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Om motivene for å delta i rammeprogrammet

Tomas Åström, Tommy Jansson, Göran Melin, Anders Håkansson, Patries Boekholt and Erik Arnold

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Summary

The Norwegian Ministry for Education and Research (KD) is due to present a research White Paper in the spring of 2013, wherein the issue of taking action to increase Norwegian participation in the European Commission's (EC) Framework Programme (FP) is foreseen to be an important aspect. Accordingly, KD has commissioned the Technopolis Group to conduct this study on motives and deterrents for Norwegian participation in the FP, particularly in the FP7 Health, ICT (Information and Communication Technologies) and Environment themes. The work was conducted between June and September 2012 and data acquisition has concentrated on focus groups and interviews with researchers and management of frequent FP participants, as well as interviews with non-participants; in total the views of more than 100 individuals have been gathered. From a methodological point of view, it should be noted that the study has intentionally focused on focus group participants' and interviewees' *perceived* (subjective) motives for and deterrents to FP participation.

The top-down view

Norway is quite successful in the FP, as evidenced by substantial FP revenue and above-average proposal success rates. Still, the economic return is considered unsatisfactory, as is the number of participating organisations. The overarching question of this study has therefore been: How can Norway's FP participation be increased and widened?

The study finds that the messages from the policy level that international collaboration in research and development (R&D) is beneficial to the Norwegian research system, and that FP participation therefore should increase, are consistent, loud and clear. To ensure that these messages have been received, a fiscal incentive has been introduced to entice higher education institutions (HEI) to seek FP funding, as well as a fiscal incentive to reward research institutes for their international revenue. In contrast, regional health authorities receive no reward for foreign funding; they are instead rewarded for publications in (highly ranked) international journals, where papers with foreign co-authors are weighted by a factor of two. Thus, for HEIs and institutes the fiscal incentive is on the "input" (funding) side, whereas it is on the "output" (publications) side for regional health authorities. These policy-level initiatives have resulted in strategies for internationalisation, and occasionally for FP participation, within R&D-performing organisations. There are also examples of organisations that have developed their own fiscal incentive structures to stimulate FP participation.

The bottom-up view

The study finds that Norwegian stakeholders largely share their main motives for FP participation with their counterparts in other countries (in no particular order): networking, knowledge acquisition, problem solving, methods development, staying abreast with international developments/competitors, accessing infrastructure, building reputation and accessing funding. Funding is stated as the top motive in most previous studies, including in Norway, but it is argued that this motive is in another "dimension" than other motives. Public project funding (whatever its source) is more of a "boundary condition" than a motive; without it, there is – in most cases – no project. This is particularly true for HEIs and institutes that have very limited internal funds for discretionary use (most funds are already allocated to a specific purpose), but in general, it also holds true for companies; public funding of collaborative R&D has a notable element of risk sharing to it, meaning that it is often an enabler.

In general, the deterrents to FP participation are also universal: demanding proposals, low success rates, cumbersome project administration, complex rules for participation, complicated to protect intellectual property and high transaction costs. From an objective point of view, all these objections are all valid to a certain degree, but they are often exaggerated. Such deterrents are most often voiced by individuals

with little or no FP experience, while experienced FP participants are much less likely to bring up such complaints. Thus, in contrast to motives, most deterrents are notably experience-dependent.

Why is Norway's FP participation not higher?

In essence, the benefits of FP participation are well known, and in most cases and for most participants the benefits outweigh the drawbacks. Then why is Norway's FP participation not higher than it is? The study proposes that the possible answers to this question can be categorised into generic answers and specifically Norwegian answers. In brief, the specifically Norwegian preconditions are that:

- The funding situation for researchers in HEIs and health authorities is so generous that they have little reason to look abroad for funding. On the one hand, government R&D base grants to HEIs are more generous than in most other European countries. On the other hand, national competitive funding from the Research Council of Norway (RCN) and regional health authorities is generally both abundant and associated with a weaker competitive element than foreign funding sources
- Previous studies indicate that the competitiveness of Norwegian R&D-performing organisations in health, ICT and environment and the quality of the research they carry out may not be sufficiently high (although there are notable variations between research fields). This becomes particularly obvious if the high costs of Norwegian organisations are taken into account
- Norway's high cost levels may lead to Norwegian organisations being squeezed out of consortia
- Previous studies conclude that the Norwegian research communities in health, ICT and environment are fragmented, and collaboration within and outside the country is low. Moreover, the related industry structures are relatively weak
- Direct incentives to provide individuals with motives for FP participation are very rare

Differences between themes

Differences in motives between themes are subtle. **Health** participants place somewhat greater emphasis on addressing specific scientific problems, as well as on accessing complementary capabilities or expertise that is not available in Norway. In contrast, Health participants rate development of tools, methods and techniques lower than participants in ICT and Environment. Previous studies provide a mixed picture regarding the quality and competitiveness of Norwegian health-related research, but the fact that the Norwegian success rate in the Health theme is comfortably above average indicates that competitiveness is quite good.

ICT participants value knowledge and capacity acquisition slightly higher than Health and Environment participants. ICT companies appear to value funding somewhat higher than companies in other themes, and HEIs and institutes find it a disadvantage that there are relatively few Norwegian companies to collaborate with (on R&D matters). From previous studies of Norwegian ICT research, we learn that many R&D groups do not measure up to international standards in quantity, quality and competitiveness, and that the research community is fragmented. These observations may in part explain a relatively low success rate in the ICT theme.

The need to tackle problems with an international dimension is a key feature for **Environment** participants. Many environment and climate issues are inherently international, and addressing them on an international arena is thus natural. Moreover, environment and climate issues have been high on the national agenda for decades and there has been a succession of national R&D programmes that early on built up Norwegian capacity. From previous studies we learn that the quality and

competitiveness of the Norwegian research community is very good, as also illustrated by a remarkably high Norwegian success rate in the Environment theme.

Lessons that arguably may be learned from the successful Norwegian participation in the Environment theme are that it takes long time and consistent national funding to gradually build competitiveness. Environment researchers have the advantage of working on inherently international topics, and since Norway started focusing on environment and climate issues decades ago, Norwegian R&D providers were "early movers". Thus, Norwegian R&D providers act from a position of strength and are apparently internationally competitive, despite their high cost. It is also noteworthy that Norway's participation in Environment is dominated by institutes, which have low base funding and therefore have to take all available funding opportunities.

Differences between participant types

Despite funding being **HEIs**' top motive for participation, a relatively large number of interviewees from all three themes, including ministry and agency personnel, profess that HEIs' funding situation is so beneficial that the incentive to apply to the FP is weak. Several interviewees state that the generous government base funding system for HEIs is a direct disincentive to internationalisation in general and FP participation in particular. University colleges find FP participation an uphill battle. On the one hand, they rarely have research groups that are sufficiently large and competitive enough to make a mark internationally. On the other hand, university colleges are hampered by an image problem; why should a consortium settle for a university college when there are willing universities? The system to reward HEIs for their FP income is reported as effective, but mainly on the organisational level, since it is rare that any of this extra funding makes its way back to the individual researcher or research group; thus, it is no incentive for the individual.

In analogy with the situation for HEI researchers, a relatively large number of interviewees, including ministry and agency personnel, profess that also the funding situation for **health authority** researchers is so generous that the incentive to apply to the FP is weak. The funding for R&D from the Ministry of Health and Care Services (HOD) to regional health authorities is allocated to health authorities following call procedures within each of the four regions, meaning that the competition that health authority researchers are exposed to is regional. The system to financially reward regional health authorities for their scientific output, and particularly papers produced in collaboration with foreign co-authors, is at best reported to be an indirect motive to participate in the FP. Two of the four regional health authorities are reported to funnel part of the reward to the research group that (co-)authored the paper. Additional disincentives for health authority researchers to participate in the FP are created by the fact that it is common practice that they also hold part-time university positions. As health authority researchers they generally do not have access to an internal FP support function and there is no financial reward for FP income. In contrast, as university researchers they have access to an FP support function and for the university there is a financial reward for FP income. Thus, the university affiliation creates notable disincentives to participate as health authority researcher.

In contrast, most Norwegian **institutes** have a considerably less benign funding situation than HEIs and health authorities, and this is most likely at least one reason why several institutes do very well in the FP. This comparison may arguably be interpreted as follows: if you are forced to explore all available funding opportunities (to stay in business/to keep your job/to conduct the kind of R&D you want) you will, which over time inevitably enhances competitiveness. It may also be argued that FP participation matches institutes' business model better than other types of participants. However, due to their high costs Norwegian institutes are not allowed to charge their full costs in FP projects, which limits the number of FP projects that they can afford to participate in.

Companies set themselves apart from other types of participants in that they place considerably greater emphasis on development of products and services. Small and

medium-sized enterprises (SMEs) are less interested in knowledge and capacity acquisition, whereas large companies are less dependent on funding. Irrespective of size, company interviewees point out that the long time perspectives and procedural rigidity of FP projects do not match their R&D needs very well; this is said to be a notable deterrent.

What are the possibilities to increase Norway's FP participation?

Based on intelligence gathered through focus groups and interviews, as well on analyses of previous studies, we tentatively propose some actions that may be worth considering in order to attempt to increase Norway's participation in the FP. Actions that there may be reason for ministries to consider are to:

- Provide RCN with additional resources so as to expand its FP information and support services
- Require HEIs, institutes and health authorities to develop and really implement more strategic approaches to internationalisation and FP participation, so as to achieve a genuine structural effect
- Develop and implement a strategy to strengthen and defragment the Norwegian R&D community in the ICT field
- Amend the HEI and health authority funding systems to include a requirement that recipients should have a certain degree of FP engagement to receive the full extent of the government base grant, with the intent of enhancing competitiveness, increasing research quality, stimulating a wider FP participation, and counteracting fragmentation through increased collaboration. The difficulties in formulating such a requirement are recognised, as is the need to give university colleges special treatment

Actions that there may be reason for RCN to consider (although we are aware that some aspects of these actions are already in place) are to:

- Strengthen the existing, competent FP information and support system so as to offer genuine added value compared to the Commission's own web sites through:
  - Providing targeted domain-specific intelligence on the latest FP developments before it becomes public
  - Stimulating companies to participate through matching of the particular interest of a sector/niche and calls for proposals
  - Catering to the needs of both novices and experienced FP participants
  - Being the ultimate, knowledgeable source of information on rules for participation, intellectual property rights, reporting, auditing etc.
  - Providing more hands-on support, such as pre-screening of proposals by experienced proposal authors and evaluators, for organisations that do not have their own EU support functions
  - Utilising experienced FP participants in information campaigns to disarm some of the rumours regarding deterrents
- Devise an instrument to entice more Norwegians to act as proposal evaluators for the Commission
- Devise an instrument to persuade Norwegian organisations to assume larger roles in FP consortia
- Devise instruments (or retain existing ones) to support newcomers to the European arena in building up their networks. To this end, efforts and instruments to increase the Norwegian Marie Curie participation should be developed

- Devise instruments (or retain existing ones) to stimulate institutes and HEIs to bring Norwegian companies with them into consortia
- Depending on what the rules for participation will be in Horizon 2020, it may be inevitable to have some form of compensatory programme for institutes also in the long run
- Evaluate the PES programme to ensure that it has the desired effects

Management of R&D-performing organisations are in a position to produce persuasive support systems and internal incentive structures for FP participation:

- Set explicit objectives for FP participation and integrate them in organisational strategies
- Introduce internal quality-control routines, including proposal pre-screening by experienced proposal authors and evaluators. This will lessen the low-success-rate disincentive for both individuals and organisation
- Support and encourage would-be proposal authors, both morally and administratively, to undertake the task of writing a proposal. Administrative support is also required during a project, particularly to reduce the workload for coordinators. Qualified administrative support will reduce the administration disincentive for individuals
- Entice more individuals to write FP proposals, by devising individualised incentives; for example by:
  - Sending a reasonable share of the organisation's funding reward for its FP income back to the research group that was responsible for the successful proposal
  - Starting to appraise individual researchers on their FP performance

  Corresponding incentive structures would probably be equally effective in health authorities and institutes

Although Norway's FP participation certainly can be increased from its current level, it should be borne in mind that a nation's economic return from the FP is but one measure of success; the benefits of FP participation go way beyond the direct economic return. Should such an increase be orchestrated, it is important to consider within which fields this ought to take place; increased FP participation is hardly a goal in itself, only a means to an end.

