministries that fund it

²⁹ Kunnskapsdepartementet, *Strategi for Norges samarbeid med EU om forskning og utvikling*, Oslo, mai 2008

³⁰ Helge Godø, Liv Langfeld og Aris Kaloudis et al, *In need of a better Framework for Success: An Evaluation of the Norwegian Participation in the EU 6th Framework Programme (2003-2006) and the first part of the EU 7th Framework Programme (2007-2008)*, Rapport 22/2209, Oslo: NIFUSTEP, 2009

and its general principle that every proposal should be considered for funding, RCN has difficulty in prioritising among FP activities. For example, RCN was involved in well over 30 of the early ERANETS, staying out of almost none of these networks and requiring a very substantial internal effort.

In May 2008, The Ministry of Education and Research (MER) published its specific EU strategy, which includes the goal for Norwegian researchers to bring back 2% of the total FP7 budget³¹. Commenting on the strategy, the MER minister Tora Aasland wrote, “Norway’s participation in EU FP7 will require adjustments in the national research policy, in policy measures and funding of research”.³² And these adjustments are part of a broader agenda to internationalise Norwegian research. Indeed, participation in the FPs has become central in the internationalisation of Norwegian research and is also a fundamental element in increasing the country’s research competitiveness and quality.

Our interviews with Norwegian stakeholders confirm that Europe is still the most important geographical orientation of both the research and the business community. While a more global orientation (e.g. towards the BRIC countries) was deemed important, there were no suggestions that it should crowd out the European or Nordic orientation. On the contrary, several interviewees stated that through the European policy networks a more common approach should be developed to set up joint S&T collaborations, for example with big countries such as China and India. For various interviewees, Norway was deemed too small to cover the formal relations with all global regions.

3.5 EU participation and Norway’s challenges

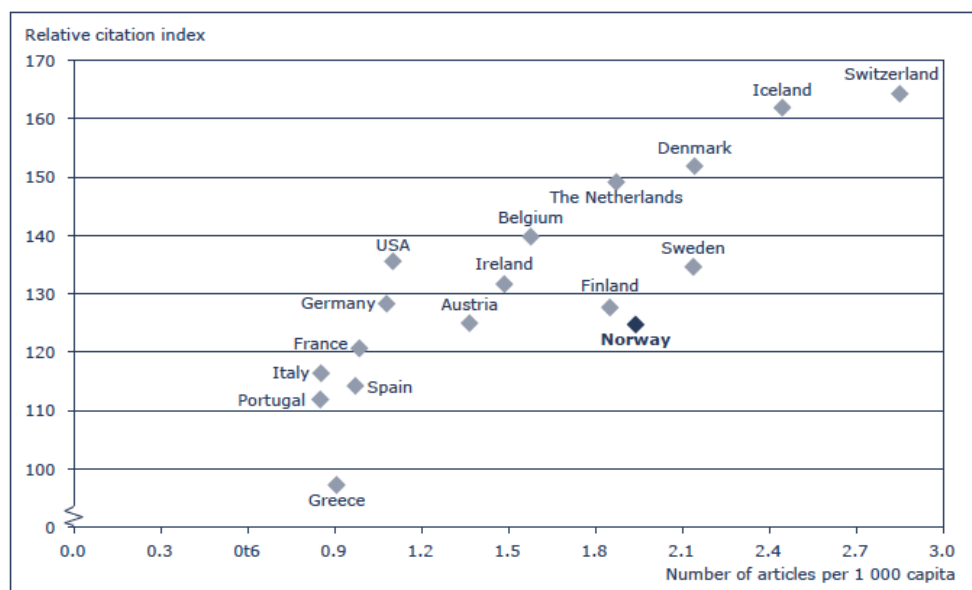
This is not the place for an exhaustive analysis of the strengths and weaknesses of the Norwegian Innovation system, nor do we attempt to give a balanced account of them here. Rather we highlight a small number of apparent challenges relevant to internationalisation.

Scientific publication has been expanding rapidly in Norway over the last decade. Norwegian publication in ISI-indexed journals was 81% greater in 2010 than in 2002, placing it among the fastest-growing scientific nations. However, citations to Norwegian research remained static in 2004-2006, while those to the work of most other OECD countries grew. This can be caused by the rapid expansion of research, with newcomers taking time to learn how to produce high quality articles. Figure 7 also suggests a need to improve quality.

³¹ Strategi for Norges samarbeid med EU om forskning og utvikling, Kunnskapsdepartementet 2008

³² Godø, Langfeldt, Kaloudis, et al. NIFU STEP RAPPORT 22/2009 (final draft 13.11.09) *In Need of a Better Framework for Success: an evaluation of the Norwegian participation in the EU 6th Framework Programme (2003– 2006) and the first part of the EU 7th Framework Programme (2007–2008)*

Figure 7 Publications per capita 2010 and the relative citation index for selected countries, 2007-9



¹ The relative citation index for articles published in 2007, 2008 and 2009 and the accumulated citations for these publications up to 2010. The index for each country has been weighted to reflect each country's relative distribution of articles across subject areas.

Source: National Science Indicators/Thomson Reuters/NIFU

Source: RCN, Report on Science and technology Indicators for Norway, 2011, Oslo: RCN, 2011

It is an increasingly common observation that internationally co-published papers tend to have higher impact factors and citation rates than national papers. Here is a clear motive for increasing Norwegian research participation in the Framework and other international collaborations. As mentioned in the previous chapter, participation in EU projects and applying to competitive funding such as the ERC helped to increase the standards of Norwegian research that was previously more inward oriented.

Other challenges of relevance to European FP participation relate to the limited internationalisation of industry. Norway has few very large companies and those that exist are primarily associated with resource exploitation. There has been little investment abroad – in particular, almost no investment in R&D abroad – leaving industry somewhat isolated from world developments in science and technology, though this situation seems to be improving. Equally, the level of foreign direct investment (FDI) is low, and is primarily limited to foreign take-overs of Norwegian businesses. What we do not see is an inflow of foreign capital, bringing with it innovative products, processes and business ideas from abroad. The exposure to partners, customers, suppliers, competitors and research organisations in international consortia helps to keep Norwegian companies more informed about state-of-the-art technological developments in global value chains.

Internationalisation and European collaboration is not a fix for all these challenges but in a global context a greater exposure to international standards and competition could help push the national agendas.

3.6 Summary

Norway's national broad thematic priorities show considerable overlap with those of the consecutive FP programmes. There is an overlap in terms of the key technology areas such as biotechnology, ICT, new materials and nano-technology. There is also a synergy in terms of thematic areas and societal challenges such as energy, environment, food and marine and maritime areas. There is no complete overlap as there are areas of specific interest to Norway that it does not share with many other

EU countries, such as research related to oil and gas exploitation. In addition, a real comparison can only be made on a level of aggregation beneath these big thematic labels. In the FPs these are laid down in the specific work programmes that define the specific research topics and research calls. The fact that Norway is an associated country allows it to be at the decision table where the contents of these work programmes are influenced. Competition for EU grants helps raise the quality of research and provides a welcome exposure for Norwegian businesses to international technologies and standards, both challenges for the Norwegian system.

As increased internationalisation is a key element of Norway's research and innovation policy and the EU Framework programmes form the main mechanism for internationalisation, the alignment seems obvious. While stakeholders express an interest to reinforce relationships outside Europe, many see the European policy networks as a good basis to build up joint non-EU collaborations, for example with the larger emerging countries such as China and India.

4. Recent developments in European research and innovation policy

4.1 The Framework Programmes

The original decision to establish a Framework Programme for research and technological development was taken in 1984. Since that time the Programme has evolved significantly, bringing in new mechanisms and new priorities. In 2000 a decision was taken to work towards creating a European Research Area, to address major challenges in European research and, in particular, to provide an “internal market” in research, with free movement of knowledge, researchers and technology.

This included increasing competition, better coordination of research policy and the development of a European research policy. Also in 2000, the EU Heads of State formulated the Lisbon Strategy to make Europe “the most competitive knowledge based economy in the world, capable of sustained economic growth with more and better jobs and greater social cohesion”³³. Following this an investment target for RTD of 3% of GDP was agreed by the Council, with the main instrument for working towards this being the so-called “Open Method of Coordination” – a process that involves securing agreement on joint policy agreements that are followed up through benchmarking and reporting processes from the Member States. Both the ERA concept and the Lisbon strategy contributed significantly to the reform of the Framework Programme and the changes introduced in FP6.

In FP6, in addition to a significantly larger budget (an increase of some 30%), several new mechanisms were introduced – both for funding of traditional projects, and for new types of activity such as the introduction of the ERA-NET scheme, aimed at enhancing cooperation and coordination among research funders in Europe. The European Technology Platforms also emerged within FP6. FP6 also increased the effort on new and emerging technologies and introduced the funding of research infrastructures.

4.2 The Innovation Union and ERA

In 2007, both FP7 and the new Competitiveness and Innovation Programme (CIP) were launched. FP7 put more emphasis on basic research and scientific excellence and saw the launch of the European Research Council, which moved away from the tradition of transnationality and collaborative research to fund individual principal investigators. It also saw an increase in the support for research infrastructures and other measures to support research capacity. FP7 also saw a near doubling of the EC research budget. That year also saw the signature of the Lisbon Treaty amending the two fundamental treaties of the EU³⁴. As well as the other major reforms introduced, the Treaty specifically integrated the concept of the European Research Area. This was reinforced with the publication of the Green Paper on “the European Research Area: new perspectives”³⁵, which emphasised the ERA as an internal market for research and identified as key challenges mobility in its widest sense, research infrastructures, excellence in research institutions, effective knowledge sharing and well coordinated research programmes.

³³ Presidency Conclusions, Lisbon European Council 23 and 24 March 2000

³⁴ Treaty amending the Treaty on European Union and the Treaty establishing the European Community (December 2007)

³⁵ SEC(2007) 41, Com(2007) 161 final 04.04.2007

As a consequence EU research policy-making may change significantly over the next years. The new Lisbon Treaty of 2009 offers by its new legal basis for legislation also a new instrument for the policy-making of the research system in order to achieve the ERA. This option offers a paradigm shift from a primarily co-operative policy making between the EU-level and the EU27 Member States, based on voluntary partnerships, to a more centrally directed, binding and top-down policy making. This option via a legal change can be seen as *the* external factor that may impact the current system dramatically. Obviously, a radical system's change may be beneficial in the long-run to the wider European socio-economic system, but at the moment it has a direct – yet unknown - impact *on* the actors and organisations of the current system.

While the new Lisbon Treaty may offer the instrument for a system's change (or parts thereof) and provide the grounds for amended institutions (in the sense of routines), it is still not clear how these new options and powers of the Commission will be used. In addition, in the areas research, technological development and space the Union and Member States have a shared competence, so the question is how top-down the EU can become.

The CIP, while considerably smaller than the FP, brought together for the first time a range of instruments to support innovation and growth including project funding, financial support instruments – especially for SMEs – and various knowledge sharing platforms.

With the ERA Green Paper came initiatives such as the Research Infrastructures leading to a legal framework for pan-European Research Instruments that might not be fundable through national legal instruments³⁶, and the concept of Joint Programming to address common European challenges in a few key areas by pooling national research efforts. Norway is the coordinator of the Oceans Joint Programming Initiative.

Following up on the Lisbon agenda, Europe 2020 is the new growth strategy for Europe, aimed at developing a smart, sustainable and inclusive economy to help the EU and the Member States deliver high levels of employment, productivity and social cohesion. Concretely, the Union has set five objectives - on employment, innovation, education, social inclusion and climate/energy - to be reached by 2020 against which each Member State has adopted its own national targets.

These areas are addressed by 7 flagship initiatives, of which the Innovation Union is one, where the EU and national authorities are expected to work together. The Innovation Union plan contains over thirty action points, with the aim to do three things³⁷:

- Make Europe into a world-class science performer;
- Remove obstacles to innovation – like expensive patenting, market fragmentation, slow standard-setting and skills shortages – which currently prevent ideas getting quickly to market
- Revolutionize the way public and private sectors work together, notably through Innovation Partnerships between the European institutions, national and regional authorities and business.

Innovation Union flagship is a departure from previous policy in that it tries to bring together user communities, innovators and researchers – including the use of public procurement where possible, to ensure a link to the demand side. It seeks to reinforce

³⁶ Council Regulation on the Community Legal Framework for a European Research Infrastructure (ERI) – COM(2008) 467 and Council Regulation on the Community Legal Framework for a European Research Infrastructure Consortium (ERIC), No. 723 (2009)

³⁷ Innovation Union Web Site

coherence between European and national research policies, cut red tape and remove obstacles to researchers' mobility³⁸.

It includes many activities previously undertaken including the delivery of the European Research Area, particularly various aspects of cross border cooperation and mobility, and the research infrastructures. It proposed focusing of funding on Innovation Union priorities and the creation of a single innovation market, measures to promote venture capital, and the further development of the European Institute of Technology. Under the Innovation Union actions, the EU and Member States are also screening the regulatory framework in key areas, particularly eco-innovation and the innovation partnerships, working to deliver the European patent and creating a European Forum on Forward Looking Activities to bring together the many sometimes disparate activities at regional/national, European and international levels.

The language of the Innovation Union strongly suggests that the Commission expects it will involve substantial coordination of national resources or resources (such as Structural Funds) normally under national control. It also sets out a clear statement on the need for free movement of knowledge across the European Union and more cooperation between science and industry at the European, national and regional levels.

It also sets the background for the development of the new generation of the Framework Programme – Horizon 2020.

4.3 Horizon 2020 – the new Framework Programme

The proposal for Horizon 2020 brings together the innovation related part of the CIP, the EIT and the Framework programme for RTD under a single heading, with a view to eliminating the separation between research and innovation. The programme will run from 2014 to 2020 with the proposed budget currently standing at €80 billion. It is structured around three priorities that link to these, with the selection of actions and instruments driven by policy objectives. EU research activities are increasingly directed at supporting broader EU policies in most areas of the Treaty. That means that its activities have an effect not only on research policy (and thus MER) but also on other Norwegian Ministries.

It also includes what it intended to be a major simplification and standardisation of funding schemes and administrative rules across the programme.

It has three strategic policy objectives

- Raising and spreading the levels of excellence in the research base, with a proposed budget of €24,598 million. This includes an increase in funding of 77% to €13.2 billion for the European Research Council and €2.4 billion for research infrastructures
- Tackling major society challenges with a proposed budget of €31,748 million covering six key areas
 - Health, demographic change and well-being
 - Food security, sustainable agriculture, marine and maritime research and the bio-based economy
 - Secure, clean and efficient energy
 - Smart, green and integrated transport
 - Climate action, resource efficiency and raw materials
 - Inclusive, innovative and secure societies

³⁸ http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=key

- Maximising competitiveness impacts of research and innovation with a proposed budget of €17,938 million. This includes major investment in key technologies, greater access to capital and support for SMEs

The programme also has a reinforced focus on SME participation, with proposed measures including devoting around 15% of the budgets of the 'Societal challenges' Specific Programme and the 'Leadership in enabling and industrial technologies' objective (€6.8 billion) directed to SMEs, a new instrument based on the US SBIR model providing simplified access for SMEs with single company support being potentially possible, and a specific action building on the Eurostars Joint Programme.