Sammendrag

Kunnskapsdepartementet (KD) skal våren 2013 legge frem en forskningsmelding der man forventer at et viktig tema vil være tiltak som kan øke Norges deltakelse i Europakommisjonens rammeprogram for forskning (FP). I den forbindelse har KD gitt Technopolis Group i oppdrag å gjennomføre denne studien av hva som motiverer og hindrer Norges deltakelse i rammeprogrammet, særlig når det gjelder FP7 og temaområdene Helse, IKT (informasjons- og kommunikasjonsteknologi) og Miljø. Arbeidet ble utført i perioden juni–september 2012, og datainnsamlingen har hovedsakelig foregått i fokusgrupper og intervjuer med forskere i og ledere for organisasjoner som er hyppige FP-deltakere, så vel som intervjuer med ikke-deltakere. Alt i alt har vi hentet inn synspunkter fra mer enn hundre enkeltpersoner. Fra et metodologisk synspunkt er det viktig å være klar over at studien med hensikt har lagt vekt på informantenes *oppfatning av* (subjektive) motiver og hindringer for å delta i FP.

Sett ovenfra

Norge gjør det forholdsvis bra i FP, det viser den betydelige FP-inntekten og det at Norge får innstilt flere søknader enn gjennomsnittet. Likevel blir den økonomiske uttellingen regnet som utilfredsstillende, og det samme blir antallet organisasjoner som deltar. Det overordnede spørsmålet i denne studien har derfor vært: Hvordan kan man øke og utvide Norges FP-deltakelse?

Studien viser at budskapene fra politisk hold om at et internasjonalt samarbeid om forskning og utvikling (FoU) gagner det norske forskningssystemet, og at FP-deltakelsen derfor bør øke, er både konsekvente og tydelige. For å sikre at budskapene blir oppfattet, har det vært lansert finansielle incitamenter for å oppmuntre universiteter og høyskoler (UoH) til å søke FP-finansiering, samt finansielle incitamenter som belønner forskningsinstituttene som kan vise til internasjonale inntekter. Regionale helseforetak får imidlertid ingen belønning for utenlandsk finansiering; de blir i stedet belønnet for publisering i (velansette) internasjonale tidsskrifter, der artikler sammen med utenlandske forfattere er vektet slik at de teller dobbelt. For UoH og institutter ligger dermed de finansielle incitamentene på «input-siden» (finansiering), mens de for regionale helseforetak ligger på «output-siden» (publikasjoner). Disse politiske tiltakene har resultert i strategier for internasjonalisering, og en gang iblant til FP-deltakelse, blant organisasjoner som arbeider med FoU. Det finnes også eksempler på organisasjoner som har utviklet sine egne økonomiske incitamentordninger for å oppmuntre til FP-deltakelse.

Sett nedenfra

Studien avdekker at norske interessenter i stor grad deler hovedmotivene for å delta i FP med sine motparter i andre land (i vilkårlig rekkefølge): nettverksbygging, kunnskapservervelse, problemløsing, metodeutvikling, holde seg oppdatert på internasjonal utvikling / konkurrenter, få tilgang til infrastruktur, bygge opp omdømmet og få tilgang til finansiering. Finansiering blir oppgitt som hovedgrunn i de fleste tidligere studier, også i Norge, men det blir hevdet at dette motivet hører inn under en annen «dimensjon» enn de andre motivene. Offentlig finansiering av prosjektene (uavhengig av kilden) er mer et «avgrensende vilkår» enn et motiv: Uten finansiering vil det – i de fleste tilfeller – ikke bli noe prosjekt. Dette er særlig tilfelle for UoH og institutter som har svært begrenset med interne midler som kan brukes etter eget ønske (de fleste midlene er allerede tildelt konkrete formål), men stort sett stemmer det også for bedrifter: Offentlig finansiering av samarbeidsprosjekter innenfor FoU innebærer helt klart en viss risikodeling, og dermed kan det være utslagsgivende for prosjektene.

Generelt sett er også hindringene for FP-deltakelse universelle: krevende søknader, lav suksessrate, plundrete prosjektadministrasjon, kompliserte regler for deltakelse, vanskelig å beskytte immaterielle rettigheter og høye transaksjonskostnader. Fra et

objektivt ståsted virker alle disse innvendingene til en viss grad gyldige, men de er ofte overdrevne. Slike hindringer kommer som regel fra personer med liten eller ingen FP-erfaring, mens erfarne FP-deltakere i mye mindre grad nevner disse innvendingene. I motsetning til motivene er altså de fleste hindringene i stor grad avhengig av tidligere erfaring.

Hvorfor deltar ikke Norge mer i FP?

Egentlig er fordelene ved å delta i FP godt kjent, og i de fleste tilfeller og for de fleste deltakerne vil fordelene veie opp for ulempene. Så hvorfor er ikke Norges FP-deltakelse større enn den er? Studien tyder på at mulige svar på spørsmålet kan deles inn i to kategorier: generelle svar og svar som er spesifikke for Norge. De spesifikt norske forutsetningene er kort sagt følgende:

- Finansieringen for forskere på UoH og hos helseforetakene er så sjenerøs at de ikke har særlig grunn til å søke utenlands etter finansiering. På den ene siden er statens FoU-grunnbevilgninger til UoH mer sjenerøse enn i de fleste andre europeiske land. På den andre siden er den nasjonale konkurransestyrte finansieringen fra Forskningsrådet og regionale helseforetak generelt både omfattende og forbundet med et svakere konkurranseelement enn utenlandske finansieringskilder.
- Tidligere studier tyder på at konkurranseevnen til norske organisasjoner som driver FoU innenfor helse, IKT og miljø, og kvaliteten på den forskningen de utfører, kanskje ikke er god nok (her er det riktignok store forskjeller mellom forskningsfeltene). Dette blir særlig synlig dersom vi tar med i betraktningen de høye kostnadene knyttet til norske organisasjoner.
- Norges høye kostnadsnivå kan føre til at norske organisasjoner blir presset ut av konsortiene.
- Tidligere studier konkluderer med at de norske forskningsmiljøene innenfor helse, IKT og miljø er fragmenterte, og det er lite samarbeid både innenlands og utenlands. De tilhørende bransjestrukturene er dessuten forholdsvis svake.
- Det er svært sjelden at det forekommer direkte incitamenter som gir enkeltpersoner noen grunn til å delta i FP.

Forskjeller mellom temaområdene

Det er bare små forskjeller mellom temaområdene når det gjelder motivene. **Helse**-deltakere legger noe større vekt på å ta for seg konkrete vitenskapelige problemer, og på å få tilgang til utfyllende evner eller ekspertise som ikke finnes i Norge. Derimot rangerer Helse-deltakerne utvikling av verktøy, metoder og teknikker lavere enn deltakere innenfor IKT og Miljø. Tidligere studier maler et blandet bilde når det gjelder kvaliteten og konkurranseevnen til norsk helserelatert forskning, men det faktum at den norske suksessraten på temaområdet helse ligger godt over gjennomsnittet, tyder på at konkurranseevnen er rimelig god.

IKT-deltakerne verdsetter kunnskaps- og kompetanseervervelse litt høyere enn deltakere innenfor Helse og Miljø. IKT-bedrifter ser ut til å verdsette finansiering noe høyere enn bedrifter innenfor andre temaområder, og UoH og institutter ser det som en ulempe at det er forholdsvis få norske bedrifter som de kan samarbeide med (i FoU-saker). Fra tidligere studier av norsk IKT-forskning vet vi at mange FoU-grupper ikke kan måle seg med internasjonal standard når det gjelder kvantitet, kvalitet og konkurranseevne, og at forskningsmiljøet er fragmentert. Disse observasjonene kan delvis forklare den (forholdsvis) lave suksessraten på temaområdet IKT.

Behovet for å takle problemer med internasjonalt tilsnitt er et viktig moment for **Miljø**-deltakerne. Mange miljø- og klimaspørsmål er per definisjon internasjonale, og det er dermed naturlig å løfte dem opp på en internasjonal arena. Miljø- og klimaspørsmål har dessuten stått høyt på den nasjonale dagsordenen i flere tiår, og en rekke nasjonale FoU-programmer sørget tidlig for å bygge opp kompetansen i Norge.

Fra tidligere studier vet vi at kvaliteten på og konkurranseevnen til det norske forskningsmiljøet er svært god, noe som også går frem av den påfallende høye norske suksessraten innenfor temaområdet Miljø.

Med utgangspunkt i Norges vellykkede deltakelse på miljøfronten vil det være naturlig å trekke den slutning at det å gradvis bygge opp konkurranseevnen krever tid og jevnlig statlig finansiering. Miljøforskere har den fordelen at de arbeider med emner som er grunnleggende internasjonale, og siden Norge begynte å fokusere på miljø- og klimaspørsmål for flere tiår siden, har de norske FoU-aktørene kommet tidlig i gang. Norske FoU-aktører stiller med andre ord sterkt og er tilsynelatende konkurransedyktige internasjonalt, til tross for de høye kostnadene. Det er også verdt å merke seg at den norske deltakelsen på miljøområdet blir dominert av institutter, som har lave grunnbevilgninger og derfor må benytte seg av alle de finansierings-mulighetene som er åpne for dem.

Forskjeller mellom deltakertypene

Til tross for at finansiering er **UoH**-deltakernes viktigste motiv for å delta, er det forholdsvis mange informanter fra alle de tre temaområdene, også fra departementer og offentlige organer, som gir uttrykk for at UoH-finansieringen er så gunstig at motivasjonen for å søke FP-finansiering er lav. Flere informanter sier at statens sjenerøse grunnbevilgninger til UoH virker direkte demotiverende på internasjonalisering generelt og på FP-deltakelse spesielt. Høyskolene opplever FP-deltakelsen som et løp i motvind. På den ene siden har de sjelden forskningsgrupper som er store og konkurransedyktige nok til å gjøre seg gjeldende internasjonalt. På den andre siden sliter høyskolene med et imageproblem: Hvorfor skal et konsortium nøye seg med en høyskole når det finnes interesserte universiteter? Systemet som belønner UoH for FP-inntekten, blir sagt å være effektivt, men hovedsakelig på organisatorisk nivå siden det er sjelden at noe av denne tilleggsfinansieringen havner tilbake hos den enkelte forskeren eller forskningsgruppen – og dermed er det ikke noe incitament for enkeltpersoner.

Hvis vi sammenligner med situasjonen for UoH-forskerne, er det forholdsvis mange av informantene – også fra departementene og offentlige organer – som mener at finansieringssituasjonen også for forskerne hos helseforetakene er så sjenerøs at motivasjonen for å søke FP-støtte er lav. Helse- og omsorgsdepartementets finansiering av FoU innenfor regionale helseforetak blir tildelt helseforetakene etter søknadsbehandling innenfor hver av de fire regionene, og det vil si at den konkurransen helseforetakenes forskere blir utsatt for, er regional. Ordningen med å belønne regionale helseforetak økonomisk for deres vitenskapelige resultater, og da særlig artikler skrevet i samarbeid med utenlandske medforfattere, kan i beste fall kalles et indirekte motiv for å delta i FP. Det blir oppgitt at to av de fire regionale helseforetakene kanaliserer deler av belønningen til den forskningsgruppen som (med)forfattet artikkelen. Andre demotiverende faktorer som hindrer helseforskere i å delta i FP, bunner i det faktum at det er vanlig for forskerne å samtidig ha deltidsstillinger på universitetet. Som helseforetakforskere har de vanligvis ikke tilgang til noen intern FP-støtteordning, og det gis ingen økonomisk belønning for FP-inntekt. Som universitetsforskere har de imidlertid tilgang til FP-støtteordningene, og universitetet vil få økonomisk belønning for FP-inntekten. På den måten gjør tilknytningen til universitetet at det blir mindre attraktivt å delta som forsker fra helseforetakene.

Derimot har de fleste norske **instituttene** en atskillig mindre gunstig finansieringssituasjon enn UoH og helseforetak, og det er trolig i hvert fall én av grunnene til at flere institutter gjør det bra i FP. Denne sammenligningen kan muligens tolkes på følgende måte: Hvis man er tvunget til å sondere alle de finansieringsmulighetene som finnes (for å holde i gang driften / beholde jobben / drive den FoU som du ønsker), vil du etter hvert uunngåelig styrke konkurranseevnen. Det kan også hevdes at FP-deltakelse passer bedre inn i instituttenes forretningsmodell enn i modellen til andre deltakertyper. På grunn av de høye

kostnadene kan imidlertid ikke norske institutter føre alle kostnadene sine på FP-prosjekter, og det begrenser det antallet FP-prosjekter de har råd til å delta i.

Bedrifter skiller seg ut fra andre typer deltakere ved at de legger betydelig større vekt på å utvikle produkter og tjenester. Små og mellomstore bedrifter er mindre interessert i kunnskaps- og kompetanseervervelse, mens større bedrifter er mindre avhengig av finansiering. Uavhengig av størrelsen nevner imidlertid intervjuobjektene fra bedriftene at det lange tidsperspektivet og de rigide rutinene i FP-prosjektene ikke egner seg særlig godt til deres FoU-behov, og dette sies å være et betydelig hinder.

Hvilke muligheter har man til å øke Norges FP-deltakelse?

Med utgangspunkt i de opplysningene vi har samlet gjennom fokusgrupper og intervjuer, så vel som analyser av tidligere studier, vil vi foreslå noen tiltak som det kan være verdt å vurdere for å prøve å øke Norges deltakelse i FP. Tiltak som det kan være aktuelt for departementene å vurdere, kan være

- å gi Forskningsrådet flere ressurser, slik at Forskningsrådet kan styrke sine informasjons- og støttetjenester i forbindelse med FP.
- å kreve at UoH, institutter og helseforetak skal utvikle og faktisk innføre mer strategiske tilnærmingsmåter til internasjonalisering og FP-deltakelse, slik at man får en reell strukturell effekt.
- å utvikle og innføre en strategi for å styrke og samle det norske FoU-miljøet på feltet IKT.
- å endre UoH og helseforetaks finansieringsordninger, slik at det stilles krav om at mottakerne må ha et visst FP-engasjement for å kunne motta hele den statlige grunnbevilgningen, med det som formål å styrke konkurranseevnen, øke kvaliteten på forskningen, oppmuntre til større FP-deltakelse og motvirke fragmentering ved hjelp av økt samarbeid. Vi erkjenner imidlertid at det kan være vanskelig å utforme et slikt krav, og at høyskolene må få spesialbehandling.

Tiltak som det kan være aktuelt for Forskningsrådet å se nærmere på (selv om vi er klar over at noen sider ved tiltakene allerede er på plass), er

- å styrke eksisterende og velfungerende FP-informasjon og -støtteordninger, slik at man tilbyr reell merverdi sammenlignet med Kommisjonens egne nettsider
  - å levere målrettet og områdespesifikk informasjon om de siste FP-nyhetene før de blir offentlig kjent
  - å oppmuntre bedrifter til å delta gjennom å matche spesialinteressene for en bestemt sektor/nisje med søknadsinnbydelsene
  - å sørge for at både nybegynnere og erfarne FP-deltakere får dekket sine behov
  - å være den beste kunnskapsrike informasjonskilden når det gjelder regler for deltakelse, immaterielle rettigheter, rapportering, revisjon osv.
  - å gi mer praktisk støtte, for eksempel ved å la personer som har erfaring med å skrive og evaluere søknader, forhåndsbehandle søknadene (for organisasjoner som ikke har noen intern FP-støtteordning)
  - å benytte erfarne FP-deltakere i informasjonskampanjer for å avlive noen av ryktene når det gjelder hindringer
- å utarbeide et virkemiddel som kan lokke flere nordmenn til å bidra med å evaluere søknader for Kommisjonen.
- å utarbeide et virkemiddel som kan overbevise norske organisasjoner om å påta seg større oppgaver i FP-konsortiene.
- å utarbeide virkemidler (eller bevare eksisterende) som kan støtte nykommere på den europeiske arenaen og hjelpe dem med å bygge opp nettverk. I denne

forbindelse bør det utarbeides tiltak og virkemidler som kan øke den norske Marie Curie-deltakelsen.

- å utarbeide virkemidler (eller bevare eksisterende) som kan oppmuntre institutter og UoH til å få med seg norske bedrifter i konsortier.
- å ha en form for kompensasjonsprogram for institutter også på lang sikt, avhengig av hvordan reglene for deltakelse i Horizon 2020 blir.
- å evaluere PES-programmet for å sikre at det har ønsket virkning.

Ledelsen for organisasjoner som driver med FoU, har en stilling som gjør at de kan lage overbevisende støttesystemer og interne incitamentordninger for FP-deltakelse:

- De kan fastsette konkrete mål for FP-deltakelsen og integrere målene i de organisatoriske strategiene.
- De kan innføre rutiner for intern kvalitetskontroll, herunder forhåndsbehandling av søknadene av personer som har erfaring med å skrive og evaluere søknader. Det vil dempe noe av det demotiverende ved lave suksessrater, for både enkeltpersoner og organisasjoner.
- De kan støtte og oppmuntre potensielle søkere, både moralsk og administrativt, slik at de går i gang med å skrive søknad. Administrativ støtte trengs også underveis i prosjektene, særlig for å redusere arbeidsbyrden for koordinatorene. Egnet administrativ støtte vil redusere motviljen mot administrasjon hos enkeltpersoner.
- De kan oppmuntre flere enkeltpersoner til å skrive FP-søknader ved å utarbeide personlige incitamenter, for eksempel ved
  - å sende en rimelig del av finansieringsbelønningen som organisasjonen mottar for sin FP-inntekt, tilbake til forskningsgruppen som sto bak den innstilte søknaden
  - å begynne å vurdere individuelle forskere ut fra FP-innsatsen deres

  Tilsvarende incitamentordninger ville trolig kunne være like effektive for helseforetakene og instituttene.

Selv om Norges FP-deltakelse definitivt kan økes fra sitt nåværende nivå, bør man også ha i tankene at den økonomiske uttellingen som landet får av å delta i FP, bare er én måte å måle fremgangen på – fordelene ved å delta i FP er mange flere enn bare det direkte økonomiske utbyttet. Skulle det bli iverksatt en slik økning, er det viktig å vurdere hvilke felt man bør satse på. Økt FP-deltakelse er neppe noe mål i seg selv, men snarere et middel for å nå målet.

1. Introduction

1.1 Background to the study

A recent study summarised that the Framework Programme (FP) is the most important channel for international science and technology cooperation in Norway, that Norway's participation is strong and that its success rates are above EU average. However, Norway's financial contribution to the FP is growing faster than the financial returns that Norwegian participants have managed to secure, leaving a gap between contribution to the FP and the Norwegian returns.[1] This situation is somewhat politically sensitive and creates a desire to take action so as to attempt to increase Norway's relative participation in Horizon 2020, and thus narrow the gap between contributions and returns. The aforementioned study also notes that there is room for improvement in the Norwegian FP participation, particularly by widening the pool of participating organisations (in particular among higher education institutions (HEI)).

The Norwegian Ministry for Education and Research (KD) is due to present a research White Paper in the spring of 2013, wherein the issue of taking action to increase Norwegian FP participation is foreseen to be an important aspect. Accordingly, KD has commissioned the Technopolis Group to conduct this study on motives and deterrents for Norwegian participation in the FP, with specific emphasis on the FP7 themes Health, ICT (Information and Communication Technologies) and Environment. The overarching question of the study has been: How can Norway's FP participation be increased and widened? KD's description of the assignment is provided in Appendix A.

1.2 Approach and methodology

The study aims to answer the following questions:

1. How do national strategies to increase FP participation affect individual organisations' (HEIs, institutes, business and health authorities[2]) strategies and actions?
2. To what extent do individual organisations have strategies to increase FP participation? If so, how do these affect the actions of individuals?
3. To what extent do individual organisations have internal incentive structures to promote enhanced FP participation? If so, how do these affect the actions of individuals?
4. What are organisations' and individuals' main motives to apply for FP funding?
5. To what extent do organisations' and individuals' motives to apply for FP funding vary between the health, ICT and environment fields?
6. To what extent do organisations' and individuals' motives to apply for FP funding vary between organisation types?
7. To what extent do organisations' and individuals' motives to apply for FP funding vary between the core FP programmes and *randsoneaktiviteter*?[3]

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1 P. Boekholt, E. Arnold, M. Carlberg, I. Collins and D.-J. Fikkers, "Norway's affiliation with the European Research Programmes: Options for the future", Technopolis, March, 2012.

2 Norway has four state regional health authorities (*regionale helseforetak*) that together own 24 health authorities (*helseforetak*), often individual hospitals providing specialist health services, research and education.

3 The Norwegian word *randsoneaktiviteter* refers to the various activities and programmes that lie outside FP7's Cooperation, Ideas, People, Capacities and Euratom core programmes. For the purposes of this study, the main *randsoneaktiviteter* are the different Article 185 and Joint Technology Initiatives.

8. How do national information activities and support instruments to increase FP participation affect the actions of organisations and individuals?
9. Are there conflicting motives and incentive structures? If so, which ones?
10. What are organisations' and individuals' main motives to elect to not apply for FP funding? Which of the deterrents reported are in effect unfounded?
11. What alternative funding options are available? What advantages and disadvantages do they have?
12. How could motives to apply for FP funding be strengthened (and deterrents be weakened)? What national or organisational instruments and support functions would be needed (would need to be strengthened) and what deterrents would need to be eliminated?
13. To what extent is increased FP participation desirable from individual, organisational and national perspectives? Under what circumstances?

KD's rationale for deciding that the study should focus on health, ICT and environment was to specifically gain additional insight into:

- Why the participation in the FP7 Health theme generally is low, and why so few health authorities participate
- Why so few Norwegian small and medium-sized enterprises (SMEs) participate in the FP7 ICT theme
- What can be learnt from the strong Norwegian participation in the FP7 Environment theme

We have focused our data collection on Norway's most experienced FP participants in the FP7 Cooperation programme's Health, ICT and Environment themes, mainly based on e-Corda data (per March 2012) kindly supplied by RCN. We have nevertheless also made sure to include individuals and organisations with little or no FP experience, including some professed FP sceptics. These have been found through analyses of statistics of FP funding to HEIs[4], through advice from RCN, as well as through company interviews carried out in a parallel evaluation of RCN, where several FP sceptics were identified.

Following agreement with KD, we have in terms of *randsoneaktiviteter* focused on Ambient Assisted Living (AAL) and Eurostars (both Article 185 initiatives), as well as on the Innovative Medicines Initiative (IMI) (a Joint Technology Initiative (JTI)). Information on participants in these activities was also kindly provided by RCN. In contrast, we have per agreement with KD not studied Norway's participation in the European Research Council (ERC) (Ideas programme), Marie Curie Actions (MC) (People programme) and Research Infrastructures (RI) (Capacities programme) in detail.

Data acquisition has included:

- Desktop studies of previous studies of FP participation
- A new analysis of survey results from a previous study, so as to focus entirely on Norwegian participants in the FP7 themes of Health, ICT and Environment
- A focus group with 16 representatives of KD, Ministry of Trade and Industry (NHD), Research Council of Norway (RCN) and Innovation Norway
- Five focus groups with in total 39 representatives of Norway's main FP participants in Health, ICT and Environment

4 "Tilstandsrapport for høyere utdanningsinstitusjoner 2011", KD.

- 47 interviews with:
  - Representatives of KD, Ministry of the Environment (MD) and Ministry of Health and Care Services (HOD)
  - Representatives of RCN, including the national contact points (NCP) for Health, ICT, Environment, ERC, MCA and RI
  - Individual researchers participating in FP7 projects and in *randsone-aktiviteter*
  - Management of organisations that frequently participate in FP7 projects and in *randsoneaktiviteter*
  - Management of organisations that do not, or rarely, participate in FP7 projects and in *randsoneaktiviteter*

From a methodological point of view, it is important to realise that the study intentionally has focused on the *perceived* (subjective) motives for and deterrents to FP participation put forth by focus group participants and interviewees. Moreover, the study largely relies on the views on motives and deterrents of *a selection* of FP participants and non-participants, and it should be noted that their views are not necessarily representative of the entire population of Norwegian participants and non-participants.