The social sciences and humanities will be fully integrated within each of the main pillars of Horizon 2020.

In addition to the current three KICs, the EIT will gradually set up six additional KICs in areas of major societal and economic relevance, with a high innovation potential – added value manufacturing, food4future, innovation for healthy living and active ageing, raw materials, smart secure societies, and urban mobility.

Implementation and governance structures have not yet been defined, however the role and structures of the Committees will change with the programme committee having only an advisory function.

At this stage the programme is still a Commission proposal that needs to be discussed and responded to by the Council and Parliament – the final shape and budget therefore may change, potentially significantly.

4.4 The Norwegian response towards these developments

Norway is not formally part of the Europe2020 strategy, and therefore has no obligation to follow it. However, internationalisation of Norwegian research has been a priority for many years as evidenced in the 2005 White Paper on research policy³⁹, and again in the White paper of 2009⁴⁰. The Framework Programme, and increasingly ERA, is seen as the largest arena for this type of activity, including collaboration between Norwegian and other international researchers. However, Norway also participates in various international “big science” organisations such as CERN, ESA, and EMBL.

In 2008, the Research Council of Norway, which was tasked with many of the relevant actions, published the “Forskningssamarbeid Norge-EU” (Research Cooperation Norway-EU) Action Plan setting out detailed arrangements for interfacing with FP7 and ERA, including in the programme committees.

The growing importance of internationalisation activities within the Framework Programme, both through increasing cooperation with third countries and through actions to support mobility of researchers more generally has not been reflected in the level of participation of Norway in these actions. Generally Norwegian participation in INCO activities and in the Marie Curie Actions promoting mobility have been low.

The new mechanisms introduced under FP6 and FP7 reflecting the development of ERA include several areas where Norway was extremely active. The ERA-NETS, for example, introduced towards the end of FP6 aimed to improve bottom-up coordination of national R&D funding with a view to potentially developing joint multinational programmes involving several Member States. Participation in ERA-NETS is optional, but RCN was one of the national research agencies with the highest level of participation (47 participations out of 71 ERA-NETS). Through this participation, Norway (mainly through RCN staff) gained significant experience on how R&D activities are organised in other Member States. This gave Norway access to

³⁹ St meld nr 20 (2004–2005), “Vilje til forskning”

⁴⁰ St meld nr 30 (2008–2009), “Klima for forskning”

networks and communication channels that they would otherwise find difficult to reach. This networking enabled, for example, the development of the cooperation with Spain and Belgium that was needed to lead the Oceans JPI.

The principle behind the Research Infrastructures activities is that national facilities of high quality should be upgraded and made available to European researchers. Examples include not only examples such as the GÉANT high-speed network, but also Intergovernmental initiatives like CERN, ESRF, ILL, EMBL, ESA and ECMWF. Norway participates as an Associated State in the ESFRI strategy forum.

The Community legal framework for a European Research Infrastructure Consortium (ERIC) entered into force on 28 August 2009. This specific legal form is designed to facilitate the joint establishment and operation of research infrastructures of European interest. This is, however, proving slightly problematic in its transposition under the EEA agreement because of the applicable law and jurisdiction provisions.

Norway coordinates the SIOs (Svalbard Integrated Arctic Earth Observing System), eccSeL (European Carbon Dioxide Capture and Storage Laboratory Infrastructure) RIs, the Council of European Social Science Data Archives (CESSDA) and participates in the eIScAt_3D (next generation European incoherent scatter radar system) project, and participates in the thematic working groups.

European Technology Platforms brought together stakeholder groups, usually led by industry to draw up long-term strategic research plans. Norway's industry, after a slow start, participates in most of the ETPs mainly in areas of direct interest to the Norwegian economy. Other public-private partnerships are also emerging in Europe such as the Innovation partnership but their precise modalities have yet to materialise.

Norway continues to consider Europe as its main target for cooperation and research because it remains the major market with 80% of exports and 70% of imports being from EU. Norwegian industry also cooperates bilaterally across Europe.

Norway's contribution to ERA has not only been through the FP participation but through active involvement in policy coordination activities outside the FP. It has participated as observer in ERAC-meetings, dealing with financial coordination outside of the FP and the development of better framework conditions for research in Europe (mobility, careers, intellectual property and so on). ERAC will likely be the platform where the European Commission will discuss its plans for ERA-type regulations and directives and seek sufficient support from the Member States before launching anything. Norway participates in ERA-policy committees such as the Strategic Forum for International Science and Technology Cooperation (SFIC), the High Level Group on Joint Programming (GPC), the European Strategy Forum on Research Infrastructures (ESFRI), the Steering Group on Human Resources and Mobility, the Working Group on Knowledge Transfer and the European Rail Research Advisory Council (ERRAC). The past five years Norway was also invited to participate in the Informal Ministerial Competitiveness Council.

Thus although not an EU Member State Norway has actively taken part in policy coordination activities. Given the stability of the EEA agreement its role does not have to be renegotiated with each new Framework Programme.

With this focus, Norway has been positive in its approach to the ERA developments and has participated extensively. However, as a relatively small country there are questions as to how far they can realistically participate across the board – there may be need for more targeted participation, building on the experience of the ERA-NETS where it could be argued that resources were spread too thinly. This need for focus is mentioned in the 2009 White Paper, which specifically sets out the strategic aim of developing an active policy for participation in the ERA and recognises the need for prioritisation among the participation activities. It also highlighted the need for adaptation within Norwegian activities to react to the changing focus of European research policy and programme.

However FP7 saw a measurable shift away from traditional collaborative research projects towards fundamental research projects led by individual research teams and the ERA structuring instruments where the Norwegian system is not particularly well organised to take full advantage.

4.5 Summary

European research policy in the last 5-10 years has shifted from an extensive vehicle R&D-project funding to a more strategic policy making forum, which involves coordination between Commission and Member and Associated States. The concept of ERA has enabled a European policy culture with more coordination (using open method of coordination as a tool) and more strategic consultation between the European Commission and the Member and Associated States and between the Member States and Associated States themselves. Norway has been an active member of this European policy community and has therefore helped to shape the decision making on research policy, despite the fact that it has no formal voting rights.

With the integration of research and innovation and the extended authorities of the Commission, taking part has become much more than being successful in acquiring R&D funding for companies, universities and research institutes. With the new Lisbon Treaty and Horizon2020 the scope of research and innovation policy has widened. While careful consideration has to be made of possible consequences of these changes, Norway's EEA Treaty provides a stable relationship with the European community. Nevertheless with the changing European context there is no 'business as usual' scenario for Norway as the relation between EU and its Member and Associated States is very dynamic.

5. Forms of affiliation between EU and third countries

5.1 Introduction

One of the questions to the study team was to explore whether there are alternative forms of affiliation with the European Framework Programme that could be an option for Norway. This chapter provides an overview of the types of FP-affiliation that are currently in operation between the European Union and non-EU countries.

In the next sections an overview is given of types of affiliations with the European Framework Programmes. Below (5.3) we describe the specifics of Norway's EEA affiliation with the EU Framework Programme. In paragraph 5.4 we elaborate on relevant FP-affiliations of three other developed countries.

Paragraph 5.4 zooms in on how the affiliation between the EU and a selection of other R&D developed states are organised: Switzerland, Israel and the United States. The first two have an association agreement while the later has a bilateral cooperation agreement. In the last paragraph 5.5 we will comment on whether any of these alternatives would be a better option for Norway.

5.2 Types of affiliations with the European Framework Programmes

Non-EA countries that are affiliated to the Framework Programme can either be an associated country or a third country with specific bilateral S&T cooperation agreements. The definitions of both categories are as follows:

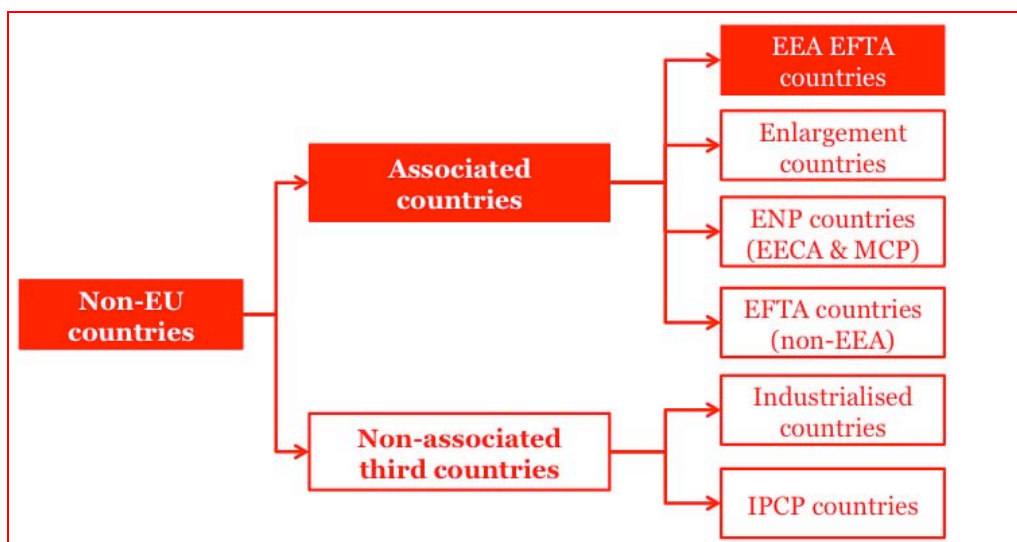
*An **associated country** is a country that has signed an **S&T association agreement** with the EC. Associated countries have signed an international science and technology association agreement with the European Community that involves financially contributing to all or part of the Framework Programme. These countries have all the rights and obligations of a Member State; the only minor difference is that representatives of associated countries do not have a formal vote at the Programme Management Committees.*

*A **non-associated third country** is a country that has signed a **bilateral S&T cooperation agreement** with the EC. The potential rights and obligations of legal entities from these countries depend on the degree of industrialisation.*

The use of both terms often lacks consistency. More specifically, certain types of associated countries are sometimes also referred to as third countries that –on the one hand- are not EEA countries or enlargement countries, but –on the other hand- are party to an S&T association agreement with the EC. The two categories we have introduced above are mutually exclusive and will be used throughout this study.

The two categories enable us to distinguish between six types of FP-affiliation for non-EU countries. The freedom to choose for specific affiliations is limited, and codetermined by factors such as welfare, geographical location, and agreements outside the field of S&T. Figure 8 presents the respective types of affiliations.

Figure 8 Typology of affiliations for non-EU countries



5.2.1 Associated countries

Associated countries have signed an S&T association agreement with the EC. Their association to the Framework Programme involves financially contributing to all or part of the Programme. Associated countries have the same the rights and obligations of a Member State. The only difference is that representatives of Associated Countries do not have a formal vote at the Programme Management Committees.⁴¹

There are four types of associated countries. Under FP7 they share equal rights and obligations. However, the main differences are the procedures that have to be followed to arrange the status of associated country.

- **EEA EFTA countries** – EFTA countries (including Norway) that have become associated through the signing of the European Economic Area agreement. Article 78 of the EEA Agreement that prescribes the EEA EFTA countries to strengthen and broaden STI cooperation with the EU. Protocol 31 of the EEA Agreement prescribes the implementation of the Framework Programme. Article 82 of the EEA lists three ways of establishing the financial contribution. *Per saldo*, full access to the EC's 7th Research Framework Programme is arranged.
- **Enlargement' countries** - Candidate and potential candidate countries for future accession to the European Union who have signed a Memorandum of Understanding. This MoU allows efficient and full access to the EC's 7th Research Framework Programme.
- **ENP countries** – There are 16 countries that fall under the European Neighbourhood Policy.⁴² ENP status does not automatically imply FP association. Currently, only two ENP countries are associated to FP7. Israel used to be the only one. Since 1 January 2012, Moldova holds the same position. The EC is currently working on reducing the procedural burdens for association for ENP countries.

⁴¹ The relevance of this difference is limited, since the Program Management Committees usually strive for consensus in their decision-making processes.

⁴² ENP is chiefly a bilateral policy between the EU and each of the 16 individual ENP countries. There are basically two groups of ENP countries: Eastern Europe & Central Asia (EECA), and Mediterranean Partner Countries (MCP).

Procedures will be similar to those of enlargement countries. Agreements will be replaced by *Memoranda of Understanding*.⁴³

- **EFTA countries** – Switzerland is associated to the Framework Programme. Association is arranged in one of the *Bilateral Agreements I* that were signed as a direct consequence of the rejection of the EEA agreements by the Swiss electorate and parliament on 6 December 1992. According to SG RTD, the idea was to minimize differences with the EEA. The EFTA Agreement of 1972 is one of the main pillars of trade relations between Switzerland and the EU. Bilateral Agreements I complement the EFTA Agreement by means of a further gradual controlled mutual opening of markets.⁴⁴ This implies that Swiss association is indirectly related to its status as an EFTA country.

Apart from the four categories mentioned above, it is also possible for countries that to sign a stand alone **International S&T Association Agreement**. Legally, this Agreement is similar to the previous construction under which ENP countries were associated. Since 10 March 2011, only the Faroe Islands have such a construction.

The table below lists the countries that are currently ‘associated’ to FP7.

Figure 9 Countries associated to FP7

EEA EFTA	Iceland
	Liechtenstein
	Norway
Enlargement countries	Albania
	Bosnia & Herzegovina
	Croatia
	Former Yugoslav Republic of Montenegro
	Serbia
	Turkey
ENP	Israel
	Moldova
EFTA	Switzerland
Other	Faroe Islands

5.2.2 Third countries

Third Countries can be affiliated to the Framework Programme in two ways. They can either sign a bilateral S&T cooperation agreement, or they can be labelled as an international cooperation partner country (ICPC).

- **International Cooperation Partner Country** – An ICPC country is a third country which the Commission classifies as a low-income, lower-middle-income or upper-middle-income country (using the World Bank definition) and which is identified as such in the work programmes. The Commission makes them eligible to participate in the FP and receive funding according to the same rules for remuneration applicable to member states and associated countries. The ICPC countries are grouped according to geographical criteria as follows:

⁴³ The Memorandum of Understanding associating Moldova to FP7 (EU) that was signed on 11 October, 2011 is the first MoU under the ENP.

⁴⁴ Integration Office FDFA/FDEA (2007). *Bilateral Agreements Switzerland – European Union: Fact sheets*

- Africa (48 countries, includes South Africa)
- Caribbean (14 countries)
- Pacific (15 countries)
- Asia (23 countries)
- Eastern Europe and Central Asia (12 countries)
- Latin America (17 countries)
- Mediterranean Partner Countries (9 countries)
- Western Balkan Countries⁴⁵
- **Industrialised countries with bi-lateral S&T cooperation agreements** -
The EC has also concluded bilateral S&T co-operation agreements with nineteen industrialised third countries. These agreements constitute a framework and a privileged forum to identify common interests, priorities, policy dialogue, and the necessary tools for S&T collaboration. The policy targets key partner countries, primarily what are generally considered to be the industrialised countries and the emerging economies, together with other countries from the neighbourhood region and Latin America. These agreements are pursued through bilateral meetings (policy dialogue) attended by high-level delegates from both parties, which are referred to as Joint S&T Cooperation Committee (JSTCC) meetings.⁴⁶

Countries with bi-lateral S&T co-operation agreements may participate in the Framework Programme but are not generally eligible for funding, although there are a number of exceptions to this rule, such as when the participation of the third country partner is considered essential for the success of the project, if specific provision is made in the work programme at topic level, or at Theme level due to reciprocal opening of research programmes⁴⁷ in a third country, or in case of IPR problems.⁴⁸

The table below lists the countries that have signed a bi-lateral co-operation agreement on S&T with the EU.⁴⁹

⁴⁵ Although today most of these have joined FP7 as associated countries

⁴⁶ Such meetings are normally held annually or every two years.