The work was conducted between June and September 2012 by a core team consisting of Tomas Åström, Tommy Jansson, Göran Melin, Anders Håkansson, Patries Boekholt and Erik Arnold, assisted by Emma Ärenman, Malin Jondell Assbring and Neil Brown. The assignment was led by Tomas Åström and quality controlled by Erik Arnold.

1.3 Report structure

Following this introductory chapter, **Chapter 2** introduces national strategies and support instruments, and also very briefly outlines Norway's FP7 participation. **Chapter 3** reports on a literature review of a range of previous studies of FP participation in a range of countries, including Norway. This chapter specifically presents a new analysis of survey results from a previous study, so as to focus entirely on Norwegian participants in the FP7 themes of Health, ICT and Environment. **Chapter 4** discusses organisational strategies and support instruments, while **Chapter 5** describes motives for and deterrents to participation from organisational and individual perspectives. **Chapter 6** reflects on possible reasons for why Norway's FP participation is not higher than it is, while **Chapter 7** summarises observed differences between themes, participant types and parts of the FP. The concluding **Chapter 8** deliberates on possibilities for increasing Norwegian participation in the FP.

Appendix A recapitulates KD's understanding of the assignment (in Norwegian). **Appendix B** lists the abbreviations used and **Appendix C** focus group participants and interviewees. **Appendix D** presents an in-depth analysis of Norwegian FP7 participants' views on national support services and motives for participation, based on reanalysed survey data from a previous study.

2. Norway in the Framework Programme

Although not an EU member state, Norway became affiliated to the FP through the European Economic Area (EEA) agreement between the European Free Trade Association (EFTA) and the European Community (later EU). Norway has thus participated in the FP since the beginning of 1994 (FP4). Previous evaluations and studies of the Norwegian participation paint a predominantly positive picture, while highlighting the fact that Norwegian participants bring back significantly less money than Norway contributes to the overall FP budget.[5]

The purpose of this Chapter is not to describe the Norwegian FP participation in detail, nor to discuss its impacts; this has been thoroughly treated elsewhere.[6,7] The main intention is rather to provide an outline of the political priorities, national strategies and national support instruments most relevant to FP participation. This chapter nevertheless concludes with a very brief recapitulation of the Norwegian FP participation in the FP7 themes of Health, ICT and Environment, so as to facilitate interpretation of subsequent Chapters.

2.1 Research White Papers and national strategies

The 2005 research White Paper *Vilje til forskning* (Commitment to research) highlights three structural priorities: internationalisation of research, basic research, and research-based innovation; four thematic priorities: energy and environment, oceans, food, and health; and three technology areas: ICT, new materials (nanotechnology), and biotechnology. The White Paper states that internationalisation of Norwegian research is a main objective of the government's research policy. Internationalisation is important to enhance research quality, to ensure renewal of Norwegian research and to make Norwegian research groups capable of utilising knowledge and technologies developed elsewhere. International collaboration is also necessary to share risk and costs of major research investments. The government specifically emphasises the importance of active participation in the FP, and sets 3% of Gross Domestic Product (GDP) as a goal for total Norwegian research expenditure by 2010, 1% of which should come from public sources.[8]

RCN's first action plan for Norwegian participation in FP7 was announced in 2007. It states that RCN's overall objective should be to contribute to fulfilment of national objectives, and to at least 75% all FP7 projects with Norwegian participation being in line with Norwegian research priorities. The plan also spells out six overall success indicators, as well as targets for each of them. For each of the themes of FP7, the action plan specifies actions to strengthen nationally prioritised areas, to promote strategic positioning and to enhance overall participation, as well as actions aimed at specific categories of participants.[9]

The 2006 ICT White Paper *Eit informasjonssamfunn for alle* (An information society for all) emphasises that the FP is Norway's most important arena for international research and development (R&D) collaboration, and that it provides opportunities to strengthen Norwegian ICT research and support national priorities.[10]

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5 A. Kaloudis, H. Godø, L. Langfeldt, Å. Gornitzka, E. Kristiansen, D. Aksnes, H. Gunnes, T. E. Pedersen, T. Sandven, S. Slipersæter and N. H. Solum, "In need of a better framework for success", NIFU step rapport 22/2010.

6 "Forskningssamarbeidet Norge–EU, Årsrapport 2011, del 1", RCN, 2012.

7 A. Kaloudis et al., op. cit.

8 St.meld. nr. 20 (2004–2005), *Vilje til forskning*.

9 "Forskningsrådets EU-prosjekt for 7. rammeprogram 2007–2013", RCN, 2007.

10 St.meld. nr. 17 (2006–2007), *Eit informasjonssamfunn for alle*.

As a consequence of the 2005 research White Paper, KD, together with RCN and Innovation Norway, developed a strategy for Norway's research collaboration with the EU. The strategy states that the overall objective of Norway's FP participation is to promote internationalisation and quality of Norwegian research, strengthen nationally prioritised R&D areas through alignment and valorisation of national R&D programmes, and to contribute to knowledge-based innovation and renewal of Norwegian industry and society. The strategy further sets a monetary objective for the 2007–2010 timeframe: Norway should bring back funding from the competitive part of the FP that corresponds to Norway's contribution to the overall FP budget.[11]

The strategy spells out 24 actions, ten of which aim to strengthen Norwegian participation in FP7, including:

- KD and RCN should facilitate the development of objectives and strategies for FP7 participation among HEIs
- RCN and Innovation Norway should strengthen the coordination of their information and counselling services
- RCN and Innovation Norway should implement activities to enhance FP7 participants' capabilities in terms of project management, proposal writing etc.
- KD should strive to adapt and strengthen programmes to co-fund FP7 proposal writing and project implementation

Building on KD's strategy for Norway's research collaboration with the EU, and its aforementioned 2007 action plan, RCN launched its second action plan for Norwegian FP7 participation in 2008. This plan resembles its 2007 predecessor, but the success indicator targets are significantly increased in terms of number of proposals and number of approved projects, thus indicating a notably higher ambition level.[12]

The 2009 research White Paper *Klima for forskning* (Climate for research) states that participation in the FP is a crucial part of the internationalisation of Norwegian research. The White Paper set five strategic objectives: solving global challenges, improved health and health services, research-based professional practice, knowledge-based industry, industrially relevant research in the areas of food, marine, maritime, tourism, energy, environment, biotechnology, ICT and new materials/nanotechnology; and four cross-cutting objectives: high quality in research, a well-functioning research system, high degree of internationalisation in research and efficient use of research funding and results. Given Norway's large GDP and its research capacity, the White Paper finds that Norway's financial returns from FP6 are satisfactory. The White Paper reiterates the *juste-retour* objective for the 2007–2010 timeframe from KD's strategy for Norway's research collaboration with the EU, and goes on to note that such a return will be difficult to achieve for the remainder of FP7 due to the progressive Norwegian financial contribution over time. The White Paper restates the previous research White Paper's objective that Norwegian research expenditure should amount to 3% of GDP, 1% of which should come from public sources.[13]

RCN's 2010 strategy for international cooperation states that international research cooperation should:[14]

- Contribute to solving global challenges
- Contribute to improving quality and capacity of Norwegian research

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11 "Strategi for Norges samarbeid med EU om forskning og utvikling", KD, 2008.

12 "Forskningssamarbeidet Norge–EU, 7. rammeprogram 2007–2013, Forskningsrådets handlingsplan 2009–2010", RCN, 2008.

13 St.meld. nr. 30 (2008–2009), *Klima for forskning*.

14 "Internasjonalt samarbeid, Forskningsrådets strategi 2010–2020", RCN, 2010.

- Secure Norwegian access to international knowledge production
- Strengthen industry's competitiveness
- Promote Norway as a leading research and innovation nation within selected fields

RCN will strive towards these objectives in collaboration with the research community, industry and ministries.

The 2010 Strategy for climate research urges the government to increase R&D funding, to ensure long-term programmes and incentive structures, to coordinate climate research and to establish an advisory council for climate research. The Strategy highlights the need to motivate researchers to collaborate internationally and to apply for R&D grants on international arenas.[15]

In a 2010 policy paper, the Confederation of Norwegian Enterprise (NHO) argues for increased FP participation of Norwegian enterprises and proposes a set of actions to achieve this.[16]

As a result of the development of KD's EU strategy and action plan for 2011–2013, a separate action plan was dedicated to increasing and strengthening Norwegian participation in the remaining parts of FP7.[17] This action plan includes actions targeting national boundary conditions for mobilisation and participation, actions targeting experienced FP participants so as to increase their participation and actions with a longer time perspective, to be implemented by ministries and RCN.[18]

The government's 2011 National strategy for biotechnology identifies four key areas that may contribute to solving societal challenges and where Norway has a competitive advantage, namely aquaculture, seafood and the marine environment; land-based food and biomass production; environmentally friendly industrial processes and products; and health, health services and health-related industry. The Strategy points to the need for Norwegian researchers to collaborate with leading foreign biotechnology research groups and to participate in the FP to a significantly larger extent.[19]

In the 2011 White Paper *Nasjonal helse- og omsorgsplan (2011–2015)* (National health care plan), HOD states that it is an objective to strengthen Norway's international research and innovation collaboration bilaterally, through the EU, at the Nordic level and through the World Health Organization (WHO). The White Paper explains that systematic work is underway to increase Norwegian participation in the FP and in *randsoneaktiviteter*, and that a strategy to engage additional research groups in medicine and health care will be developed.[20] Annual instructions from HOD to regional health authorities have in recent years included the objective to increase its participation in FP7 and in *randsoneaktiviteter*.[21]

It is obvious that Norwegian research policy and strategies are consistent in promoting internationalisation of Norwegian research, and that both increasing (national) public investments and increasing FP participation are integral parts of this transformation. It is also clear that the three research themes of this study – health, ICT and environment – are at the core of Norwegian research priorities.

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15 "Kunnskap for klima, Strategi for klimaforskning", Styringsgruppen for Klima21, 2010.

16 "EU forskningen – Hva må til for å løfte norsk næringslivs deltagelse?", NHO, 2010.

17 "EU-strategi og handlingsplan, Kunnskapsdepartementet, 2011-2013", KD.

18 "Tiltakspakke for økt og styrket deltakelse i siste del av EUs 7. rammeprogram for forskning", KD, 2011.

19 "Nasjonal strategi for bioteknologi, For framtidas verdiskaping, helse og miljø", Strategi 2011–2020, KD, 2011.

20 Meld. St. nr. 16 (2010–2011), *Nasjonal helse- og omsorgsplan (2011–2015)*.

21 E.g. "Oppdragsdokument 2012, Helse Sør-Øst RHF", HOD.

2.2 National information and support activities, and support instruments

Through its EU office and its NCPs, RCN supports FP proposers and participants by:

- Supplying a range of marketing, information, guidance and advisory services
- Striving to tie nationally prominent research groups to expert networks
- Striving to make Norwegian research groups, companies and public agencies attractive partners for collaboration
- Stimulating mobility
- Contributing to internationalisation of graduate education
- Making Norwegian research more well known internationally

Innovation Norway administers the Norwegian part of the Enterprise Europe Network, which (among other things) provides advice to small companies on how to participate in the FP.

RCN runs four programmes that specifically aim to promote FP participation, *Prosjektetableringsstøtte* (PES), *Tiltak for økt deltakelse av forskningsinstitutter i EUs rammeprogram* (STIM-EU), *Toppfinansiering av Marie Curie-stipender* (IS-TOPP), and Funding of ERC Starting grant proposers.

PES grants are to be used to prepare FP proposals and may cover up to 50% of the costs. Grants are limited to NOK50k per proposal for proposal participants and up to NOK350k for Norwegian would-be coordinators of a large project. Any type of organisation may apply for a PES grants and grants may be used for proposals to any FP7 sub-programme, including *randsoneaktiviteter*. Frequent FP participants (typically HEIs) may apply for an annual grant; 28 organisations have annual grants in 2012. The PES budget for 2012 is NOK40.2m.