⁴⁷ Brian Warrington et al., *International Cooperation Activities of the Seventh Framework Programme's Capacities Programme - Interim Evaluation*, Report of the Expert Group, European Commission, DG Research and Innovation, 2011

⁴⁸ We elaborate on these exceptions in the section where we discuss the situation in the US.

⁴⁹ In some cases, the agreement includes a 'roadmap', i.e. a detailed timing of participation in the Framework Programmes and/or identification of the research priorities that constitute a specific focus. 'Reviews' are available for the agreements with Argentina, China, India, and the US, i.e. studies highlighting benefits, threats and opportunities as well as recommending further steps.

Figure 10 Third Countries with a S&T co-operation agreement

Country	Next renewal	Roadmap	S&T Review
Argentina (Argentine Republic)	2016	2010/11	2005
Australia	Indefinite period	2010-2012	
Brazil, Federative Republic of	2012		
Canada	Indefinite period	2009	
Chile, Republic of	2012	2010/11	
China, People's Republic of	2014		2004; 2008
Egypt, Arab Republic of	Indefinite period		
India, Republic of	2015		2006
Japan	Indefinite period		
Jordan, Hashemite Kingdom of	Indefinite period		
Korea, Republic of	2012		
Mexico (United Mexican States)	2010		
Morocco, Kingdom of	Indefinite period		
New Zealand	2014	2010/13	
Russia (Russian Federation)	2014	2010-2012	
South Africa, Republic of	2014		
Tunisia (Tunisian Republic)	Indefinite period		
Ukraine	2014		
United States of America	2013	2009	2003; 2009

Source: European Commission, DG Research, International Cooperation - Policy Framework

5.3 Specifics of Norway's EEA affiliation with the EU Framework Programme

5.3.1 The model for the EEA EFTA countries

The affiliation of Norway to the Framework programme finds its origins in the European Free Trade Association (EFTA) and more specifically in the European Economic Area (EEA) Agreement that was signed in 1994 between the EFTA member countries and the European Union, forming the cornerstone of the relations between Norway and the European Union.

The **European Free Trade Association** (EFTA) is an intergovernmental organisation set up for the promotion of free trade and economic integration to the benefit of its Member States. It was founded in 1960 by Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom and was established as an economic counterbalance to the more politically driven European Economic Community (EEC). However, cooperation with the EEC was growing: in the 1970s, the EFTA States concluded free trade agreements with the EC; in 1994 the EEA Agreement entered into force (see further below). In 1995, Austria, Finland and Sweden left the EFTA and joined the EU. Since then, the EFTA states are Liechtenstein, Iceland, Norway, and Switzerland. The latest development in the EFTA is that in 2009, Iceland applied for EU membership and started accession negotiations with the EU in 2010.

The European Economic Area (EEA) Agreement extends the Internal Market and its so-called four freedoms – the free movement of goods, capital, services and persons – to Norway and the two other EEA EFTA countries, Iceland and Liechtenstein. The fourth EFTA state Switzerland rejected participation in the EEA by referendum.

The Agreement guarantees equal rights and obligations within the Internal Market for citizens and economic operators in the EEA. It also includes so-called "flanking and horizontal policies", intended to strengthen the Internal Market.

Part VI of the EEA Agreement, concerning **co-operation outside the four freedoms**, establishes the principle of EFTA participation in a number of Community activities, such as research and technological development, education, information services, environment, social policy and the audio-visual sector (Article 78 EEA).

According to the EFTA secretariat⁵⁰, within the EEA agreement, the EEA EFTA states currently participate in the following EU programmes and activities (in order of decreasing budgets) that are related to science and innovation:

- FP7
- Lifelong Learning Programme
- Galileo Programme (Norway only)
- Competitiveness and Innovation Programme
- Erasmus Mundus II (Actions 1 and 3)
- Health Programme
- European Institute of Innovation and Technology

Whenever a programme ends, the EU side normally adopts a successive programme through a new (European Parliament and) Council Decision.⁵¹

EEA EFTA participation in a given EU programme is possible only if the three EEA EFTA States agree to it; subsequently, the *legal basis for participation* is established through a decision of the EEA Joint Committee to incorporate the Decision on the programme into Protocol 31 EEA.

While the European Research Area is not specifically mentioned in the EEA agreement, article 80 of the Treaty states that for the areas outside the four freedoms, cooperation may take place in the form of concentration or coordination of activities, the establishment of ad-hoc joint actions and where appropriate parallel legislation of identical or similar content. Thus ERA regulation can also be implemented in the current form of the EEA agreement. The so-called Protocol 31 of the EEA agreement allows incorporation of potentially new legal ERA-measures and legal acts. The normal EEA-institutions and protocols can be used for that purpose.

When agreeing to incorporate programmes into the EEA Agreement, the EEA EFTA States also commit themselves to paying an annual financial contribution into the EU budget.

Participation in programmes implies a financial contribution from the EEA EFTA States. Article 82 of the EEA lists three ways of establishing the financial contribution:⁵²

- Article 82(1)(a): The contribution from the EFTA States is calculated proportionally to the commitment appropriations and the payment appropriations entered in the general budget of the Community which is "*the sum of the ratios between, on the one hand, the gross domestic product at market prices of each of the EFTA States and, on the other hand, the sum of the gross domestic products at market prices of the EC Member States and of that EFTA State*".

⁵⁰ This is EFTA 2011, EFTA, March 2011

⁵¹ The legal basis of Horizon2020 is one of regulation and not decision.

⁵² Siri Frost Sterri, Toine Manders, *Report on EFTA participation in EC Programmes*, Joint Parliamentary Committee, European Economic Area, 2000

- Article 82(1)(b): The financial contributions are based on the principle that each Contracting Party shall cover its own costs, with an appropriate contribution fixed by the EEA Joint Committee to the Community's overhead costs.
- Article 82(1)(c): The EEA Joint Committee takes the decisions concerning the contribution of the Contracting Parties to the costs of the activity in question.

Up to now, the financial contribution to all activities covered in Protocol 31 EEA has been calculated according to Article 82(1)(a). The lion share of the financial commitments of the EEA EFTA countries to the EU is connected to their participation in the Framework Programmes.

The annual financial contribution poses a particular challenge for the Norwegian government and for the Ministry of Education and Research (MER) in particular. The FP contribution is paid on an annual basis from the budget of MER, and not as in most EU Member States as part of a block fund allocated by the central government's Treasury. The recent Expert Committee's Report on the EEA⁵³ phrased it as follows:

National participation in EU programmes represents a challenge for the budgets of the Norwegian government. Two factors in this respect are noteworthy. Firstly, changes in priorities internally in EU often lead to increases in Norway's commitments. As the EU reallocates funds from policy areas in which Norway does not participate (e.g. agriculture) to areas in which Norway does participate (e.g. research) this entails an increase in Norway's total commitments to EU. For the Member States such rearrangement of priorities play little or no role for their government budgets.

Secondly, ... the various Norwegian ministries have to cover commitments to EU programme participation from their own budgets.Therefore participation in the EU programmes is sometimes perceived as an expense rather than as an opportunity. The sister Ministries in the EU Member States, view the EU programmes rather as a source of revenue for activities in their own policy areas.

Our interviews revealed that in general there are no major issues regarding the participation of Norwegians in European initiatives. Issues that were put forward are that:

- In a few occasions representatives of a European Member State or the European Commission are unaware of the status of Norway and need to be informed about the rights that Norwegian affiliation brings. The low awareness of the details of the EEA agreement means that Norway is in some cases treated as a 'third country' and not as a full participating member in the Framework Programmes
- In a few cases Commission documents fail to mention the status of the EEA countries
- Researchers hardly encounter any problems with their counterparts in other EU member States in terms of having to explain the Norwegian situation in the preparation of a proposal or consortium agreement. Norwegian partners are now a 'normal' feature of the European landscape

The official decision for the European Research Area Board (ERAB) does not mention that its members need to be from a EU Member State, so there is no legal barrier and indeed Ms Unni Steinsmo of Sintef is currently a member of ERAB. There is also a Swiss member of ERAB. The current ISTAG advisory board on ICT only has members of Member States.

⁵³ Utenriksdepartementet, 2012, Utenfor og innenfor, Norges avtaler med EU.

5.4 EU and the affiliation with other developed countries

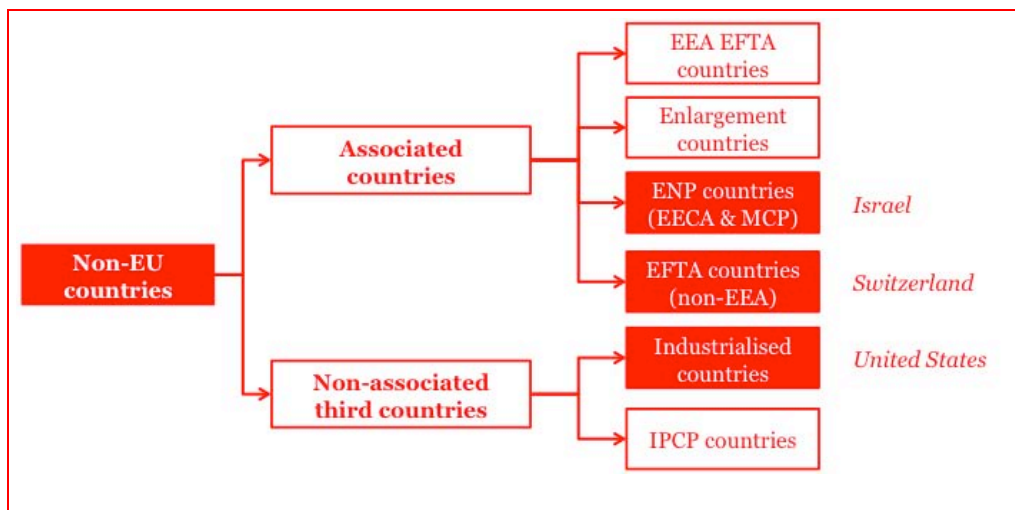
5.4.1 Introduction

In the previous paragraph we've seen that the affiliation with The Framework Programme can be organised in a number of ways. Apart from the association through the EEA Agreement that we described in the previous paragraph, countries can be associated as enlargement countries, ENP countries, and EFTA countries. Basically, rights and obligations are equal to that of member states. Yet, procedures for association differ significantly.

Countries can also participate in the Framework Programme as non-associated third countries. Basically this can be done under the conditions of an industrialised country or as an IPCP country. The latter is not relevant for Norway.

In this paragraph we describe three concrete alternative affiliation set-ups that could be compared to the Norwegian model. We do this by means of three concrete country case studies: Israel, Switzerland, and the United States. As Figure 11 below shows, each country represents one of the potential alternatives for Norway's affiliation.

Figure 11 Framing our country case studies in the typology of affiliations



In our three case studies we discuss the following aspects of each country's affiliation:

1. Current status of the country in FP7;
2. Financial contributions and rights of the country in FP7;
3. Obstacles in the current FP7 configuration for legal entities;
4. Access to FP7 related programmes.

The following Figure 12 gives an overview of the basis of affiliation of the three cases in comparison with Norway. Each of the countries will be discussed in more detail.

Figure 12 Forms of formal affiliation of country cases and comparison with Norway

	Israel	Switzerland	USA	Norway
Current Status	Associated country	Associated country	Third country, non IPRC	Associated country
Current status since	1994	2004	1999	1994
Legal basis of FP relationship	<ul style="list-style-type: none"> • Agreement on scientific and technical cooperation between the European Community and the State of Israel 	<ul style="list-style-type: none"> • Bilateral Agreements I • Agreement on S&T cooperation between the EC and the EAEC, of the one part, and the Swiss Confederation, of the other part 	Agreement for scientific and technological cooperation between the European Community and the Government of the United States of America	<ul style="list-style-type: none"> • EEA Agreement, article 78, • EEA Agreement, protocol 31.
Financial contribution to FP	<ul style="list-style-type: none"> • Based on proportionality factor • Annex III of the Agreement on scientific and technical cooperation between the European Community and the State of Israel 	<ul style="list-style-type: none"> • Based on proportionality factor • Article 5 of the Agreement on S&T cooperation between the EC and the EAEC, of the one part, and the Swiss Confederation, of the other part 	<ul style="list-style-type: none"> • Project by project funding, • In principle no EC funding • three exceptions (mainly IPR) 	<ul style="list-style-type: none"> • Based on proportionality factor • Article 82, EEA Agreement • Additional role of Norwegian Financial Mechanism⁵⁴

5.4.2 Switzerland

5.4.2.1 Status of the Switzerland in FP7

Switzerland is an EFTA member, but is has not signed the Agreement on the European Economic Area (EEA)⁵⁵. This implies in the first place that Switzerland is not subject to the Four Freedoms: the free movement of goods, persons, services, and capital among the EEA countries. Unlike EEA countries, Switzerland was not obliged to adopt part of the Law of the European Union.⁵⁶ It also implies that Switzerland is not subject to:

- Article 78 of the EEA Agreement that prescribes the contracting parties to strengthen and broaden cooperation in ten fields outside the Four Freedoms including research and technological development.
- Article 82 of the EEA Agreement that states that the contribution of the EFTA States, arising from their participation in Community activities, shall be calculated proportionally to the commitment appropriations, and to the payment appropriations.

⁵⁴ The Norwegian financial mechanisms support projects in new EEA and EU Member States in a wide range of priority sectors such as protection of the environment, conservation of the European cultural heritage, health and childcare and development of human resources as well as academic research.

⁵⁵ Agreement on the European Economic Area (OJ No L 1, 3.1.1994, p. 3; and EFTA States' official gazettes)

⁵⁶ Interface Institut für Politikstudien, Fraunhofer-Institut für System- und Innovationsforschung (ISI) (2005), *Evaluation der schweizerischen Beteiligung am 5. und 6. Forschungsrahmenprogramm der Europäischen Union sowie des Informationsnetzwerkes Euresearch*. Luzern

- Protocol 31 to the EEA Agreement that states that EFTA states shall participate in the implementation of –amongst others- the framework programme of Community activities in the field of research and technological development.

While EEA countries joined the research framework programmes through the EEA Agreement,⁵⁷ Switzerland had to arrange the status of an associated country in 2004 through the so-called *Bilateral Agreements I*. The renewal of these agreements also arranged cooperation with the European Atomic Energy Community.

This association implies that the Swiss are party to an international agreement with the EC, under the terms or on the basis of which it makes a financial contribution to all or part of FP7.

This situation is relatively new for Switzerland. Until 2003 the Swiss were involved in Framework Programmes on a “project by project” basis. Before the Framework Programme S&T cooperation was arranged in 6 research agreements, focussing on various research areas.⁵⁸

The Bilateral Agreements I were negotiated following the rejection of the EEA in a referendum. They were agreed upon mid 1999 by Bern and Brussels and approved by 67.2% of the Swiss electorate on 21 May 2000. The Bilateral Agreements I consist of seven sectoral agreements⁵⁹ between the EC and Switzerland. The Research Agreement was the seventh one. It assured the complete Swiss participation in the Framework Programmes as of January 2004 and superseded the six previous research agreements.⁶⁰ The agreements were renewed in 2007 to ensure similar participation in FP7.

The Bilateral I package made Switzerland one of the five associated countries in FP6. This status results in equal right in all programmes and activities under FP6, and FP7 for Swiss legal entities. Swiss legal entities receive funding from the EC and are fully entitled to participate in and coordinate European projects.⁶¹

5.4.2.2 Financial contributions and rights of Switzerland in FP7

Before association in January 2004, Swiss contributions to Framework Programmes were done on project-by-project basis. Payments to projects were made by the federal authorities (*Bund*), more specifically the *Staatssekretariat für Bildung und Forschung* (SBF).

Since the Bilateral Agreements I, this situation is different. Article 5 of the ‘Agreement on scientific and technological cooperation between the European Community and the European Atomic Energy Community, of the one part, and the Swiss Confederation, of the other part’ states that *‘the proportionality factor governing Switzerland’s contribution to the Seventh EC (...) Framework Programmes (...) shall be obtained by establishing the ratio between Switzerland’s gross domestic product, at market prices, and the sum of gross domestic products, at market prices, of the Member States of the European Union’*. These conditions are equal to those in the EEA agreement to which Norway is subject.

⁵⁷ Research and Development is covered by Protocol 31 to the EEA Agreement and falls under Subcommittee IV.

⁵⁸ Vahl, Marius, Nina Grolimund (2006). Integration without membership Switzerland’s bilateral agreements with the European union, Centre for European Policy Studies.

⁵⁹ free movement of persons; the Mutual Recognition Agreement; public procurement markets; agriculture: overland transport; civil aviation; and research

⁶⁰ Schweizerischen Bundesrates (2006). *Botschaft zur Finanzierung der Beteiligung der Schweiz an den Programmen der EU in den Bereichen Forschung, technologische Entwicklung und Demonstration in den Jahren 2007–2013 vom 13. September 2006*

⁶¹ EUReseach (2006). FP7 – 7th Framework Programme for Research and Technological Development.

The Swiss contribution to FP6 was CHF 775,3 mln. Until the mid-term evaluation in 2009, contributions to FP7 were CHF 474,8 mln.⁶² Based on GDP forecasts, the Swiss will contribute approximately CHF 2,4 bln (in today's currency nearly €2 bln) during FP7. The Swiss take a large interest in their so-called *Rückflusskoeffizient*. Their expectation on this coefficient is positive for FP7.

Under FP6, Swiss legal entities had slightly less rights than EU legal entities. Swiss legal entities were not allowed to participate in consortia that only consisted of legal entities from associated non-EEA countries.⁶³ EEA legal entities did have that right. Apart from this difference, Swiss legal entities had had similar rights during FP6 as legal entities from EU Member States. They have the formal opportunity to coordinate FP projects. This particular opportunity is considered to be of great value by the Swiss. 'The latter opportunity to directly influence the direction of a project and the choice of partners is an undeniable advantage for the Swiss research community and has considerably helped to increase Swiss participation in the framework programmes.'⁶⁴ Swiss legal entities also participate as observer in PMCs, where work programmes and calls are discussed. Representation in the PMCs is arranged by the SBF.⁶⁵ Switzerland can send representatives to committees established by Decision 2006/512/EC of the Commission under similar conditions as EU Member States.

Switzerland is convinced of the benefits of the current association over the project-by-project affiliation before 2004. The Evaluation of Swiss participation in FP5 and FP6 clearly shows substantial participation increases after the ratification of the Bilateral Agreements.⁶⁶ This increase was especially strong in the horizontal programmes (Innovation, Mobility, Infrastructures) where access was limited before 2004. Swiss participation, according to the valuation of FP5 and FP6, was also increased because administrative burdens for research institutes decreased. After all, no longer were they obliged to write two project proposals per project. 70% of Swiss research institutes in FP6 noticed a clear decrease of administrative burdens after association. The Bilateral Agreements, according to the SBF's interim analysis 'Effects of Swiss participation in EU Research Framework Programmes' allow Swiss researchers not only to participate in, but also to propose and coordinate European research projects. In Evaluation of FP5 and FP6 noticed a clear increase in the participation of potential coordinators after the Bilateral Agreements I. Currently, Swiss participation in PMCs, CREST, the Board of Governors of the European Commission Joint Research Centre is very much appreciated in Switzerland. Moreover, according to the evaluation, participation as an associated country granted Switzerland access to information, which is not available for third countries that are affiliated on a project-by-project basis.

Under FP7, Swiss research organisations have the same rights as EU legal entities. In June 2007 an agreement was signed between Switzerland and the EC that arranged the continuation of the Framework Programme aspects of Bilateral Agreements I under FP7. Moreover, it gave Swiss legal entities the hypothetical right to be in consortia with only non-EEA countries. The problem mentioned in the previous paragraph was solved. From then on, Swiss research organisations had equal rights entitlement to funding as their partners from EU Member States and from Norway when taking part in FP7 projects.

⁶² Staatsekretariat für Bildung und Forschung (2009). *Auswirkungen der Beteiligung der Schweiz an den Europäischen Forschungsrahmenprogrammen Zwischenbericht 2009*

⁶³ EFPC Group (2011). *The European Union's Framework Program 7 (with an emphasis on ICT)*

⁶⁴ EURResearch (2006). *FP7 – 7th Framework Programme for Research and Technological Development*.

⁶⁵ http://www.sbf.admin.ch/htm/themen/international/eu-frp_de.html

⁶⁶ Interface Institut für Politikstudien, Fraunhofer-Institut für System- und Innovationsforschung (ISI), *Evaluation der schweizerischen Beteiligung am 5. und 6. Forschungsrahmenprogramm der Europäischen Union sowie des Informationsnetzwerkes Euresearch*

Switzerland is an observer in the European Research Area Committee (ERAC). Swiss representatives can participate in the meetings of ERAC, however formally it meets without the presence of Swiss representatives at the time of voting.

Swiss Science Counsellors are not allowed to participate in local EU MS Science Counsellors' networks. These used to be arranged by DG RELEX.

5.4.2.3 Obstacles in the current FP7 configuration for Switzerland

Apart from participation in local EU MS Science Counsellors' networks, Swiss legal entities have similar rights as EU legal entities and as Norwegian and Israeli entities.

However, the Swiss follow completely different procedures than Norway when it comes to renewing their agreements with the EC. The Swiss and the EC are party in a stand-alone international agreement. Renewing this agreement is a lengthy process. In Brussels it requires approval of the Council. After negotiations, it requires approval of the European Parliament. Similar hurdles have to be taken in Switzerland. The last two times, the renewal process took 2 years. This meant that Switzerland became an associated country later than expected and the agreement did not take full effect during FP6. Switzerland thus had to continue its participation on a project-by-project basis for more than 1,5 years after the Bilateral Agreements I came into force. Subsequently, this was considered extremely problematic and disappointing by the Swiss authorities. Looking forward to the transition to FP7, the Bund remembered this problem and stated that: 'any distortion of the current situation [of full participation] would harm the Swiss role [in FP] disproportionately'.⁶⁷

The Swiss have asked the Commission for a more efficient process. However, this could not be implemented before the Horizon 2020 proposal was published. Hence, the Swiss will start negotiations on Horizon 2020 in coming months.

5.4.2.4 Actual participation in FP

The Swiss government, especially the SBF, has been very active in promoting Swiss participation in Framework Programmes, both FP6 and FP7. Additional SBF grants are open to Swiss potential project coordinators, and to SMEs that want to participate in a project for the first time.

In 2009, the Swiss performed their first assessment of their full association with FP6 and FP7. They concluded that:

- Involvement in FP6 amounted to more than 1000 Swiss participations in 900 projects.
- FP6 involvement was especially strong in the fields of LSH and ICT;
- In terms of financial contributions to FP6, the Swiss were ranked ninth, after Belgium.⁶⁸
- 90 FP6 projects were coordinated by Swiss legal entities;
- There was a 100 % return on the Swiss contribution to FP7;
- About 60% of the participations were from public sector research organisations. Some 40% were industry participations.⁶⁹ Of the industry participations, some 55% were SME participations.⁷⁰

⁶⁷ Schweizerischen Bundesrates (2006). *Botschaft zur Finanzierung der Beteiligung der Schweiz an den Programmen der EU in den Bereichen Forschung, technologische Entwicklung und Demonstration in den Jahren 2007–2013 vom 13. September 2006*

⁶⁸ 3,1% of total contributions. Source: SBF data, calculations: Technopolis.

⁶⁹ Please note that industry participations were significantly higher than in the U.S.

⁷⁰ Staatssekretariat für Bildung und Forschung (2009). *Auswirkungen der Beteiligung der Schweiz an den Europäischen Forschungsrahmenprogrammen Zwischenbericht 2009*

Besides that, it was concluded that Swiss full FP participation has promoted Switzerland's permanent integration into European research networks. A substantial number of arrangements have continued after project completion.

Switzerland seems satisfied with its current status as an associated member that participates with similar rights and obligations as member states. The Bund states that any Swiss return to the participation on a project-by-project basis would result in:

- Exclusion from cardinal cooperation- and information networks;
- Exclusion from project management, and the right to set up new projects-,
- The exclusion from IDEAS, and PEOPLE programmes

5.4.2.5 Swiss access to FP7 related programmes

Competitiveness and Innovation Framework Programme. In accordance with Article 4 of the CIP Decision, the Competitiveness and Innovation Framework Programme is open to the participation of EFTA countries that are members of the EEA, in accordance with the conditions laid down in the EEA Agreement.⁷¹ Similar arrangements were made in the EEA agreement of 2007.⁷² Participation by other third countries is only possible when agreements so allow. Switzerland is not member of the EEA and has no specific agreements with the EC on participation in CIP. It does not participate in CIP. The only exception is the CIP initiative EEN.⁷³ Switzerland indicated that it had no interest in participating in other CIP pillars.⁷⁴

European Institute of Innovation & Technology. The EIT is open to EFTA countries. The EIT is based on three Knowledge and Innovation Communities (KICs). Switzerland actively participates in the EIT and is the only non-EU Member State to host one of the 16 co-location centres that constitute the KICs.

European Technology Platforms. As an Associated Country, Switzerland participates in the ETPs. Switzerland has representatives in 15 of the 35 ETP mirror groups.⁷⁵

Joint Technology Initiatives. JTIs are open to Member States and Associated Countries to the Framework Programme.⁷⁶ As an associated country, Swiss legal entities can also get funding under the same conditions as Member States.

5.4.3 Israel

5.4.3.1 Status of the Israel in FP7

The signing of the Oslo Agreements implied Israel's acceptance as an S&T partner by the EC.⁷⁷ Israel's participation in Framework Programmes dates back to 1996.⁷⁸ The current Science and Technology Agreement was signed on 16 July, 2007 and was concluded and entered into force in December 2008.

⁷¹ DECISION No 1639/2006/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013)

⁷² Dahl, Hanne DAHL Øystein Djupedal (2008). *REPORT on RESEARCH AND EDUCATION PROGRAMMES: THE EEA AND THE EFTA STATES*. EUROPEAN ECONOMIC AREA JOINT PARLIAMENTARY COMMITTEE

⁷³ (<http://www.bbt.admin.ch/themen/01051/01053/01067/index.html?lang=en>)

⁷⁴ Interview 12-14

⁷⁵ SBF. *European Technology Platforms (ETP): Swiss representation in the Mirror Group*

⁷⁶ European Commission. *Joint Technology Initiatives: Public Private Partnerships in EU Research*.

⁷⁷ ISERD (2006). *Israel and the European Framework Programme for Research and Development Looking Ahead: the Seventh Framework Programme 2007-2013*

⁷⁸ The Agreement on Scientific and Technical Cooperation between the European Community and the State of Israel was adopted on March 25, 1996 and entered into force on August 6, 1996

The Agreement gives Israel the status of an associated country, similar to that of Norway and of Switzerland. This implies that Israeli legal entities can participate in FP7 under the same conditions as legal entities from EU Member States.

5.4.3.2 Financial contributions and rights of Israel in FP7

Already in 1996, the Israeli financial contribution to the Framework Programmes was arranged according to the proportionality factor that is also used for EEA countries including Norway. Israel's contribution was based the ratio between Israel's GDP, and the sum of GDPs, at market prices, of the Member States of the European Union'.

Under FP6, -unlike legal entities from the U.S., Switzerland, and Norway- Israeli legal entities were excluded from security projects. Israeli legal entities also were excluded from setting up projects without the participation of at least one legal entity from the EEA. Under FP7 the participation rights of Israeli research organisations are similar to those of Norway and Switzerland. Israeli legal entities are able to obtain financing for Homeland Security projects. Israel can send representatives to committees established by Decision 2006/512/EC of the Commission under similar conditions as EU Member States.

In PMC's, Israeli representatives have no voting rights, just like Norwegian and Swiss representatives. Apart from that, the only difference with EU Member States is also shared with Switzerland and Norway. Israeli Science Counsellors are not allowed to participate in local EU MS Science Counsellors' networks. These used to be arranged by DG RELEX.

Israeli representatives can participate in the meetings of the ERAC. ERAC however meets without the presence of Israeli representatives at the time of voting. Israel is an observer in ERAC.

5.4.3.3 Obstacles in the current FP7 configuration for Israel

The Israeli are currently subject to similar procedures as the Swiss for as far as renewing the agreement is concerned. In terms of administrative burdens it is equally heavy. The Israeli renewal process will however change and be made more efficient in the future. This change is part of the new ENP that arranges more efficient ties with neighbourhood countries. The idea is that in the future ratification by the EP is not needed anymore for Israeli association to FP's. Similar changes on the Israeli side would indeed make the process much more efficient according to the EC.

The future agreement will be a bilateral protocol that basically says in which programmes Israel participates, and that contains references to documents and MoUs that contain the details of such a participations in terms of funding, deadlines, contribution calculations, etcetera. This protocol serves as a framework and makes ratification by national parliaments and the EP unnecessary, thus making renewal much more efficient.

This situation cannot be transferred to Norway easily for four reasons:

1. The protocol is currently restricted to ENP-countries;
2. Even if this restriction is loosened, EEAS might be reluctant to give DG RTD a mandate to negotiate bilaterally with Norway over such a construction. It might be considered as 'dismantling the EEA'.
3. Since it requires a full ratification process, setting up such a protocol takes two years. 'Filling' it with FP MoUs takes time as well.
4. According to DG RTD, the current EEA protocol 31 is still more efficient than the future Israeli configuration.

Legal obstacles for researchers are not perceived. The Israeli seem satisfied with the current configuration. No substantial changes are requested in the context of Horizon 2020.⁷⁹ Israeli legal entities, being based 'outside' Europe, do find it hard to keep up with the high competition from the continent.⁸⁰

5.4.3.4 Actual participation in FP

Israel is the second most important non-EU participant in the Framework Programmes after Switzerland. In terms of financial contributions to FP6, the Israeli were ranked nineteenth, after Ireland.⁸¹ During FP6, more than half of the funding (56%) was allocated to the Israeli industry.