STIM-EU was introduced in 2012 to reflect the fact that institutes have difficulty getting sufficient cost coverage in FP projects. STIM-EU primarily aims to promote increased institute FP participation and secondarily aims to increase industry participation in the FP through enhanced collaboration with institutes. Thus, if an institute collaborates with a Norwegian company in an FP project, the grant is increased by 50%. Only 56 selected institutes may apply for a STIM-EU grant, and grants may only be sought for the Cooperation programme and once a project has become a reality. STIM-EU will provide 5% additional funding to grants received from the FP. The STIM-EU budget for 2012 is NOK26m.

The IS-TOPP "top-up" funding programme for incoming MCA grantees provides Norwegian host organisations with additional funding to compensate for the fact that MCA grants do not to a sufficient extent take Norwegian wages into account.

The programme for funding of ERC Starting grant proposers targets unsuccessful proposers to ERC. Assuming that a proposer fulfils ERC's excellence criteria, but does not receive a grant purely for budget reasons, RCN grants up to 75% of the amount that ERC otherwise would have granted. This programme gives ERC proposers two funding opportunities, and thus likely increases incentives to apply. This programme was initially introduced for Starting grant proposers, but was in 2012 extended to also include Advanced grant proposers.

RCN also administers programmes that have as secondary objectives to stimulate international collaboration and FP participation, including *Brukerstyrt innovasjonsarena* (BIA), *Virkemidler for Regional FoU og Innovasjon* (VRI) and VERDIKT. Generally, projects are encouraged to have some form of foreign participation or link.

Innovation Norway runs the Industrial R&D contracts programme (*Industrielle forsknings- og utviklingskontrakter, IFU)*) targeting small and medium-sized enterprises (SMEs). Among the goals of the programme are to build international

competitiveness, build international networks and get access to the international marketplace.

RCN and Innovation Norway jointly administer the *SkatteFUNN* programme that may give a company a tax reduction for its R&D costs; large companies may get up to 18% tax reduction and SMEs up to 20%.

The government grants systems to the HE sector and (selected) institutes comprise different funding incentives for international funding. The system for government grants to HEIs introduced in 2002 splits public funding into a basic component, an education component and a research component. The research component has a strategic and a performance-based component. In 2007, 2% of the total government grant to HEIs depended on FP funding in the previous year, as part of the performance-based component.[22] In practice, this means that an HEI receives NOK1.8 extra for each NOK1 in FP funding.[23] The performance-based component has a fixed annual volume at the level of the HE sector as a whole, meaning that it is a zero-sum game. In 2010, the system was revised so as to also include funding from *randsoneaktiviteter*. The system grants the extra funding to the HEI, not to the department or group that received the FP funding.

New funding guidelines for research institutes were introduced in 2009. These reward international revenue, i.e. both private funding and public funding (such as from the FP). However, the percentage of non-competitive government funding in the institutes' total income ranges from 6% for the technical/industrial institutes to 8.3% for the environmental ones, and it is not uncommon that international private funding dominates over public funding.[24] This means that for institutes, the government incentive to stimulate FP participation is weak, and considerably weaker than for HEIs.

In contrast, regional health authorities receive no reward for foreign funding; they are since 2003 instead rewarded for publications in (highly ranked) international journals; since 2010, papers with foreign co-authors are weighted by a factor of two. The system grants the extra funding to the regional health authority, not to the health authority, research group or individual that (co-)authored the paper. Thus, for HEIs and institutes the fiscal incentive is on the "input" (funding) side, whereas it is on the "output" (publications) side for regional health authorities.

2.3 Norway's participation in FP7

As a background to the discussions in the upcoming parts of this report, it may be helpful to have a basic understanding of the Norwegian participation in the FP7 Health, ICT and Environment themes, as well as in ERC, MCA, RI and selected *randsoneaktiviteter*. The most comprehensive descriptions of the full Norwegian participation in FP7 may be found in RCN's annual and mid-year reports, from which most of the participation data of this Section has been drawn.

Table 1 shows that Norwegian participation is particularly high in the Environment theme, wherein Norway participates in more than every fourth project, whereas the relative participation is more modest in Health and ICT. The Table also illustrates that the Norwegian success rate (ratio between proposals funded and proposals submitted) for the entire Cooperation programme is 24%, which is an impressive 4.7% higher than the average for all evaluated proposals. In this respect, Norway obviously does particularly well in the Environment and Health themes, but less so in the ICT theme.

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22 E. Arnold, B. Mahieu and M. Carlberg, "Evaluation of the Research Council of Norway, Background Report No 1, Production of Strategic Intelligence and Advice", KD, 2012.

23 J. Fagerberg et al., "Et åpnere forskningssystem", NOU 2011:6, 2011.

24 Ibid.

Table 1 Norwegian participation in FP7 themes Health, ICT and Environment, as well as in the Cooperation programme, by June 2012 (data on coordinators from December 2011).[25]

	Total number of projects	Projects with Norwegian partner	Norwegian share of total	Projects with Norwegian coordinator	Norwegian success rate	Ranking over/ under average for all proposals
Health	819	83	10%	9	28%	4.6%
ICT	1,580	110	7%	21	15%	-0.9%
Environment	406	109	27%	15	29%	10.1%
Cooperation	**5,374**	**695**	**13%**	**216**	**24%**	**4.7%**

In terms of participant types, Figure 1 illustrates that there are notable differences between the three themes. While participation in ICT projects largely mimics the overall national pattern, institutes strongly dominate in Environment and HEIs within Health, where "Others" in part may be translated into health authorities. However, as we will discuss in subsequent chapters, the HEI participation in Health most likely includes a certain degree of participation of health authorities. It may also be noted that company participation is very low in Health and Environment (but this is not a uniquely Norwegian feature).

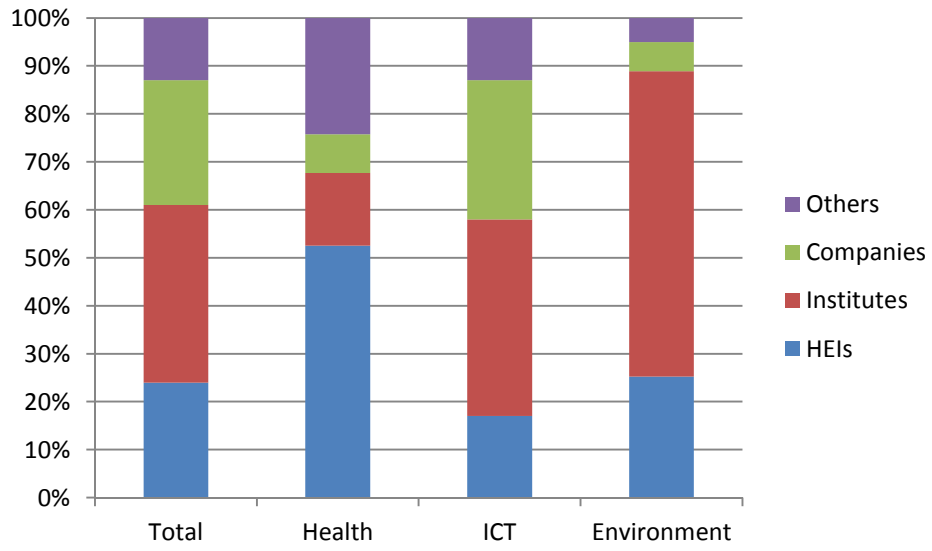

Figure 1 Relation between participant types in FP7 themes Health, ICT and Environment (based on participation counts).[26]

Table 2 shows that in RI Norway's participation is quite high and its proposers very successful. In contrast, Norwegian participation in ERC and MCA is remarkably low and success rates below average, with the exception of ERC advanced grants where the success rate is above average.

25 "Forskningssamarbeidet Norge–EU, Rapport pr. første halvår 2012", RCN, 2012. Data on coordinators from "Forskningssamarbeidet Norge–EU, Årsrapport 2011, del 1", RCN, 2012.

26 "Forskningssamarbeidet Norge–EU, Årsrapport 2011, del 1", RCN, 2012.

Table 2 Norwegian participation in ERC, MCA and RI by June 2012 (data on ERC Starting and Advanced grants from December 2011).[27]

	Total number of projects	Projects with Norwegian partner	Norwegian share of total	Norwegian success rate	Ranking over/ under average for all proposals
ERC	2,400	27	1.1%	11%	-3.1%
Starting grants	*1,289*	*9*	*0.70%*	*6.5%*	*-6.8%*
Advanced grants	*757*	*15*	*2.0%*	*17%*	*3.3%*
MCA	7,864	134	0.17%	20%	-5.7%
RI	318	68	21%	50%	12.5%

Table 3 illustrates how Norwegian ERC and RI projects may be attributed to the three FP7 themes in question. The classification has been done by RCN and some projects have been classified as belonging to more than one theme. MCA projects are not classified in this respect.

Table 3 Number of Norwegian ERC and RI projects by theme. Based on RCN data for December 2011.

	Health	ICT	Environment
ERC	9	1	4
RI	5	26	24

Table 4 shows the Norwegian participation in the three *randsoneaktiviteter* (IMI, AAL and Eurostars) that we later take a closer look at. The relative Norwegian participation in these *randsoneaktiviteter* is at approximately the same level as in the Health and ICT themes, and thus considerably lower than in the Environment theme.

Table 4 Norwegian participation in selected *randsoneaktiviteter* by June 2012.[28]

	Total number of projects	Projects with Norwegian partner	Norwegian share of total
IMI	24	2	8%
AAL	101	12	12%
Eurostars	540	51	9%

[27] "Forskningssamarbeidet Norge–EU, Rapport pr. første halvår 2012", RCN, 2012. Data on ERC Starting and Advanced grants from "Forskningssamarbeidet Norge–EU, Årsrapport 2011, del 1", RCN, 2012.

[28] "Forskningssamarbeidet Norge–EU, Rapport pr. første halvår 2012", RCN, 2012.

3. Previous studies on motives for FP participation

3.1 Introduction

This chapter looks into what existing literature tells us about the motivations and incentives for organisations and individual researchers to take part in European research activities or alternatively to abstain from participation. The literature we build on for this task includes for instance completed evaluations of consecutive FPs and specific programmes or initiatives of the FP, academic studies on European research collaboration and other policy-related studies and documents that discuss this topic.

While most of the literature on EU participation is generic, i.e. it does not distinguish between the different thematic areas, some studies do have a focus on the topics of Health, ICT and Environment that are of particular importance for this study. We will use both the generic knowledge, as much of the findings will be true for the three topics, and where possible make distinctions between the three themes. The report is structured according to the type of actors that participate in the programme: HEIs, research institutes, individual researchers and companies.

Most of the inputs and feedback on the motivations of participants and the motives for engaging into European research stem from evaluations and other studies that have surveyed and interviewed participants (and sometimes non-participants). Surprisingly, the overarching evaluations of for instance FP6 or the IST programme, usually conducted by expert panels, have given little attention to the motivations of participants as they have mainly focused on effectiveness and impacts.

For instance, the Study on the Longer-term Impact of European Union funding of research in the Field of Environment and Health, mainly analysed the effects of (groups of) projects, but hardly discussed what made the participants decide to take part. The main inputs for the study come from stakeholders (potential users of the research results) rather than from the participants, since the aim was to analyse the take-up and impacts of consecutive FPs.[29] This example illustrates that many of the impact assessments procured by the European Commission do not tell us much about the motivations and incentives to take part.

3.2 A wide array of incentives, motivations and objectives

The starting point for our discussion is the motives for FP participation identified in our 2010 NordForsk Policy Brief 1. This study found that the primary motives for Nordic participants were:[30]

- To develop new or improved relationships or networks
- To access research funding
- To develop and extend internal knowledge and capabilities
- To address specific scientific or technical questions, problems or issues
- To develop new or improved tools, methods or techniques

Other factors rated as of relatively high importance were to tackle problems that have a European or international dimension, and to access capabilities that do not exist in your own country (complementary expertise). We will return to this study in some detail in Section 3.7 (and Appendix D).