Until mid-2011, Israeli legal entities have participated in 5811 proposals. Slightly more than one fifth (23%) of these participations resulted in FP7 projects.⁸² Israeli organisations received a total of €492,5 mln in the form of research grants. The industries share dropped in comparison to FP6.⁸³ Israeli participation is particularly strong in PEOPLE programme and the CAPACITIES programme.

5.4.3.5 Israeli access to FP7 related programmes

Competitiveness and Innovation Framework Programme. CIP aims at fostering the competitiveness of enterprises, in particular SMEs. It is open to the participation of third countries. Israel was the first neighbourhood country that joined the CIP. In 2007 Israel joined the first pillar Entrepreneurship and Innovation (EIP).⁸⁴

European Institute of Innovation & Technology. EIT is principally open to third countries, including Israel. Legal entities from Israel may, under certain conditions, participate in the EIT. Participation is however subject to the approval of the Governing Board of the EIT.⁸⁵

European Technology Platforms. As an Associated Country, Israel participates in the ETPs.

Joint Technology Initiatives. JTIs are open to Member States and Associated Countries to the Framework Programme.⁸⁶ As an associated country, Israeli legal entities can apply for funding under the same conditions as Member States. However, Switzerland has not joined the JTIs ARTEMIS and ENIAC because the required flexibility in making financial commitments could not be approved by the Swiss parliament. In Norway this was solved by delegating this responsibility from the Ministry to the RCN.

5.4.4 United States

5.4.4.1 Status of the United States in FP7

The U.S. are an industrialised non-FP7 associated, and non-ICP country. To that extent, the U.S. are similar to other high-income countries, such as Australia, Canada,

⁷⁹ Interview Myer W. Morron, former head of ISERD.

⁸⁰ ISERD (2006). *Israel and the European Framework Programme for Research and Development Looking Ahead: the Seventh Framework Programme 2007-2013*

⁸¹ 1,0% of total contributions. Source: SBF data, calculations: Technopolis.

⁸² ISERD (2011). *Israel participation in FP7 - up date 29 November 2011*

⁸³ Interview Myer W. Morron, former head of ISERD.

⁸⁴ COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME (CIP) IMPLEMENTATION REPORT 2010

⁸⁵ REGULATION (EC) No 294/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2008 establishing the European Institute of Innovation and Technology

⁸⁶ European Commission. *Joint Technology Initiatives: Public Private Partnerships in EU Research*.

Japan, Korea, and New Zealand. Like those countries, the U.S. have signed an S&T Agreement with the EC. This enables participation of U.S. legal entities in FP7. Similar agreements are signed between the EC and other non-associated high income countries.⁸⁷

The U.S. however do not have a priority status in FP7. Cooperation with third countries in FP7 is targeted, in particular, at candidate countries; countries neighbouring the EU, developing countries, focusing on the particular needs of each country or region concerned, and emerging economies.⁸⁸

The first general bilateral EU-U.S. S&T Agreement was signed in 1999. It was preceded by a number of sector specific EU-U.S. agreements, relatively often in the field of energy-research. The initial 1999 EU-U.S. S&T Agreement was renewed in 2004 and later in 2009. The Agreement does not include provisions on funding of research activities. This is subject to the applicable laws/regulations, policies and programmes of both the EC and the U.S. In article 3, it does, however, set the principles for conducting cooperative activities.⁸⁹ It is considered complementary to a large set of bilateral agreements between the U.S. and individual EU Member States.

The 2009 EU-U.S. S&T Agreement is constantly monitored by the Joint Consultative Group (JCG).⁹⁰ This group reviews the progress and monitors the implementation of the EU-U.S. S&T Agreement. It functions as a forum on U.S.-EU research topics, annually providing a report on the status and effectiveness of cooperation undertaken under the Agreement, reviewing the efficient and effective functioning of the Agreement, and ensuring the participation of a large number of U.S. governmental bodies, such as the NSF, NASA, and the NIH. In the last few years, meetings of JCG are greatly improved regarding scientific content and participation of high level stakeholders.⁹¹

5.4.4.2 Financial contributions and rights of the U.S. in FP7

The U.S. do not pay a yearly contribution to FP7, and are no IPC Country. This implies that U.S. legal entities are not eligible to financial contributions from the EU.

Exception can only be made in particular circumstances, notably when

- Provisions are made in the relevant work programme or the call for proposals⁹², or
- A contribution – not a participation- is essential for the progress of a certain project, or
- EU funding to the legal entity is essential for other bilateral arrangements and indirect actions between the EC and the U.S.⁹³

⁸⁷ Regulation (EC) No 1906/2006 “rules for participation”, Article 11

⁸⁸ DECISION No 1982/2006/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, techno- logical development and demonstration activities (2007-2013)

⁸⁹ Manfred Horvat, Keith A. Harrap (2009). *Review of the Science and Technology Cooperation between the European Community and the United States of America 2003 – 2008*.

⁹⁰ COUNCIL DECISION of 30 March 2009 concerning the extension and amendment of the Agreement for scientific and technological cooperation between the European Community and the Government of the United States of America

⁹¹ Manfred Horvat, Keith A. Harrap (2009). *Review of the Science and Technology Cooperation between the European Community and the United States of America 2003 – 2008*.

⁹² A good example is the Health 2009 WP, that states that ‘in recognition of the NIH programmes to European researchers (...)participants in the U.S. are also eligible to (...) be funded in the context of the Health Theme calls described in this WP’.

⁹³ Regulation of the European Parliament and of the Council of 18 December 2006 laying down the rules for participation under the Seventh Framework programme and for the dissemination of research results (2007-2013). Official Journal of the European Union. L 391/1-18, 30.12.2006, Article 29, 2. (c), p.

Only for management and IP protection, the EU contributes 100% of eligible costs. In other cases only a portion of eligible costs are covered by FP7. This portion depends on the activities:

- 50% for RTD activities
- 50% for demonstration activities
- 75% for secondary and higher education establishments

The U.S. are aware of the funding barriers for U.S. legal entities to participate in Framework Programmes. For this purpose, the NSF (OISE) has set up a funding structure. NSF can support the costs of the U.S. legal entities participating in Framework Programmes.

Apart from the different financial configurations illustrated above, U.S. participants have similar participation rights (e.g. IPR) as EU participants of participants from Associated Countries such as Norway. They are also subject to similar obligations, such as signing the grant agreement and the respective reporting obligations.

As a third country, the U.S. also has an influence in the proposal selection process. U.S. experts can sign up in the database of experts and take part in the evaluations of project proposals.

5.4.4.3 Obstacles in the current FP7 configuration for the U.S.

During FP7 U.S. legal entities have expressed a number of concerns with their current role in FP7. Especially in those cases where the U.S. legal entities are not entitled to EC financial contributions problems are perceived by the U.S. legal entities. According to the Delegation of the European Union to the U.S.A., there have been ‘many cases’ where these concerns have prevented U.S. legal entities from signing FP7 grant agreements.⁹⁴ Perceived problems focus on four aspects:

- Law and jurisdiction
- Financial provisions
- IPR⁹⁵
- Administrative issues

The EC is aware of these obstacles. For this reason a number of clauses have been developed to be added to the grant agreement. These clauses might alter the legal entities obligation to submit certificates on financial statements, or lighten the financial audits and controls.

5.4.4.4 Actual participation in FP

Within FP7, two programmes have been set up to increase RTD cooperation between the U.S. and the EC in the context of FP7.⁹⁶ But, according to the Horvat-Harrap Report, ‘participation of US partners in European research activities and vice-versa is low’. They identify two reasons for that. In the first place means for promoting EU-US S&T cooperation are too weak. In the second place the EC-US S&T cooperation ‘is following mainly a kind of bottom-up approach through the principal openness of FP7 for international cooperation’. In other words, anyone can compete and there is a lack of U.S. strategy for FP participation.

⁹⁴ Delegation of the European Union to the U.S.A (2009). *Transatlantic Cooperation in the European Seventh Framework Programme for Research & Development*.

⁹⁵ Most notably the difference between the ‘first to invent’ and ‘first to file’ approaches in force respectively in the US and in the EU.

⁹⁶ BILAT-USA & LINK2US. BILAT provides information and assistance to U.S. researchers on the opportunities for EU-US S&T cooperation offered through FP7.

At the beginning of 2010, some 11% of all non-EU participations in FP7 were U.S. participations. This is similar to the participations mentioned above during FP6. The success rate of US legal entities is relatively high, also compared to that of EU entities. U.S. participation is particularly high in health, NMP, ICT, and environmental research. Just like in FP6, the Marie Curie actions are the most important scheme in the EC-US S&T relations.

5.4.4.5 U.S. access to FP7 related programmes

Competitiveness and Innovation Framework Programme. CIP aims at fostering the competitiveness of enterprises, in particular SMEs. It is open to the participation of third countries including EFTA countries that are members of the European Economic Area (EEA); - accession and candidate countries benefiting from a pre-accession strategy; countries of the Western Balkans; other third countries, when agreements and procedures so allow. Theoretically, U.S. participations would be possible. Until 2010 no U.S. participations were known.⁹⁷

European Institute of Innovation & Technology. EIT is principally open to third countries, including the U.S. 'In order to contribute to the competitiveness and to reinforce the international attractiveness of the European economy and its innovation capacity, the EIT and the KICs should be able to attract partner organisations, researchers and students from all over the world, including by encouraging their mobility, as well as to cooperate with third-country organisations.' Participation is subject to the approval of the Governing Board. A KIC may include partner organisations from third countries, again subject to the approval of the Governing Board. The majority of the partner organisations forming a KIC are to be established in the Member States.⁹⁸

European Technology Platforms. ETPs, according to the EC should not close their doors to the potential benefits from building alliances with third countries. At the launch of FP7, the Third Status Report on ETPs was published.⁹⁹ It stressed the particular importance of U.S. participation in ETPs. Similar statements were made in the Evaluation of ETPs in 2008.¹⁰⁰ However, legal entities from those countries, including the U.S. cannot join ETPs. However, U.S. organisations can set up collaborations with ETPs. This is done intensively.¹⁰¹ The Commission states that 'international co-operation [within the ETPs] should be considered on a case-by-case basis, taking into account the political motivation, the need for reciprocity and the potential for real added value.'¹⁰² Participation of experts from third countries like the U.S., in principle requires prior authorisation by the Technology Platform's Governing Council.

Joint Technology Initiatives. JTIs are not open to U.S. legal entities. They are only open to Member States and Associated Countries to the Framework Programme.¹⁰³

⁹⁷ COMPETITIVENESS AND INNOVATION FRAMEWORK PROGRAMME (CIP) IMPLEMENTATION REPORT 2010

⁹⁸ REGULATION (EC) No 294/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2008 establishing the European Institute of Innovation and Technology

⁹⁹ European Commission (2007). *Third Status Report on European Technology Platforms: At the Launch of FP7*

¹⁰⁰ Idea Consult (2008). *Evaluation of the European Technology Platforms (ETPs): Request for Services in the context of the DG BUDG Framework Service Contracts on Evaluation and Evaluation-related Services*

¹⁰¹ ETP Expert Group (2010). *Strengthening the role of European Technology Platforms in addressing Europe's Grand Societal Challenges*. Report of the ETP Expert Group

¹⁰² European Commission (2009). TECHNOLOGY PLATFORMS, from Definition to Implementation of a Common Research Agenda

¹⁰³ European Commission. *Joint Technology Initiatives: Public Private Partnerships in EU Research*.

5.4.5 Advantages and disadvantages of other affiliation models

Both Switzerland and Israel are comparable to Norway in terms of size, welfare, and STI expenditures. However, both Switzerland and Israel are outside the EEA and therefore cannot participate in the EU's Internal Market. They are however both associated countries, and therefore have equal rights and obligations in The Framework Programme as Norway has. The main differences in FP affiliation between the two concern the procedures towards new association.

Swiss association is arranged in the *Bilateral Agreements I* of 2004. This process is a lengthy and inefficient process. In Brussels it requires approval of the Council. After negotiations, it requires approval of the European Parliament. Similar hordes have to be taken in Switzerland. Due to that, Switzerland has missed the first calls of FP6. For Horizon 2020 a new agreement has to be made. This process has already started, according to our respondents. The process is expected to take about two years, resulting in outcomes that are similar to those of Norway. Swiss contributions are calculated in the same way as Norwegian contributions.

Israeli association has always had similar procedures as Switzerland. However, The EC is currently working on reducing the procedural burdens for association for ENP countries, such as Israel. Changes have already been implemented for Moldova. Procedures will be similar to those of enlargement countries. Memoranda of Understanding will replace the conventional S&T association agreement. Israeli contributions are calculated in the same way as Norwegian contributions.

US affiliation differs significantly from that of Norway, Switzerland and Israel. The U.S. are not associated to FP7. The U.S. -EC S&T Agreement is no more than a general framework. It is renewed every five years. If certain calls lead to cooperation of U.S. legal entities, specific legal agreements have to be signed on this cooperation. U.S. legal entities have to bring their own money. There are certain exceptions in which the EC does finance US participants. Conditions are basically restricted to unique research infrastructures, essential participation of certain legal entities, reciprocal opening of research programmes (in particular NSF) and IPR problems. The latter condition will be dropped in 2013. One should be aware that NSF has got substantial and costly programmes to stimulate U.S. participation in Framework Programmes. Even with such stimulation programmes, US participation is mainly public research. U.S. legal entities cannot participate in FP related programmes such as ETPs and CIP.

The scenarios illustrated above show no potential benefits compared to the Norwegian affiliation. Both Israel and Switzerland have procedures to realise association that are lengthier than the current procedures Norway has to follow. Future Israeli procedures will be more efficient than the current ones, but will still be less efficient than the current Norwegian ones, according to DG RTD.

Moreover, what Israel will get is a bilateral protocol that basically says in which programmes the country participates, and that contains references to documents and MoUs that contain the details of such a participation in terms of funding, deadlines, contribution calculations, etcetera. This serves as a framework and makes ratification by national parliaments and the European Parliament unnecessary.

According to DG RTD, the current EEA article 31 procedure is more efficient than the future Israeli agreement. Moreover, Norway's possibilities to alter the current affiliation seem limited. DG RTD has indicated that it does not expect to get a mandate to negotiate bilaterally with Norway over such a construction. EEAS would consider this as 'dismantling the EEA'. Moreover, setting up the protocol takes two years. Since it requires a full ratification process. This is a stand-alone international agreement, but is has no content.'

5.5 Summarising the alternative associations

Comparing Norway to other associated industrialised countries we can conclude that Norway is by far the most active country in various European activities. However,

Switzerland is more successful in terms of the size of the participation and financial returns (but hardly in terms of success rates).

Until 2010, Norway had 467 participations in FP7 (1.5% of the total). In 75 cases, Norwegian participants coordinated the project. Over the same period, Switzerland had 945 participations (3.1% of the total). Swiss researchers coordinated 170 projects (3.4% of total). One must note that Switzerland's success is very much dependent on the fact that CERN is based in Switzerland and that it has world-class research organisations such as ETH-Zürich. Israeli researchers participated in 428 projects (1.4%), of which they coordinated 144 (2.9%). Both Switzerland and Israel make more use of their right to coordinate projects. Especially the Swiss appreciate this right highly.