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29 "Study on the Longer-term Impact of European Union funding of research in the Field of Environment and Health", European Commission, 2011.

30 J. Stroyan et al., "Enhancing the Effectiveness of Nordic Research Cooperation: Nordic participation in the EU Framework Programmes – Best practices and lessons learned, Policy Brief 1", NordForsk, 2011.

We will seek to compare the Nordic results with studies done in other European countries or procured by the European Commission. Most recent studies conducted in Member States have looked at FP6 as this programme has been completed while FP7 is still on-going. In general, we find that the types of incentives and motivations identified in other studies are very much in line with the 2010 NordForsk Policy Brief.

Table 5 Evolution of the most important objectives related to FP participation since FP4 according to Finnish FP participants.

	FP6	%	FP5	%	FP4	%
SMEs	New contacts	79	Monitoring S&T development	89	New contacts	61
	International cooperation	76	European cooperation	73	European cooperation	58
	New product or new feature into existing product	67	New contacts	65	Monitoring S&T development	58
					Research funding	55
Big companies	Monitoring S&T development	93	Monitoring S&T development	66	Monitoring S&T development	62
	International cooperation	93	New contacts	59	New contacts	53
	Deepening of collaboration	89	European cooperation	57	European cooperation	43
Research centres	International cooperation	95	Research funding	86	New scientific knowledge	69
	New scientific knowledge	90	New scientific knowledge	80	New contacts	60
	Deepening of collaboration	87	Monitoring S&T development	71	Added visibility or prestige	59
			European cooperation	71		
Universities	International cooperation	97	Research funding	85	New scientific knowledge	77
	New contacts	88	New scientific knowledge	80	Added visibility or prestige	60
	Deepening of collaboration	86	European cooperation	71	New contacts	58
	New scientific knowledge	86				
Non-for-profit Orgs.	Deepening of collaboration	95	Dissemination of research results	63	European cooperation	58
	New contacts	89	European cooperation	63	New contacts	52
	Getting international knowledge into Finland	89	Monitoring S&T development	63	Added visibility or prestige	38

A 2008 study procured by Tekes provides an overview of the evolution of the most important objectives related to FP participation since FP4, see Table 5. This overview indicates that:[31]

[31] S. Kuitunen, K. Haila, I. Kauppinen, M. Syrjänen, J. Vanhanen, P-P. Ahonen, I. Tuomi, P. Kettunen and T. Paavola, "Finns in the EU 6th Framework programme, Evaluation of Participation and Networks", Programme Report 6/2008, Tekes, 2008.

- For SMEs new contacts and the opportunity to monitor science and technology (S&T) developments are constant motivations to participate, while in the most recent FP the objective to obtain concrete results such a new products or new features in existing product came up
- For big companies monitoring S&T developments remains the most important objective, closely followed by making new contacts and cooperation
- For research centres and universities "knowledge-based" objectives, such as to obtain new scientific knowledge, and relational incentives are most important
- In FP6, deepening of collaboration wins in importance for big companies, universities and research centres, suggesting that in earlier FPs Finnish participants got to know who is who, and that they gradually developed their relationships with (a selection) of partners
- Research funding regularly appears as an objective in Finland and it was the number one objective for research centres and universities in FP5, but disappeared in FP6. As we will soon note for other countries (e.g. Ireland), there is a correlation between national funding opportunities and interest in the FP

A type of motive that cannot easily be distilled from surveys, but that does come up in case studies, are strategic motivations. Examples of strategic motivations are the desire to be in a particular consortium or sequence of projects, as such projects may be critical for future standardisation, or because potentially important customers or top scientists will be taking part. Not taking part in such consortia may pose a risk of being locked out of new developments, so it may be better to be "in", even with a small role, than being excluded from developments that could potentially be on a critical trajectory.

Yet another set of objectives is related to the various parts of the FP that support mobility of researchers or provides grants to individual researchers. For these types of programmes the desired effect on the participant's career by working in a foreign institute, receiving specific training or by accepting a (prestigious) grant are important motivations. Motivations may also include cultural motivations such as the wish to be exposed to another country's (academic) culture. There may of course also be purely private motives to seek international mobility, but these are more difficult to pin down or to influence with policy measures, so we will discard them in this review.

The Austrian FP6 impact study found that motivations such as tackling problems that have a European or international dimension, tackling issues not addressed in national programmes, and to improve coordination of research scored high.[32] The consecutive Irish FP evaluations came up with the same set of motives. The FP6 survey found that the primary motives for FP participation were to develop new or improved relationships or networks, to develop and extend internal knowledge and capabilities, and to access research funding. Other factors rated as important or very important were to develop new or improved tools, methods or techniques, to solve specific scientific or technical questions, to tackle problems that have a European or international dimension, and to access capabilities that do not exist in Ireland.[33] The Norwegian FP6–7 evaluation showed similar motivations for participation. According

32 E. Arnold, P. Boekholt, B. Good, A. Radauer, J. Stroyan, B. Tiefenthaler and N. Vermeulen, "Evaluation of Austrian Support Structures for FP 7 & Eureka and Impact Analysis of EU Research Initiatives on the Austrian Research & Innovation System", BMWF, 2010.

33 "Evaluation of Framework Programme 6 in Ireland", Forfás, 2010.
P. Boekholt et al., "Evaluation of the Impacts and Operation in Ireland of the European Union's Fifth Framework for Research, Technological Development and Demonstration", 2005.

to the Norwegian surveys, access to research networks, expertise, scientific excellence and funding were the most important motivations for Norwegian FP participation.[34]

A range of FP impact studies thus show that we can group the motivations in a number of categories:

- Relational motivations (i.e. an array of networking incentives)
- Knowledge-based motivations
- Problem-solving motivations (including technological and societal problems)
- Career-boosting motivations (including research training)
- Strategic motivations (which may include standardisation)
- Infrastructural motivations (access to data, biobanks, research infrastructure)
- Financial and economic motivations (either through FP funding or indirectly through anticipated impacts of participation)

Policy makers may also have a set of additional motivations for EU research, such as abating research fragmentation, increasing policy coordination, or leveraging national funding. Strictly speaking these are not the participants' motivates and as long as the researchers themselves do not express this as their main motive, these will not be further addressed. So far, few studies have shown a European "altruism" among organisations or individual researchers to take part in the broader European agenda. Whereas the European culture and aspiration for more European connections may well have an influence in the background, it is unlikely that this is a sufficiently strong motivation to explain the willingness to endure the considerable transaction costs involved in cross-border collaboration.

The remainder of this chapter will elaborate on motivations per type of actor: universities and research organisations, individual researchers and companies.

3.3 Motives for HEIs and institutes

European universities and institutes are strong proponents of the European Research Area (ERA), as illustrated by the recent signing of a Joint Statement by the European Association of Research and Technology Organisations (EARTO), the European University Association (EUA), the League of European Research Universities (LERU), NordForsk, Science Europe (SE) and the European Commission on working in partnership in achieving the ERA.[35] While the European agenda as such is considered crucial at the highest levels, the specific feedback on the current European Framework Programme and Horizon 2020 from the same organisations is currently mostly concerned with rules for participation and financial regulations, rather than with the content or relevance of the research themes suggested by the European Commission. This is in line with a most dominant tone in the debates on the FP in recent years: in principle it is accepted as a good and beneficial vehicle to support research, but its implementation brings bureaucracy and administrative burdens that lessen its attractiveness. As there is still over-subscription in all domains of FP7, the interest is obviously still there and the benefits seem to outweigh the disadvantages. The Norwegian FP evaluation found that as many as 72% of respondents in a participants' survey stated that one motivation for participation was that the FP project was considered as an integrated part of their organisation's internationalisation strategy, indicating that local policy and attitudes to international projects and collaboration

34 A. Kaloudis et al., op. cit.

35 Joint Statement by the European Association of Research and Technology Organisations (EARTO), the European University Association (EUA), the League of European Research Universities (LERU), NordForsk, Science Europe (SE) and the European Commission on working in partnership in achieving the European Research Area, 17 July 2012.

are important and encourage participation. This suggests that a positive attitude from the organisation seems to influence its individual researchers.

However, alignment of an organisation's strategy with the FP's research agenda is not a matter of course. In the Danish FP evaluation most interviewees stated that organisational strategies are primarily based on the organisation's assessment of internal research capabilities/strengths coupled to an understanding of political, industrial and societal needs and priorities, primarily expressed at the national level.[36] Institutional strategies can be modified slightly in light of EU-level priorities and funding opportunities, but it is more likely that efforts will be made to influence the latter to bring them into closer alignment with national research capabilities and trajectories than the other way round, according to the Danish interviewees. In this sense, FP priorities do not drive planning at the national or organisational level, but it is not uncommon for plans to be marginally adjusted in order to provide a greater degree of alignment with EU-level priorities and opportunities.

The trend over time has been that the share of participation of HEIs has increased and the relative share of industry has decreased. Today HEIs are the main beneficiaries of FP7, constituting approximately a third of all proposers (36.8%) and requested FP funding (€3.1 billion or 31.3%; in retained proposals). Participation of the private sector in FP7 involves a quarter of all proposers (25.3%) and requested FP funding (26%).[37] About a quarter of all participants are institutes.

Typically, HEIs and institutes rate the following motivations as most important:

- To develop new or improved relationships or networks
- To develop and extend internal knowledge and capabilities
- To access research funding
- To solve specific scientific or technical questions, problems or issues
- To develop new or improved tools, methods or techniques
- To tackle problems that have a European or international dimension

These intrinsic motivations seem difficult to encourage through external support measures. Large parts of the scientific endeavour have already been highly international for several decades, if not longer. A 2007 study on the degree of internationalisation of German scientists, HEIs and research institutes showed that almost two thirds of German researchers had stayed abroad for a longer period (more than 3 months) and over two thirds of research institutes and almost half of the HEIs had an internationalisation strategy in place.[38] These numbers have likely increased since 2007. As relationship building is a key element of internationalisation, perhaps the stimulation of international networking early in a researcher's career would be one route to follow. Existing programmes such as European Cooperation in Science and Technology (COST) could be a stepping stone for FP involvement.

The (dominant) presence of HEIs and institutes as the main participant categories is not constant across all thematic areas and all parts of the FP. The Dutch FP impact evaluation saw a considerable variation in the interest to participate across the topics of Life sciences and health, Food quality and safety, ICT and Sustainable energy. In Life sciences and health, the key actors involved were academic hospitals, three major

36 "Evaluation of Danish Participation in the 6th and 7th Framework Programmes", Danish Agency for Science, Technology and Innovation, 2011.

37 "On the progress made under the 7th European Framework Programme for Research", European Commission Staff Working Document, SEC (2009) 589, 2009.

38 J. Edler, G. Licht and P. Boekholt et al., "Internationalisierung der deutschen Forschungs- und Wissenschaftslandschaft", Fraunhofer IRB Verlag, 2007.

academic hospitals in particular. Almost two thirds of the Dutch FP6 participation stemmed from academic (medical) partners in this field. Public non-academic research organisations had a limited role in this domain (and so did companies). The evaluation found that:[39]

- There was a strong additionality of EU funded research due to the strong complementarity of the research funded by large Dutch initiatives (e.g. the Netherlands Genomics Initiative) and consecutive FPs. Thus, a motivation for researchers was that FP participation added to critical mass and a larger scope to what they were already doing funded by the national funding system. This led to a culture where Dutch medical researchers would first wait to see what topics would be included in the FP work programmes, and research topics that did not fit in the FP were subsequently conducted by means of national funding instruments
- The participation in the FP provided Dutch medical researchers access to foreign research infrastructures that were not available nationally
- Researchers affirmed that FP projects gave them better chances to publish in high-impact international journals, which was considered important as this is how the university assesses their performance. This was confirmed by a bibliometric analysis of FP6 participants that showed that Dutch participants score high[40]
- The medical research teams developed quite longstanding partnerships that sometimes originated from FP4. Despite the FPs gradually evolving from funding fundamental health research to more translational research, these consortia were able to get funding for new topics with each new FP
- Access to "tacit" knowledge through networking and foreign partnership was put forth as an important benefit of FP projects, which is not easily replicated in any other setting

In Food quality and safety, key research groups stressed the importance of gaining access to much larger datasets in FP projects, which allows for epidemiological research that would not be possible with smaller national datasets. In this same domain it was stated that in FP projects topics could be studied more deeply and rapidly because the large Integrated Projects (IPs) rely on partners' complementary skills to cover more ground. In the ICT, Food quality and safety and Sustainable energy domains, Dutch participants from public research organisations valued the fact that FP projects provided them the opportunity to work with industry and with foreign companies. In Life sciences and health this was not as evident as this domain has very low private-sector participation.

The study on long-term impacts of EU-funded research on environment and health identified a strategic goal for the participating researchers: to get the research topics on various diseases and hazards higher on the policy agendas in the Member States and the EU. However, it is not clear how strong the participants' motivation was in this respect at the outset of the projects. Another motive that surfaced from extensive surveys and interviews was the need expressed by the stakeholders (including the researchers) to build sustainable networks in a field of research that is by nature cross-border.[41]

A factor that has influenced the participation patterns in the FP is the increasingly strenuous role of being project coordinator. Particularly with large consortia (typically

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39 P. Boekholt, H. Bodewes, C. Enzing, J. Van Giessel, I. Meijer, B. Mostert, G. van der Veen and F. Zuijdam, "Impact Europese Kaderprogramma's in Nederland, Synthese rapport", 2009.

40 P. Larrue, Y. Cadiou, P. Laurens and E. Arnold, "Bibliometric profiling of Framework Programme participants", 2009.

41 "Study on the Longer-term Impact of European Union funding of research in the Field of Environment and Health", European Commission, 2011.

in the IP instrument), the coordinator's role involves a substantial administrative and reporting burden. According to several national FP impact studies, this has meant that smaller universities – with less well-developed support facilities – are less keen to take on a proactive role, whereas large universities and research institutes – who usually have more resources for management and administration – increasingly have taken on coordinating positions.

According to the Austrian FP impact study, research institutes have a distinct and interesting role: they seem to be the most Europe-oriented. For them the motives "to tackle issues that are not adequately addressed by national programmes" and "to tackle problems that have a European or international dimension" are more important than for other participants. This may be explained by the fact that research institutes are often active in more policy-oriented research domains.

3.3.1 The funding motive

While researchers are often fast to affirm that they "are not in it for the money", the funding aspects of the FP do play an important role, as illustrated by several previously cited studies.

That funding, both the abundance and the lack of it, plays a role at the level of the national research system may for example be illustrated with Ireland. In the FP5 evaluation, a major concern was to understand the significant drop in participation among all actors. The early years of FP5 coincided with a large national investment in science and technology. A sudden large wave of national funding coming from a new programme for investments in research infrastructure and funding from the newly formed the Science Foundation Ireland, resulted in a degree of crowding out taking place in the Irish research community. This was particularly obvious in the HEI sector where scarce time resources were applied to write proposals for national funding, as this was expected to have a much larger leveraging effect than the odd EU project. Interviewees clearly indicated that the HE sector was therefore "distracted" during the beginning of FP5. This effect became even more obvious when participation from the Irish HE sector increased again in FP6 and now in FP7 is even stronger, while national funding has been affected by austerity measures.

The participants' survey in the Austrian impact assessment revealed that the most important motive for participating in the FP is "to access research funding". This was followed by the motive "to develop new or improved relationships and networks". In other words, FP participants may be keen on FP funding, but they also appreciate and identify with one of the main objectives of the FP, namely to network the European researcher community. The participants' survey in the Norwegian FP evaluation showed that funding became more important as a motivation in the first part of FP7 than it had been in FP6. This may be an indication of a greater pressure to find funding for research.

In the Dutch FP impact study, researchers from all domains stressed the importance of the contribution of EU projects to provide continuity in large-scale research projects or programmes in a specific research group or department. The study found that the importance of EU funding for research groups varied between 10 and 70%. Interviewees from HEIs and research institutes stressed that EU funding allowed them to develop a strategic research agenda that was more long-term and less dependent on project-by-project funding.

The Dutch FP impact study specifically focused on two sub-domains of the ICT field: components and micro-systems and embedded systems. The motivation for HEIs (mainly the three technical universities) to be active FP participants was related to the availability of national funding. According to interviewees, the Dutch funding system has a bias in favour of basic research, meaning that funding for applied research and in particular engineering-type research is much more difficult to find. In addition, Dutch funding was considered to favour more short-term research and small projects, while FP projects were often more long-term and more strategic in international

terms. Thus in this ICT-field, FP funding was a welcome complement to what was considered a gap in the national funding system.

The Swedish FP impact study had a clear example where a particular topic – nano-electronics – fell out of grace with national funding agencies, which led to an increased need and eagerness of a large research group to be at the forefront of European developments in the FP, Eureka and in JTIs. However, if there is no national funding or priority in a particular topic participation in Eureka and JTIs, which require national co-funding, also becomes difficult. Thus, the FP becomes more important.

Overall researchers admit to having a quite opportunistic attitude to acquiring EU funding. For many, EU funding is just another potential source of income. In countries such as the Netherlands and the UK where there is a strong pressure on researchers to apply for competitive funding, applying for an FP project is not that different from applying for national funding. Particularly long-term FP participants are used to both the administrative requirements of submitting a proposal and how to adapt to the "Eurospeak" needed in proposals, e.g. referring to European added value and impact on various EU policy objectives.

3.4 Motives for companies

Decreasing FP participation of industry and SMEs in particular has been a European policy concern for many years. Since FP4 industry participation as share of all participation has dropped. All major FP-related evaluations comment on this issue and try to provide explanations to this trend and what may be done to reverse the trend. The debate thus seems to be dominated by the discussion on disincentives rather than incentives.

There is nevertheless plenty of evidence to support the statement that motives for participation is still high among companies. For instance, the FP6 ex-post evaluation expert group notes a relatively high oversubscription in the SME measures of FP6. The same report observes that the highest industrial participation is in ICT, NMP, Aerospace and Sustainable development, while industry participation is surprisingly low in the life sciences-based thematic priorities of health and food.[42] Thus, the Norwegian interest in incentives for enterprises should take into consideration these general patterns of interest from the private sector per thematic area.

In general, various national FP impact studies show the same pattern when it comes to incentives and motivations for companies to take part in European research:

- Networking and establishing relations with partners to gain access to knowledge and expertise is most important. SMEs also get the opportunity to develop relationships with potential customers, where access to customers through normal commercial channels would be much more difficult to establish. Large firms also appreciate the formal contractual setting in which they can work with their competitors
- To access research funding is a reason mostly mentioned by SMEs and less so for larger companies. It reduces the risks of investments in research projects for which technical or economic results are not guaranteed
- To solve specific scientific or technical questions, problems or issues
- To develop new or improved tools, methods or techniques is again a motive that is more often heard from SMEs than from the larger companies. For instance, the Austrian FP impact study found that this motive is significantly more important for SMEs than for large firms, implying that SMEs seek more tangible results

[42] "The Evaluation of the Sixth Framework programmes for Research and Technological Development 2002-2006", Report of the Expert Group to the European Commission, 2009.

- Industry participants often quote the "technology-watch" function of FP projects: it allows them to stay abreast with the latest developments and give them early warnings for technology trajectories that may prove too risky to pursue

Company participation in FPs shows considerable variation across thematic areas and over time. The Dutch FP study for instance found active industrial participation in ICT, since companies in the electronics sector have a longstanding tradition of international collaboration with competitors and universities due to the large and expensive technological challenges the sector faces. The report includes a case study on Philips, the company that was one of the original members of the ESPRIT programme, the first multiannual FP programme. Over a period of 25 years many areas of FP research have become less relevant to the company due to internal choices (e.g. the termination of telecommunications as a business area), while new areas (health care) have come up that fits the current business strategy. So the relevance and interest in FP participation is not a given but rather shifts over time, even to a specific company. The early strategic importance of FPs can be illustrated in the area of mobile telecommunications where it had an impact on the European ICT industry and standardisation. GSM was influenced by the COST programme while 3G, the third generation mobile telephony system, has been targeted by consecutive European Commission programmes since 1987.[43] Thus, one strategic motive for industry to be involved in EU programmes may be related to the standardisation role these programmes can play.

Both the Dutch and Swedish FP impact studies showed reluctance by the pharmaceutical industry to conduct collaborative R&D in European projects, mostly due to intellectual-property rights (IPR) issues and a stronger tradition of conducting research behind closed doors. Both studies also showed that industry participation in the environmental and sustainable energy areas was fragmented and research institutes therefore play a dominant role. So a system of incentives to take part in the FPs needs to take into account the particular patterns of private sector participation in different sectors.

EUREKA's Eurostars Programme is an Article 185 initiative. Eurostars falls within the "Research for the benefit of SMEs" part of the Capacities programme and supports SMEs from at least two countries in conducting collaborative R&D projects. SMEs have shown an interest in Eurostars, but their motives for participation have so far not been extensively covered in the literature. An interim evaluation of the Eurostars programme that looked mostly at the procedures and the implementation has been completed. The domains of ICT, biotechnology and industrial technologies have the largest share of approved projects.[44] The 2010 Austrian impact FP study suggested that the Eurostars programme is not yet very visible for the SME community and it is too small to really make a difference. Few other national FP studies have covered Eurostars since the programme's first projects were awarded in 2008.

3.5 Deterrents and barriers

An extensive analysis of deterrents and barriers to FP participation was done in the context of the Austrian FP impact study. The Austrian study team asked respondents to assess barriers to participation in the FP. It turned out – perhaps not very surprisingly – that the most important barriers are administrative in nature: "administrative burden for preparing the proposal", was followed by "administrative burden for managing the project" and "administrative burden for reporting". The first non-administrative barrier is "little chance of getting the project proposals approved". The latter deterrent is not unexpected, as it refers to success rates as low as 10% in

43 E. Arnold, B. Good and H. Segerpalm, "The GSM Story", VA 2008:04, VINNOVA, 2008.

44 A. Laperrouze, E. Autio, M. Bucar, G. Licht, J. Molero and L. Tsipouri, "Eurostars Programme, Interim Evaluation, Final Report", European Commission, 2010.

some calls. Although "administrative burden for preparing the proposal" and "too little chance of getting the project proposals approved" are equally important to all types of Austrian organisations, this is not the case for "administrative burden for managing the project" and "administrative burden for reporting", which are less relevant as barriers to research institutes and firms. The barriers are assessed differently by different groups of respondents. Most importantly, "administrative burden for managing the project" and "administrative burdens for reporting" are more of a barrier for non-coordinators than for coordinators, while "administrative burden for preparing the proposal" and "administrative burden for reporting" are more of a barrier for inexperienced respondents than for experienced ones. In other words, administrative burdens become less relevant the more experienced you get.

Similarly, "the risk for repayment obligations" is considered a greater barrier by non-coordinators and inexperienced participants than for coordinators and experienced participants. Not surprisingly, "too little information" is more of a barrier to non-coordinators.

Through a comparison of other studies, the Austrian impact study showed that also in other countries the greatest barriers to participation is the administrative complexity they bring. Although this has been a major concern and a subject of complaint for a number of years, it is also a barrier that some countries and participants have learnt to live with over the years. Irish participants, for example, expressed reasonably high levels of satisfaction with FP6 administrative processes and procedures, and the balance of opinion was that matters had improved since FP5. However, in Sweden quite a number of interviewees complained that FP projects were scientifically less productive than national ones. This was a result of the administrative, networking and travel overheads that FP projects entail, which divert effort from research. In Denmark, the high administrative burden and complexity associated with FP participation – in terms of applying for, managing and administering projects – was seen as a possible reason for the decline in FP participation and a general lack of demand for FP project participation.