The following Figure 13 provides a comparison of the 'rights' of the abovementioned affiliated countries Israel, Switzerland, the United States and Norway and where possible we have included the activity level in various instruments or initiatives.

Figure 13 Comparison of roles and activities of country cases

	Israel	Switzerland	USA	Norway
Taking part in R&D projects	√ (FP6 excl security)	√	√	√
Euratom participation included in Agreement	X	√	X	X
Funding for R&D projects from EU	√	√	X (with exceptions e.g Health calls)	√
Coordination of R&D projects	√	√	X	√
Taking part in CIP	√ (only in certain parts of EIP)	√ (only in EEN (part of EIP))	(in theory not in practice)	√ (only in IEE and ICT-PSP)
Taking part in ERA-NETs*	√ (32)	√ (48)	Observer (1)	√ (65)
Taking part and leading in Joint Programming**	√ (1 active, 1 pending)	√ (5 active, 1 pending)	X	√ (7 active 3 Observer)
Taking part in ERC as host	√	√	X	√
Taking part in EIT	√ (permission EIT board needed)	√	X	√
Taking part in JTIs	√	√	X	√
Taking part in ETPs		√	X	√
Taking part in PC meetings	√	√	X	√
Voting in PC meetings	X	X	X	X
Taking part in ERAC meetings	√	√	X	√
Voting in ERAC	X	X	X	X
Difference FP6 FP7	<ul style="list-style-type: none"> • Adding research on security and space to the list of sectors for cooperative activities • Consortia with only non-EEA countries possible 	Consortia with only non-EEA countries possible	Adding research on security and space to the list of sectors for cooperative activities	

- source Netwatch: participations in closed and open ERA-NETs
- ** Source ERA-Portal

The conclusions that we can draw from a comparison with industrialised countries with a different type of affiliation than Norway are as follows:

- From a public management point of view the Norwegian EEA agreement is much more efficient and clear cut than the bilateral agreements that Israel and Switzerland have in terms of the time it takes to draw up the agreements and

renew them. We have not been able to assess whether from an external perspective the Norwegian affiliation is seen as more European. From the perspective of the researchers and participants this will not make much difference as long as the administrative rules for participants from associated countries are transparent.

- Both Israel and Switzerland have similar financial arrangements than Norway and contribute to the EU based on their share of the GDP.
- Switzerland has deliberately chosen to move away from its ‘project-by-project’ type affiliation with the Framework Programme, despite the higher cost of this affiliation. The exclusion from some parts of the Framework Programme but more importantly the inability to coordinate and lead projects and take part in strategic platforms and committees with its non-associated status have convinced the Swiss that an association agreement – however laborious to complete – is of greater value to the Swiss community than a ‘pay-as-you-go’ arrangement. This is an important lesson for Norway as well.
- The USA is taking part only as a relative outsider and their financial involvement is relatively small. According to US evaluations¹⁰⁴ this is –to a substantial extent– caused by a lacking U.S. strategy for FP participation. Having a bilateral affiliation means that US policy makers and researchers are not involved in any agenda setting or policy strategic process, similar to the situation that Switzerland was in before their affiliation status changed.

¹⁰⁴ Manfred Horvat, Keith A. Harrap (2009). *Review of the Science and Technology Cooperation between the European Community and the United States of America 2003 – 2008*.

6. Hypothetical scenarios for Norway's affiliation

6.1 Introduction

This chapter gives a short description of four scenarios that we have elaborated for Norway's affiliation with the European Framework Programmes¹⁰⁵ and the European Research Area.

It is clearly stated by all stakeholders that we have spoken for this assignment that it is not the intention of Norway to step out of the EEA agreement and the close integration with Europe is politically an obvious position. Nevertheless, it is important to reflect on Norway's future affiliation with the European Framework Programmes and the European Research Area.

This means for example to reflect what Norway could and should do with the 'voluntary status' outside the four freedoms, regarding research and technological development. It is also politically unlikely that Norway would opt for a EU-membership in the near future. Thus a status as an associated state is the realistic option that we have based our scenarios on.

We also have to keep in mind that a Treaty such as the EEA is an agreement between two parties: the European Union and the Associated States. This brings both rights and obligations to both parties. We have therefore refrained from elaborating scenarios where Norway would get all the rights as an associated state (e.g. full participation to the FP and ERA-related policy initiatives) but refrains from its current obligations as an associated state (e.g. providing a financial contribution to the FP and ERA-policy initiatives). Our interviews suggest that this would not be a feasible option for the foreign relationship between Norway and the European Union, as it is unlikely that the European Commission would consider such an option.

For the sake of argument and to reflect on the possible effects of different steps that Norway could hypothetically take, we have developed four scenarios. This chapter gives an outline of what these affiliation scenarios could look like. We have not attempted to give the full legal and foreign policy characteristics of these scenarios, as our focus is on the implications on research, development and innovation in Norway.

This chapter 6 describes the characteristics of the scenarios, the discussion of their implications for the Norwegian research and innovation system can be found in the next chapter 7.

6.2 Scenario 1: Integration of ERA in the core of the EEA Treaty

In this scenario research and development is integrated into the core of the EEA Treaty and becomes a 'fifth freedom' which includes automatic legal endorsement of ERA-type regulations and directives, rather than through a case-by-case integration of any ERA-type measures through Protocol 31.

As explained in Chapter 4, the new Lisbon Treaty has an explicit reference to the European Research Area as a concept that helps to achieve the strengthening of the scientific and technological basis of the European Union. In comparison with the previous EC Treaty, following the Lisbon Treaty the European Commission has a stronger role in coordinating research policies between the EU and the Member States. The Commission may propose the adoption of regulations, directives or decisions

¹⁰⁵ The European Commission has decided to stop referring to 'Framework Programme' as a title for their multi-annual strategy and support framework for research and innovation. The FP7 will be followed by 'Horizon2020' rather than the Eight Framework Programme

according to ordinary legislative procedure. In addition there are more possibilities to engage into Joint Undertakings and participation in research and development activities of a number of Member States. This has opened the way for the potential co-funding by the Commission of Joint Programming and Joint Undertakings by a selective group of Member States rather than the full 27 Member States. The latter is already the case in FP7.

In scenario 1, through the integration of research and development in the non-voluntary part of the EEA agreement, Norway would accept all ERA type regulations and directives that the Commission launches between now and 2020. However, the timing of the renewal of the EEA-agreement and the understanding what the 'full ERA-package' will look like do not match, as proposals from the Commission will only come in the course of the years up to 2020.

To achieve this scenario, requires a renegotiation of the EEA-agreement, which would make Norway automatically legally bound to all regulations and directives that the European Union implements in the ERA domain. These could include directives that touch upon education, labour regulations (e.g. specific conditions for foreign researchers) and intellectual property right.

Interviews with the Commission suggest that they expect that the association with EFTA countries in future would include the whole ERA package and not just the financial instruments, in what used to be called the Framework Programmes. At this moment in time there are no clear plans or proposals from the Commission what it could do with this new regulative authority. The Commission is well aware of the sensitivity at the Member State level of exposing them to top-down regulations or directives. If at all, regulatory powers are likely to be used on topics that have a large consensus such as researcher's careers and cross-border mobility. Thus speculating what Norway would sign up to at this moment is difficult. In scenario 1 there is no uncertainty whether or not Norway decides to voluntarily follow a directive.

In terms of research policy it would mean that Norway is an equal partner in European research policy. The position in Programme Committees and other committees would most likely be the same as today: an observer member with no voting rights. But just as today Norway can take full part in initiatives related to Article 185 (Joint Programming, Joint Undertakings etc). Not being a member of the European Union the Norwegian position regarding European Council activities and ERAC will remain the same (observer at Informal Council meetings and ERAC).

The fact that this scenario requires a drastic renegotiation of the entire EEA agreement means that the political and foreign policy negotiation efforts involved in achieving the scenario will be considerable and is expected to take at least two years.

6.3 Scenario 2: Horizon2020 and ERA remains in the voluntary part of the EEA

In this scenario 2 the affiliation with the European research programmes takes place by a Parliament decision to participate in Horizon2020. With this decision Norway would also in principle endorse ERA however, not through an all encompassing new EEA Treaty, but through the voluntary agreement of regulations and directives in the ERA domain. In this case Norway can decide to ratify on a case-by-case situation each of the directives. This also leaves the flexibility to choose not to ratify a particular directive, for instance when it involves other policy domains, or whether it lacks political support in Norway. The EEA-institutions and procedures (Protocol 31) are there today to make this possible.

In terms of the political position of Norway in Europe this is not much different from the previous scenario and from the situation that de facto exists today. If European developments would remain the same, we could call this the 'business as usual' scenario. In a static European context there would be no need for change. However the European and global context is changing and there has been an important dynamism in the European research policy landscape as was described in Chapter 4. In addition

the economic and financial crisis hitting the European markets, ask for a more strategic approach towards the allocation of research funding.

As changes have taken place and will take place regarding the governance of European research and innovation policies, there can be no 'business usual' scenario for Norway as the international and European context in which it operates is dynamic. The European Member States have accepted a larger role for the Commission in the coordination of European research policy and have themselves embraced the opportunities provided through Article 185 (e.g. Joint Programming) the strategic importance of the European agenda only becomes stronger. Norway has been an active partner in that as well as described in Chapter 4.

If research and development remains in the voluntary part of the EEA agreement, a number of issues need to be dealt with on the foreign policy level on a case by case situation:

- The legal implications of the ERA type directives and regulations that the European Commission might apply and the possibility to incorporate this through the EEA protocols provided for these case-by-case legislation
- The boundaries of the research and development remit of the voluntary agreement in relation to the innovation activities that are now also included in the future Framework Programme, Horizon2020

As far as we can judge the status of Norway as a participant in the various forms of research funding and in research policy committees and boards will remain the same as it is today. It will need a clearer positioning from the Norwegian side on Innovation Policy as this is now an integrated part of Horizon2020 rather than a separate part in the Community Innovation programme where associated countries were able to opt in and out of some parts of that programme. This scenario 2 requires a Parliamentary decision on the participation in Horizon2020 rather than a complete renegotiation of the EEA Treaty as foreseen in scenario 1. Thus the political and foreign policy burden of this scenario will be much lower than in scenario 1 and there is less risk of a time gap between the end of the current research and technology association agreement and a new agreement related to Horizon2020.

6.4 Scenario 3: Bilateral S&T agreement as Associated Country.

In this scenario Norway does not any longer include research and development as an element of the EEA agreement. Instead Norway would negotiate a dedicated Science and Technology Cooperation agreement with the EU, similar to what for instance Switzerland and Israel have at the moment.

Working out the consequences for this scenario depends on the content of that specific S&T agreement, that will be a Norway-only agreement, as the affiliation is no longer connected to the EFTA countries.

This agreement would then need to be ratified accordingly and depending on the exact terms of the agreement, needs to be renegotiated with the EU on a regular basis. The obligations and rights of Norway will in the end be quite similar as they are today, as we have seen from a comparison with the status of Switzerland and Israel. The financial contribution mechanism (i.e. share of GDP) will also be the same, as these two associated countries apply exactly the same formula for their contribution to the European Commission.

What will differ from scenario 1 and 2 is the ratification and renewal of the S&T-agreement between the multi-annual framework programmes. This would need to be renegotiated and would need Parliamentary agreement. As we have seen from the cases of Israel and Switzerland this will take up quite some time for the representatives of Norway's foreign policy and does risk a gap between framework programmes during which time Norwegian researchers can not take part in R&D projects and programmes. The example of Switzerland shows that it is not only the exact contents of the S&T agreement with the EU that makes the difference, but also

how the domestic decision making procedures are set up. If each policy and funding decision has to undergo Parliamentary decision, the process can be slowed down considerably.

6.5 Scenario 4: A bilateral S&T agreement as ‘Third State’

An even further step away from the present situation would be to set up an agreement similar to that of the United States or the situation of Switzerland before 2004. This would be an agreement where Norwegian researchers are able to take part in European research projects, but receive no funding for their part in the research. This would be a scenario based on a principle of ‘bring-your-own-funding’. Norway would no longer be an Associated State but have the status of a Third Country. In these cases Norwegian research and innovation funding agencies would have to arrange funding mechanisms for Norwegian participants on a case-by-case situation.

It would imply that:

- Norwegian researchers can not coordinate a consortium or a project
- Norwegian researchers can not apply for ERC funding
- Norwegian policy makers will most likely not be able to take part as observers in Programme Committees and other Advisory Boards and Committees

On a financial level it would mean that:

- The funding for EU-participation is no longer based on its GDP-share but on the number and size of projects in which Norwegian researchers are invited, by participants from EU Member and Associated States.

The following Chapter 7 will elaborate what each of these four scenarios would mean from the perspective of research and innovation policy.

7. Consequences of the four scenarios for Norway

7.1 Consequences of Scenario 1

In short this scenario means integration of research and development in the core ‘four freedoms’ part of the EEA agreement, legally bind Norway to legislation to the European Research Area and confirming Norway’s status as an Associated State. This would require a renewal of the EEA Treaty. It’s financial contribution will remain GDP-based, as is the case for all Associated States.

7.1.1 Overall government policy

From a foreign affairs policy position this integration will have quite a number of legal consequences. We have not explored the legal and regulative consequences (e.g. the acceptance of the European Court as an arbitrary body, obligation to follow EU directives) of this level of integration with European policy. Understanding the legal and foreign policy consequences in detail is not within the remit of this assignment. In January 2012 a Committee of experts has published its review of the complete EEA Treaty and have looked at the options for the EEA more widely.¹⁰⁶

It is obvious however that a complete renegotiation of the EEA would be a heavy burden on Norway’s foreign policy and will take quite some time. The renegotiation would possibly also open up discussions on other policy domains as the complete treaty will be on the table.

The biggest risk for the research and innovation community is to find itself in a situation as Switzerland has been at the start of FP7, where the new Treaty is not yet signed when Horizon2020 begins and thus excluding Norwegians from the first calls for proposals.

Interviews with stakeholders from the Norwegian research community suggest that there is little concern to adhere to common guidelines in research and technology. Already Norwegian researchers taking part in EU projects have to follow European regulations and rules such as those on IPR in European projects. Some institutions follow voluntary guidelines already, such as for instance with the Charter for Researchers. It seems that the general feeling expressed is that it would be better if Norway is seen as ‘good European citizens’ who adhere to all ERA-measures, rather than to opt out of some parts. This scenario would confirm Norway’s full commitment to the European agenda.

7.1.2 Research and Innovation Policy

From a research policy perspective it is difficult to identify major differences with the situation as it is today. In today’s European research policy community, Norway plays an active role in MS driven initiatives such as Joint Programming and ERA-NETs. Participants from the public and private sector are considered as ‘normal’ European partners that are not treated differently than partners from a European Member State. Their status as an Associated member is much stronger than being considered coming from a Third Country. Of course Norway still doesn’t have voting rights in programming committees, ERAC and so on, but participating as an observer allows in practice the opportunity to shape the European research policy discussions, as Norway has done in the past decade.

¹⁰⁶ Utenriksdepartementet, 2012, Utenfor og innenfor, Norges avtaler med EU.

From a research policy perspective de facto Norway is already fully integrated. So in this scenario Norwegian policy makers could:

- Continue to take part in various strategic platforms,
- Participate and coordinate Article 185 initiatives
- Have an Observer role in Programme Committees
- Have an Observer role in ERAC and Informal Council meetings
- Take part in the various strategic committees such as ESFRI, SFIC and so on

7.1.3 The research performers levels

Maintaining and even strengthening the role of Norway in the Innovation Union and Horizon2020 will have the following effect on the research performers level:

- The Norwegian companies, research institutes and universities can continue to benefit from the European Framework Programmes as project participants, coordinators of projects and as excellent researchers
- Will remain a serious partner for the research and innovation communities in the other European Member States and Associated States, who can take part without leading to additional administrative burdens for the coordinators
- Norwegian SMEs can continue to take part in specific SME related programmes which are envisaged to play a larger role in Horizon2020
- Can take a leading role in the development and management of cross-border research infrastructures
- Companies, research institutes and universities can send representatives to the multiple bodies that are shaping the Strategic Research Agenda's in various domains and sectors, thus influencing the contents of the European research agendas
- Benefit from the learning from other excellent and leading edge partners in terms of research management, career development, and so on

7.2 Consequences of Scenario 2

In short in this scenario the Norwegian Parliament decides to take part in Horizon2020, within the current framework of the EEA agreement. It will subsequently make provisions for ERA-type measures on a case-by-case through today's existing institutions and protocols.

7.2.1 Overall government policy and diplomacy

The consequences of maintaining research and development as part of the voluntary agreement, would from a foreign policy perspective, be the most smooth scenario as it requires a Parliamentary decision to participate in Horizon2020 rather than a complete renewal of the EEA Treaty. While this will also require time and efforts, the institutional and legal procedures are in place to apply the EEA. The current articles and protocols are in place to adapt to ERA regulation and legislation on a case-by-case basis. This would allow Norway to opt out of certain parts of legislation that it deems to be outside the authority of the EEA or for which it does not have political support. It is not transparent whether Norway would acquire more political influence in the above scenario 1, compared to the influence the country will most likely have within this scenario 2. The major difference between the two scenarios in terms of the political position of Norway, would most likely reveal itself should Norway choose to opt out of certain ERA regulations. This is at this stage highly speculative what that could involve.

As already mentioned in scenario 1, interviews with Norwegian stakeholders suggest that there is little concern to adhere to common guidelines in research and technology.

Already Norwegian researchers taking part in EU projects have to follow European regulations and rules such as those on IPR in European projects. Some institutions follow voluntary guidelines already, such as for instance with the Charter for Researchers. It seems that the general feeling expressed is that it would be better if Norway is seen as ‘good European citizens’ who adhere to all ERA-measures, rather than to opt out of some parts.

As it is difficult to envisage what potential or hypothetical directives or guidelines would be strongly against Norwegian interests, none of the interviewees expected that this could bring Norway into big trouble.

The financial consequences – Norway’s contribution to Horizon2020 - will be similar to Scenario 1: Norway will pay its share on the basis of its share of the GDP.

7.2.2 Research and Innovation Policy

In principle the consequences for research policy will be exactly the same as for Scenario 1, assuming that there will be no major disagreements between Norway and the EU on adopting particular ERA-legislation that the Member States have all agreed to adhere to.

In scenario 2 Norway can play an active role in MS driven initiatives such as Joint Programming and ERA-NETs. Participants from the public and private sector are considered as ‘normal’ European partners that are not treated differently than partners from a European Member State. Their status as an Associated member is much stronger than being considered coming from a Third Country.

From a research policy perspective de facto Norway is already fully integrated. So in this scenario 2, similar as in scenario 1, Norwegian policy makers could:

- Continue to take part in various strategic platforms,
- Participate and coordinate Article 185 initiatives
- Have an Observer role in Programme Committees
- Have an Observer role in ERAC and Informal Council meetings
- Take part in the various strategic committees such as ESFRI, SFIC and so on

7.2.3 Research performers level

Again, in principle the consequences for research performers will be exactly the same as for Scenario 1, provided that the agreement negotiations between Norway and the European Institutions are successful and the EEA is renewed.

As with scenario 1:

- The Norwegian companies, research institutes and universities can continue to benefit from the European Framework Programmes as project participants, coordinators of projects and as excellent researchers
- Will remain a serious partner for the research and innovation communities in the other European Member States and Associated States, who can take part without leading to additional administrative burdens for the coordinators
- Norwegian SMEs can continue to take part in specific SME related programmes which are envisaged to play a larger role in Horizon2020
- Can take a leading role in the development and management of cross-border research infrastructures
- Companies, research institutes and universities can send representatives to the multiple bodies that are shaping the Strategic Research Agenda’s in various domains and sectors, thus influencing the contents of the European research agendas

- Benefit from the learning from other excellent and leading edge partners in terms of research management, career development, and so on

Should Norway through the voluntary agreement choose not to adhere to specific ERA-related regulatory measures and directives, for instance regarding to IPR (should the European patent ever become a reality for instance), there is a chance that Norwegian institutions are not treated equally as those in EU Member States.

In a hypothetical example, should the Commission decide that only universities receive funding, that have officially ratified a formal 'Directive for Researchers Recruitment' and Norway does not endorse that directive formally, it could be hypothetically possible that Norwegian universities can not receive funding.

Both **scenario 1 and scenario 2** have some uncertainties depending on the developments in the European Union.

As aforementioned, the use of legislative and regulatory powers by the Commission is still very unclear and no proposals have been put forward yet how the Commission would apply this authority. Even if these powers are used, it is unlikely that the Commission would force directives that would meet resistance from a considerable number of Member States, as this will undermine other policy instruments that require coordination and joint action. Norway with its strong partnerships with the Nordic countries and as an active participant in European research policy developments has as much chance to influence the European research agendas, as any other small sized and industrialised European country, if it keeps actively taking part in the most strategic initiatives.

The Innovation Union and the Horizon2020 programme have the ambition to reinforce policies that address the framework conditions for innovation and research. New initiatives such as stimulating innovation procurement are on the wish list of the Commission. These are topics that are becoming more mainstream in many European states as well. An associated country status of Norway would allow policy makers to influence and or take part in these European policies and exchange experiences and policy learning with their counterparts from other European Member and Associated States.

There is an increasing activity to streamline and coordinate the international cooperation with so-called Third Countries. Today many EU Member and Associated States have their own bilateral agreements with specific countries and regions in the world. Through the Strategic Forum for International Science and Technology Cooperation (SFIC) a common European strategy is developed for international S&T cooperation. As this is an initiative by the Council and strongly linked to ERAC Norway is an Observer at this table. So far the Observer status has not been a major barrier for taking part in the strategic discussions and initiatives as far as we have been able to establish.

The associated status through the EEA with ERA and the Innovation Union would mean that the financial burden for taking part in future Framework Programmes (Horizon 2020 and beyond) will increase considerably. If we assume that Norway's GDP remains at a share level of 2.6% as it is today (so Norway's GDP growth equals that of the average European Union growth), the contribution of Norway will increase with the desired budget increase for Horizon 2020. Should the Commission proposal for a budget of €80 billion be accepted, this would lead to an increase of Norway's contribution of €780 million for the whole period of Horizon 2020, or a good €110 million per year.

On the one hand it is unlikely that the full €80 billion will be allocated to Horizon2020 due to austerity measures in many Member States. At the same time, it is unlikely that the Norwegian GDP will maintain the current share of GDP, as its economy is performing much better than many other EU countries. This will become a financing problem for the Ministry of Education and Research (MER), particularly if the budgets for Horizon2020 are commissioned in a few large waves of calls, for instance at the

beginning, mid-term and at the end of the framework period. Today Norway pays on an annual basis their share of the Commission's expenditure of a particular year.

Given the Norwegian annual budgeting cycle, this could mean that for some years in the period 2014-2020 the Ministry has to negotiate huge funding increases with the Finance Ministry. This could be one issue for negotiation between Norway and the European Commission to spread the financial contributions more evenly over the 2014-2020 period and adjust the balances in the later stages of Horizon2020 if needed. However, the current Article 82 nr. 1, regulating how the EEA EFTA countries pay for their contributions, leaves very little room for negotiation within the current agreement.

In both scenario 1 and scenario 2 Norwegian researchers and companies will still have to cope with the administrative burden of taking part in European research. Although simplification is propagated in the communications of the EU, it needs to be seen whether real progress has been made on this, when the details of Horizon2020 become clearer.

7.3 Consequences of scenario 3

In short this scenario would mean that Norway enters into a bilateral agreement with the EU, maintaining its Associated Country status, but removing research and development from the EEA. This would be quite similar to the S&T agreement that Switzerland and Israel have today.

7.3.1 Overall government policy and diplomacy

The comparison with the bilateral S&T agreement between on the one hand Norway and on the other hand Switzerland and Israel (Scenario 3) clearly shows that:

- The S&T part of the EEA agreement does not take so much time to ratify, therefore not risking gaps between S&T agreements where the research and innovation community does not have access to the Framework programme
- The EEA agreement is much more easy to handle administratively and provides a stable legal basis with know institutions and procedures to define the rights and obligations of both Norway and the European Union
- The bilateral agreement as Associated Country has exactly the same financial contribution consequences compared to the current EEA treaty so there is no benefit between one or the other format of calculation
- Depending on the national decision making process chosen in Norway, it could make participation in instruments as the Joint Technology Initiatives more complex if Norwegian funders need to seek political support for major decisions, similar as is the case in Switzerland at the moment
- Provides equal rights and obligations in terms of access to EU instruments and strategic processes

Thus an obvious conclusion is that adopting the S&T agreement mechanism used by other industrialised European Associated States is not a beneficial option for Norway. It would bring a larger burden on politicians, policy makers and diplomats, but not bring any advantages. It would also damage the relationship with the European Commission as it will be perceived as a downgrading of the Norwegian affiliation with Europe. Therefore we will not elaborate this scenario further as no-one gains from Scenario 3.

7.4 Consequences of scenario 4

In short the last means that Norway changes its status as an Associated Country to one of a Third Country. In Scenario 4 Norway would arrange a bilateral S&T agreement with the EU similar to that of the US. This would have a number of consequences for policy and diplomacy:

- Although we have not studied the political effects in detail, our interviews all point to the same conclusion: the damage to political and foreign relations between Norway and the EU would be considerable. The European Commission would interpret this as taking a step back from the common European Agenda. It would disqualify Norway as an equal partner. The Norwegian stakeholders interviewed also strongly feel that this would harm the relationships with the entire European community. In fact not one of the interviewees can envisage that Norway would ever take such a drastic step as it would not have the political support in Parliament.
- In financial terms it would mean a serious reduction in the financial contribution that Norway has to pay for European research. As it is likely that there will be less participation (see below), Norwegian research funders would only have to fund the Norwegian parts of the projects on a one-off basis, assuming that there will be funding provided for that for both public and private sector participants. As the 'saved budgets' will remain at the Treasury, it does not automatically mean that these saved funds will be allocated to the Norwegian research and innovation system. The budgets could well be allocated in other policy domains.

7.4.1 Research and Innovation Policy

Scenario 4 would have large consequences for Norwegian research policy:

- Norwegian policy makers would most likely not be taking part in European strategic policy forums such as Advisory Bodies, Proposal Evaluation Panels, Programme Committees, Expert Groups, Technology Platforms nor have an observer role in ERAC, SFIC and other places where the European research agendas are being shaped. Norwegian research policy would be more internally focussed and a follower of European developments
- As Norway is opting out of the Innovation Union and the ERA-related measures, it would no longer be able to lead Article 185 type of initiatives and measures. It would certainly not benefit from any form of top-up funding from the EU. As Norway today is the most active country in Europe, it would be left out of coordinating actions on science and technology domains which fit very well with current national priorities such as energy, climate change, marine sciences and so forth
- Europe would lose out on the active involvement of Norwegian policy makers and representatives of funding agencies who have played an active role in the past decades in various platforms
- Opportunities to develop joint European S&T collaboration strategies with non-European countries will be missed, as Norway would itself be considered a "Third Country"
- Given the increasing coupling of EU policy and funding with inter-governmental bodies such as EUREKA (e.g. Eurostars), COST, ESA and so forth Norway's position with these other bodies will become more complicated and funding arrangements made more complex for Norwegian participants
- Norway's policy objective to increase internationalisation of R&D will witness a step back as the EU Framework programmes have always been the key mechanism for international collaboration. As barriers for participation will be higher (see below) a decrease of European R&D collaboration can be expected
- Potentially it could mean that more attention and resources are dedicated to set up cross-border programmes with alternative international partners, for instance to reinforce the collaboration with the Nordic countries, the United States or the emerging countries (BRIICs). As there are no common legal frameworks for such co-operations comparable to that which exists within the EU, these agreements and programmes would need to be set up and maintained in Norway

- As European research policy is broadened to support other policy domains (e.g. Health, Transport, Energy) Norwegian policy makers will be cut off from important platforms that discuss technological standards, policy research, joint roadmaps and so forth.

Thus scenario 4 would reduce Norway's involvement in many places where European policy strategy is formulated. Given the fact the European research policy is increasingly about setting common policy agenda's, Norway would be less in touch with these policy developments and would be less able to support its research and innovation community to play an active role in this.

7.4.2 Research performers

The largest consequences would be on the research and innovation performers from the public and private sectors.

As described in Chapter 2 the impacts and benefits of the European framework programmes on Norway have been substantial. Norwegian organisations and researchers have been considered as equal partners by their European counter parts and increased their presence in the European research community. It is difficult to anticipate in how far the foreign relations damage will trickle through to the level of research performers. In general one can assume that it does not make much difference to researchers what the formal administrative status is of their counterparts, as long as they deliver excellent work and cause no additional trouble related to funding, IPR rules, administration and so on.

If Norway would shift to an S&T agreement more similar to that of the USA with essentially no automatic contribution to the FP budget but a 'bring-your-own-funding' participation model the following changes will be very likely:

- Norwegian research organisations and companies can not lead consortia thus they have to be invited by EU (associated) states to join their consortia. One could argue that European relationships are already strong in the networks have been formed in the past decade(s). However the different status of Norwegian partners would be an additional administrative hurdle for the coordinators and thus be a disincentive to include them in the proposal stages. In addition this would not help the younger generation researchers nor the research groups and companies who have not yet taken part. The double effect of not being able to lead and coordinate and having a different administrative position will most likely lead to a decrease in the number of projects with Norwegian partners. This may not be so visible in an early stage where Norwegian partners can still rely on their strong partnerships but these networks will deteriorate quickly if they are not refreshed
- Even if we would assume that due to a Norwegian government decision to fund all successful Norwegian applicants in EU consortia, it will most likely increase the administrative burden of the Norwegian partners as they have to apply and report twice: to the European funders and consortia and to the Norwegian funders. The Swiss example shows the increase in participation once their status had been changed and the project-by-project status had been abolished
- Norwegian researchers cannot apply for ERC grants, which is a considerable share of Horizon2020. The incentives that ERC grants give individual researchers to improve the international excellence of their work, to develop a more international career pattern, and the eventual boost of their visibility and scientific reputation by winning an ERC grant, will have a negative impact on the overall international excellence of Norwegian research. The higher education institutions will also have less incentives to boost excellence and international publications and adapt their career development policies accordingly
- Norwegian companies and research institutions cannot take part in stakeholder forums that set the Strategic Research Agendas such as the Technology Platforms.

Particularly in areas where Norway could play a leading role (e.g. Marine sciences and technologies, energy) and influence the contents of the work programmes.

Thus we can assume that participation in European research projects will decrease and thus have a negative impact on:

- The number of international co-publications of Norwegian researchers
- The access to new and complementary knowledge and know how that R&D collaboration mostly brings
- The competence building of the (young) researchers involved
- The exposure to international competition and the drive to reach state-of-the-art quality will diminish and thus slow down the HEI modernisation agenda
- The access to state-of-the-art research infrastructures of European partners
- The opportunities to work with private sector partners that are not active in Norway and thus provide business opportunities, access to (state-of-the-art) applied technologies and industrial research experience not available locally

There will be benefits from this scenario as well. If Norwegian researchers will reorient towards applying for national funding which is considered by interviewees as more efficient and more 'easy' to obtain. Assuming that national funders such as RCN can keep up their efficiency, despite a larger demand from the Norwegian research community, the administrative burden to obtain research funding will decrease.

A possibility would be that (part of) the saved government funding is used for bilateral cooperation between Norway and other parts of the world outside the EU or specific parts of the EU (e.g. Nordic Countries).

Given that the financial contribution to the EU will be considerably less, the Norwegian government and ultimately the tax-payer will be better off in the short run. The likely negative impact on Norway's competitiveness in the medium to longer term is difficult to forecast in monetary terms.

8. Conclusions and recommendations

The main objective of this study is to analyse the available options for Norway's affiliation with the EU Framework Programmes, assess the consequences of various options and weigh this against the pros and cons for Norwegian research and innovation policy. The assignment was to develop a number of alternative – and realistic - scenarios for the future.

The first research question addressed in this report is *'what have been the benefits and drawbacks of the Norway-EU affiliation in RTI up to this moment?'*

Previous studies demonstrated that the effects of the Norwegian participation in EU Programmes have been predominantly positive for research institutes, the higher education sector and the business sector. The business sector participants have emphasised that collaboration in European research have allowed them access to broader opportunities and networks. Importantly, these have been developed as neutral meeting places, and have as such been ideal for conducting industrial research. In addition, high-risk research have been shared among participants, and allowed projects that have been deemed too risky to undertake singlehandedly to be conducted between European partners. The synthesis of existing studies on the impact of the FPs and our interviews with stakeholders lead to the conclusions that

- The Framework Programme is the most important channel for international S&T cooperation in Norway. Norway's participation is strong and success rates are above EU average
- Norway's financial contribution to the Framework Programmes is growing faster than the financial returns that Norwegian participants have managed to secure, leaving a gap between the monetary value of the contributions to the EU versus the funding received in Norway
- Norway has a relatively strong participation in the thematic areas environment, energy and the social sciences
- Existing studies show a predominantly positive view on FP participation leading to benefits and impacts such as:
 - Access to complementary and state-of-the art knowledge
 - Building networks with other European research organisations
 - Increasing international co-publications with European partners which generally have a higher scientific impact than national publications
 - Access to customers and suppliers through collaborative projects for firms
- Critical views are mostly concerned with the large administrative burden attached to the Framework Programme and the need for simplification to attract more participants
- Interviews with various Norwegian stakeholders confirmed a strong positive balance of benefits versus drawbacks of participation in the FPs. The positive effect on the higher education modernisation agenda was stressed as an important indirect effect that is clearly visible in the universities
- Despite the fact that Norwegian success rates are above average, studies and interviews point out that there is still room for improvement, particularly by widening the pool of participating organisations (in particular universities and companies).

A second research question addressed is: *do the priorities of the European FPs match with the RTI policy priorities of Norway?*

Norway's national broad thematic priorities show considerable overlap with those of the consecutive FP programmes. There is an overlap in terms of the key technology areas such as biotechnology, ICT, new materials and nano-technology. There is also a synergy in terms of thematic areas and societal challenges such as energy, environment, food and marine and maritime areas. There is no complete overlap as there are areas of specific interest to Norway that it does not share with many other EU countries, such as research related to oil and gas exploitation. In addition, a real comparison can only be made on a level of aggregation beneath these big thematic labels. In the FPs these are laid down in the specific work programmes that define the specific research topics and research calls. The fact that Norway is an associated country allows it to be at the decision table where the contents of these work programmes are influenced. Competition for EU grants helps raise the quality of research and provides a welcome exposure for Norwegian businesses to international technologies and standards, both challenges for the Norwegian system.

As increased internationalisation is a key element of Norway's research and innovation policy and the EU Framework programmes form the main mechanism for internationalisation, the alignment seems obvious. While stakeholders express an interest to reinforce relationships outside Europe, many see the European policy networks as a good basis to build up joint non-EU collaborations, for example with the larger emerging countries such as China and India.

Chapter 4 describes the recent developments in European research policy and its effects on the future affiliation with Norway. FP7 saw a measurable shift away from traditional collaborative research projects towards fundamental research projects led by individual research teams and the ERA structuring instruments. The new Lisbon Treaty, the Innovation Union and Horizon2020 have expanded the scope and role of European Commission in the European Research Area (ERA). European research policy in the last five years has shifted from an extensive vehicle for R&D-project funding to a more strategic policy making forum, which includes coordination of policies between Commission and Member and Associated States in order to pool resources. With the integration of research and innovation and the extended regulative and legislative authorities of the Commission, taking part in Framework programmes and ERA has become much more than being successful in acquiring R&D funding for companies, universities and research institutes. Norway needs to be sitting at the multiple decision tables that are formed around the ERA in order to take full advantage of Horizon2020. While careful consideration has to be made of possible consequences of these changes, Norway's EEA Treaty provides a stable relationship with the European community. Nevertheless, with the changing European context there is no 'business as usual' scenario for Norway as the relation between EU and its Member and Associated States is very dynamic.

Chapter 5 addresses affiliation models between the EU and other national states that potentially provide a better alternative to the current EEA model. The conclusions that we can draw from a comparison with industrialised countries with a different type of affiliation than Norway are as follows:

- From a public management point of view the Norwegian EEA agreement is much more efficient and clear cut than the bilateral agreements that Israel and Switzerland have in terms of the time it takes to draw up the agreements and renew them. We have not been able to assess whether from an external perspective the Norwegian affiliation is seen as more European. From the perspective of the researchers and participants this will not make much difference as long as the administrative rules for participants from associated countries are transparent.
- Both Israel and Switzerland have similar financial arrangements than Norway and contribute to the EU based on their share of the GDP.

- Switzerland has deliberately chosen to move away from its ‘project-by-project’ type affiliation with the Framework Programme, despite the higher cost of this affiliation. The exclusion from some parts of the Framework Programme but more importantly the inability to coordinate and lead projects and take part in strategic platforms and committees with its non-associated status have convinced the Swiss that an association agreement – however laborious to complete – is of greater value to the Swiss community than a ‘pay-as-you-go’ arrangement. This is an important lesson for Norway as well.
- The USA is taking part only as a relative outsider and their financial involvement is relatively small. According to US evaluations¹⁰⁷ this is –to a substantial extent– caused by a lacking U.S. strategy for FP participation. Having a bilateral affiliation means that US policy makers and researchers are not involved in any agenda setting or policy strategic process, similar to the situation that Switzerland was in before their affiliation status changed.

On the basis of our interviews and the analysis of existing affiliation models we have defined four possible scenarios for Norway’s future affiliation:

1. **Scenario 1:** The EEA will be renegotiated and research and development policy becomes part of the ‘core’ of the EEA making Norway legally bound by future ERA legislation
2. **Scenario 2:** On the basis of the current EEA agreement, Norwegian Parliament votes in favour of participation in Horizon2020, leaving research and development in the voluntary part of the agreement adopting ERA legislation on case-by-case basis
3. **Scenario 3:** Norway removes research and development from the EEA and negotiates a bilateral S&T cooperation as Associated Country with the EU instead
4. **Scenario 4:** Norway negotiates a bilateral S&T agreement giving Norway a Third Country status similar as for instance the USA meaning that participation is allowed with own national funding

The following Figure 14 summarises the main advantages and disadvantages of these four scenarios.

¹⁰⁷ Manfred Horvat, Keith A. Harrap (2009). *Review of the Science and Technology Cooperation between the European Community and the United States of America 2003 – 2008*.

Figure 14 Overview advantages and disadvantages scenarios

Main Advantages	Main Disadvantages
Scenario 1 R&D in core EEA	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA through EEA • Status as Associated Country • Potentially more political power as 'preferred' associated country • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • Heavy burden on foreign policy to renegotiate EEA • Long time needed before new EEA is fully operational • No possibility to opt out of specific ERA legislation • Financial contribution through GDP formula
Scenario 2 R&D in voluntary part EEA	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA through EEA protocols • Status as Associated Country • Potentially more political power as 'preferred' associated country • Adoption of ERA legislation with case-by-case procedures thus providing the possibility to opt out of ERA regulations • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • ERA regulation needs to be negotiated and politically decided case-by-case • Financial contribution through GDP formula
Scenario 3 Bilateral S&T agreement as Associated Country	
<ul style="list-style-type: none"> • Strong integration of Norway in Horizon2020 / ERA bilateral S&T agreement • Status as Associated Country • Full partner in ERA policy making thus participation in strategic policy committees secured • Norwegian participants full access to Horizon2020 as equal partners 	<ul style="list-style-type: none"> • Need to establish new stable legal framework for decision making in Norway • Need to renegotiate the S&T agreement for each new EU multi-annual FP • Risk for gaps in agreements between FPs • Seen as 'step back' in EU engagement by the European Commission • Financial contribution through GDP formula
Scenario 4 Bilateral S&T agreement as Third Country	
<ul style="list-style-type: none"> • Norway can be selective and only take part in thematic areas that are of interest to Norwegian stakeholders and policy makers • The budgetary contribution from the Government to the EU is considerably reduced • Opportunity to start large scale collaboration programme with non-EU countries • Researchers face less red-tape from EU programmes 	<ul style="list-style-type: none"> • Will damage EU-Norwegian foreign policy relations • Norway has no seat in European research policy committees such as ERAC, ESFRI, programme committees, ERA-working groups etc. • Participation in other inter-governmental R&D agreements in EU more complex • Parts of Horizon2020 not accessible (e.g. ERC) • Potential participants face bigger hurdles to join consortia • Norwegian organisations can not lead projects • Norway can not take part in ERA-type instruments • Overall level of participation in EU collaboration will drop • RTI internationalisation agenda will not be met

The comparison of the terms of Norway's affiliation with Europe with those of the other associated states Switzerland and Israel shows that:

- Norway's legal arrangements are simpler, need less bureaucratic efforts while giving similar if not better rights at the European policy tables
- The financial arrangements are similar and based on the same GDP-based calculations. Only because of Norway's relative high GDP in comparison with its research system the 'just retour' position is less advantageous than the comparator countries (but still better than some member states). The options for another calculation base do not seem realistic in light of the foreign relationships between the EU and European non-EU countries.

Only a drastic change of the current affiliation model to scenario 4 would have the benefit of lowering the annual financial contributions to the EU. It would also allow Norway to selectively take part and pay for thematic research areas that are of interest to Norwegian stakeholders. However, this has a number of major disadvantages:

- In foreign relationship terms it would damage Norway's position in the European Community
- In research policy terms it would cut Norway loose from many of the important decision tables and forums where common strategic research agendas are decided
- Norwegian institutions and government bodies would not be able to lead coordination actions such as ERA-NETs and Joint Programming Initiatives
- It would lead to a strong reduction of Norwegian participations in projects from both the public and the private sector
- It would prevent research performers to lead and coordinate research consortia and projects or host initiatives such as KICs or European research infrastructures
- It would most likely mean that Norwegian researchers can not apply for grants such as ERC grants and Marie Curie fellowships
- All these would have a negative effect on Norway's policy priority to increase the internationalisation of R&D

The medium and long-term loss of international competitiveness and research excellence, that will most likely result from less international exposure, can not be easily calculated in monetary terms. It will have a long-term structural impact on the Norwegian public research system and will damage the competitive position of companies and sectors that are now strongly involved in the European consortia. It will slow down the modernisation and quality improvement of the university sector.

The above conclusions lead the study team to make the following recommendations:

1. A close integration of Norway with the future Framework Programme and European Research Area should be secured for the future. The decisions whether this is done through the route of Scenario 1 (integrating research and development in the core of the EEA) or Scenario 2 (remaining research and development in the voluntary part of the EEA agreement) relies on political and foreign policy considerations. The first scenario requires a renegotiation of the EEA while the second needs a Parliamentary decision on participation in Horizon2020. From a research policy perspective the key importance is that Norway endorses the European Research Area concept to be considered as a full partner country in order to fully benefit from Horizon2020.
2. Instead of focussing on the 'just retour' question that can not be monetized by simply calculating the awarded grants, Norway should focus its attention to improving its FP participation rates. Studies suggest that this is not simply a question of improving the quality of the proposals that are submitted (apart from specific areas such as the ERC grants, Norwegian success rates are better than EU

average). More important is to increase the number of researchers, research groups, companies and particularly universities that engage into European science and innovation collaboration. It is not within the scope of this study to assess whether the Norwegian policy priority to provide better support for EU participation has been implemented well, however further analysis could be made which improvements in EU participation would add most value to Norway.

3. Norwegian research policy should engage into a political debate how the financial contributions to the EU can be better managed so that it does not lead to an erratic spending pattern in the science budget, leading possibly to a crowding out of other research funding. If Norway decides to participate in Horizon2020 at governmental level it should also develop financial arrangements at Treasury level to plan this spending for the whole period 2014-2020 on a multi-annual basis.
4. Norway should keep pushing the simplification message in all possible European policy platforms

Appendix A List of interviewees

Interviewee	Organisation
Kathrine Angell-Hansen	Oceans JPI
Laurent Bochereau	EC Directorate-General for Research
Kristin Danielsen	Research Council of Norway
Clara de la Torre	EC Directorate-General for Research
Simen Ensby	Research Council of Norway
Jorunn Birgitte Gjessing-Johnrud	Innovasjon Norge
Pål Gretland	Ministry of Trade and Industry
Tore Grøningsætter	EFTA
Elisabeth Harstad	Det Norske Veritas
Bjørn Haugstad	University of Oslo
Hjördis Hendriksdottir	EFTA
Gunnar Jordfald	FFA Association of Research Institutes
Anthony Kallevig	Trades Union Congress
Olga Kopiczko	EC Directorate-General for Research
Ernst H Kristiansen	SINTEF
Tore Li	Confederation of Norwegian Enterprise
Ragnar Lie	Norwegian Association of Higher Education Institutions
Jean David Malo	EC Directorate-General for Research
Myer Morron	(Formerly at) ISERD Israel-Europe R&D Directorate for the EU Framework Programme
Svend Otto Remøe	Research Council of Norway
Daniela Rod	Swiss Mission to the EU
Minna Wilkki	EC Directorate-General for Research
Kaja Winther	Norwegian Ministry of Foreign Affairs
Erik Yssen	Norway Mission to EU

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