The Dutch FP impact study analysed a sample of Dutch companies that had participated more than once in FP5, but that did not participate in FP6. For almost a fifth (18%) of these companies, the negative experience with the administrative burden was the key factor for not participating again. However, a larger group of companies (21%) that took part in FP5 had been liquidated. This probably means that quite a few young start-up companies that took part in FP5 did not survive in the long term. A considerable group of companies (13%) reported that due to reorganisation of their (parent) company the role of R&D had changed and decisions were taken to cut back on R&D. The largest share of companies (26%) was taken over by another (foreign) company and saw their R&D functions disappear abroad or be outsourced. Notably, a considerable share of the SMEs in this sample (22%) indicated that their participation was a one-off event and that they had been asked by others, generally institutes or universities, to take part. As the opportunity did not arise in FP6 (they were not approached by anyone), they did not participate. So while we may analyse a drop in FP participation solely from the perspective of the merits of the FP, this small sample illustrates that a strong explanation may be found in developments within the private sector itself.

While the IST-RTD programmes attracted relatively high shares of SMEs (over 20%), high-technology SMEs are still not fully involved, probably due to the duration of projects and lack of incentives, according to the self-assessment of the IST-programme.[45] Such SMEs depend on rapid market introduction of new products and services, and multi-annual research projects therefore may not be attractive. Timing

45 "Self-assessment of the effectiveness of IST-RTD in the 6th FP", European Commission, 2007.

and length of projects in relation to the length of product life cycles can thus be a deterrent in sub-sectors with short time-to-market business cycles.

3.6 National information and support activities, and support instruments

Previous studies have described different national support structures for FP participation, e.g. the aforementioned Austrian impact study. We can summarise these support structures and measures as follows:

- All countries for which impact studies have been conducted have networks of EU support services, mostly centred around the NCPs
  - The organisational set-up of these networks are very context-dependent; some are very centralised (e.g. the Netherlands) with most of the services concentrated in one organisation, while others are dispersed (e.g. Ireland) with many organisations involved in providing services to their stakeholders. An common characteristic of those who work in these support networks is that they are domain experts with a good knowledge of a certain field and its actors
  - All such networks provide basic information on the FP and on particular calls. This type of information is however increasingly made available on-line by Commission services, so this service is more useful for newcomers than for those experienced in the FPs
  - Some of the better equipped national support systems provide dedicated training, have specialised expertise on legal, contractual and IPR matters
  - The interaction and exchange of information between the policymakers who represent countries on programme committees, other representative bodies and the NCPs who provide information to the research community is seen as sub-optimal in many countries. A lack of human resources to cover and coordinate all these tasks is quite often a bottleneck
  - All support structure face a challenge to find the balance between serving the most active stakeholders and newcomers, which have very different needs. The more experienced actors need more strategic information (e.g. early warning on the content of the next work programme, suggestions on how to influence agenda setting etc.), whereas newcomers need more practical information on how to write proposals, contract issues etc.
- Some countries have succeeded in engaging the management of HEIs to develop a more strategic approach to participation in the FP. There is no standard approach to this but it does require a lot of social capital and effort. Some of the quoted literature suggests that in countries such as Germany, internationalisation is already high on the agenda of research institutes and HEIs
- In many countries (e.g. Austria, Ireland, Sweden, the Netherlands) an increasing share of HEIs have set up dedicated units and hired staff to support researchers and research groups to engage in EU programmes. These units deal with the administrative aspects, but sometimes also with pre-screening of proposals. In the Netherlands, national support services have decided to focus on stakeholders without these services rather than more well-equipped organisations
- There are no great success stories in any of the countries studied for providing public incentives to increase SME participation. Several studies suggest that SMEs are often taken on board by research institutes or HEIs in their own region or country. Incentives to assist networking between SMEs, research institutes and HEIs could thus in the long term stimulate increased SME participation
- There are a few examples (e.g. Ireland, Austria, Norway) where financial incentives to boost EU participation have been provided, for instance funding for travel of potential coordinators to set up a consortium, to write proposals etc. The Irish and Austrian schemes have proven not to be very effective. In Ireland the

administrative burden to acquire the grant was by many considered too high in relation to its size and purpose, and in Austria the evaluation found too much free-riding (e.g. the proposals would have been written anyway). The Norwegian study has on the other hand found that researchers were quite satisfied with this incentive

3.7 FP7 participants survey

As part of the aforementioned study undertaken by Technopolis and NIFU-Step into Nordic participation in the FP, a survey was directed to all Norwegian participants in FP6 and FP7. The study was commissioned by NordForsk, which has kindly given us permission to reanalyse the survey results.[46] This section presents selected results from the NordForsk survey, and in particular analyses the responses of participants in the FP7 themes of Health, ICT and Environment. A more comprehensive analysis is provided in Appendix D.

The survey was conducted in April–May 2010, meaning that data are two years old when this report is being finalised. The fact that results are somewhat old means that there are now several additional Norwegian FP7 participants, but we see little reason why their opinions should differ significantly from those of the "older" participants or why the opinions of those previously polled should have changed much in two years.

The survey yielded an overall response rate of 23% and a total of 212 useable responses, 131 of which from FP7 participants. However, it should be noted that some respondents skipped certain questions, and the sample size thus varies between questions. The actual number of respondents providing an answer to a question is used as the basis of calculations within the analysis and is indicated in table captions or headings (n=x). The distribution of respondents between themes and organisation types is shown in Table 6. Obviously, for some theme–organisation type combinations the number of responses is tiny, meaning that any analyses of results from sub-sets of respondents must be made with great care, and conclusions may have limited validity. However, analyses of aggregated data should provide useful indications.

Table 6 Number of responses by theme and organisation type.

Organisation type	Sub-classification	Environ-ment	Health	ICT	*Subtotal*	Other	Total
HEI	–	10	13	1	*24*	10	**34**
Institute	–	17	10	9	*36*	14	**50**
Company	SME	6	2	4	*12*	5	**17**
	Large company	3	–	1	*4*	8	**12**
Public body	Public agency	1	1	1	*3*	9	**12**
	Health authority	–	2	1	*3*	1	**4**
Other	–	1	1		*2*		**2**
Total		**38**	**29**	**17**	***84***	**47**	**131**

3.7.1 National information and support activities

Respondents were asked to indicate which forms of support their organisation had received from a national agency in order to help them participate in FP7. Table 7 shows that the most common form of assistance was "advance notification of forthcoming calls". "Advice on EC rules and procedures" and "information on live calls" were accessed by approximately two-thirds of respondents. More detailed analyses (cf. Appendix D) reveal that differences between responses from the three

[46] J. Stroyan et al., op. cit.

themes and between organisation types are not large, although participants from HEIs and institutes appear more likely than companies and public bodies to access the support available.

Table 7 Extent to which different forms of support were received.

Support received (n=99-101)	Used
Advance notification of forthcoming calls	78%
Advice on EC rules and procedures	69%
Information on live calls	65%
Provision of national funding for FP projects	53%
Help with the preparation of ideas for proposals	42%
Help with identifying partners	31%
Advice/feedback on draft proposals	27%
Help with preparing/drafting proposals	20%
Other	24%

Where respondents had received support in order to take part in FP projects, they were also asked to rate the effectiveness of the support provided. The responses for Norway overall is shown in Table 8, with the types of support that attract the highest effectiveness ratings (quite + very combined) appearing at the top of the Table. The "provision of national funding" to support the costs of participations was the area of support most commonly reported as quite/very effective (by 75% of users). However, a majority of users (≥60% in each case) gave "quite/very effective" ratings across most of the different forms of support (shaded in grey), with the exception of two areas. The effectiveness ratings of "advice/feedback on draft proposals" and of mechanisms to "help with identifying partners" are both significantly lower than the others listed, with less than half of users reporting the support they received was quite or very effective.

Table 8 Effectiveness of support received.

	Not very effective	Quite effective	Very effective
Provision of national funding for FP projects (n=52)	25%	38%	37%
Information on live calls (n=65)	34%	65%	2%
Advance notification of forthcoming calls (n=79)	37%	52%	11%
Help with preparing/drafting proposals (n=20)	40%	45%	15%
Help with the preparation of ideas for proposals (n=42)	40%	50%	10%
Advice on EC rules and procedures (n=70)	40%	53%	7%
Advice/feedback on draft proposals (n=27)	59%	30%	11%
Help with identifying partners (n=31)	65%	29%	6%

More detailed analyses (cf. Appendix D) show little variation between respondents participating in different FP7 themes. There may possibly be a somewhat greater variance between respondents from different organisation types, but the sample size is so small that differences are unlikely to be statistically significant.

3.7.2 Motives for FP participation

Respondents were asked to rank which of a number of motives that were the three most important motives for their organisation's or research group's participation in FP projects. Table 9 reveals that "to access research funding" is the most important motive. In total, 41% of respondents selected it as the most important motive, while a further 13% and 12% selected it as second and third most important, respectively. In total, two-thirds (66%) put this factor in their top three. Another four motives were

selected in the top-three most important by at least 20% of respondents. These are shaded in grey.

Table 9 Motives for involvement in FP projects overall (n=111); only top five motives shown.

Motive	Most important 1st	2nd	3rd	Key motives
To access research funding	41%	13%	12%	66%
To develop new or improved relationships or networks	14%	17%	26%	57%
To address specific scientific or technical questions, problems or issues	12%	8%	19%	39%
To develop and extend internal knowledge and capabilities	9%	21%	7%	38%
To develop new or improved tools, methods or techniques	5%	9%	6%	21%

Table 10 shows the same results by theme and Table 11 by organisation type. For simplicity, only the overall proportion of respondents selecting each motive as a key motive (1st, 2nd or 3rd most important) is shown in these tables. The five most commonly selected motives in each case are again shaded. The tables illustrate that the differences between themes are minor, whereas there are more notable differences between organisation types; a word of caution as to the small samples is nevertheless in order.

Table 10 Key motives for involvement in FP projects by theme; only top five motives for each theme shown.

Motive	Environ-ment	Health	ICT	Three themes	All
(n=x)	(33)	(26)	(15)	(74)	(111)
To access research funding	68%	77%	73%	72%	66%
To develop new or improved relationships or networks	57%	54%	60%	56%	57%
To address specific scientific or technical questions, problems or issues	32%	50%	33%	39%	39%
To develop and extend internal knowledge and capabilities	32%	31%	53%	36%	38%
To develop new or improved tools, methods or techniques	29%	19%	33%	26%	21%
To tackle problems that have a European or international dimension	25%	8%	0%	14%	16%
To access capabilities that do not exist in your own country (complementary expertise)	13%	23%	7%	15%	15%

Table 11 Key motives for involvement in FP projects by organisation type; only top five motives for each type shown.

			Company		Public body			
Motive	**HEI**	**Inst.**	**SME**	**Large**	**Agency**	**Health**	**Other**	**Total**
(n=x)	(28)	(42)	(14)	(11)	(10)	(4)	(2)	(111)
To access research funding	86%	67%	71%	18%	45%	75%	100%	66%
To develop new or improved relationships or networks	54%	63%	50%	64%	46%	50%	50%	57%
To address specific scientific or technical questions, problems or issues	36%	48%	36%	27%	13%	75%	50%	39%
To develop and extend internal knowledge and capabilities	29%	53%	14%	27%	59%	0%	50%	38%
To develop new or improved tools, methods or techniques	18%	17%	36%	36%	23%	0%	0%	21%
To tackle problems that have a European or international dimension	18%	12%	14%	18%	11%	25%	50%	16%
To access capabilities that do not exist in your own country (complementary expertise)	14%	20%	7%	9%	10%	25%	0%	15%
To develop new or improved commercial products or services	4%	2%	29%	45%	11%	25%	0%	12%
To improve the coordination of research	7%	2%	0%	9%	53%	25%	0%	9%

4. Organisational strategies and support instruments

This chapter recapitulates the *sentiments* of individual researchers and management of all types of participating organisations, including researchers and organisations that have not participated in the FP. Unless otherwise explicitly noted, the views stem from interviews and focus groups conducted during the present assignment.

4.1 Organisational strategies

How do the national strategies for increased FP participation, outlined in Section 2.1, affect individual organisations? Based on our empirical evidence, the policy documents on internationalisation seem to have an important symbolic value, emphasising the importance of Norwegian presence in the international research arena. However, their value goes beyond mere symbolism: according to several HEI and institute management representatives, national strategies have an impact on the actions and prioritisations of research-performing institutions: "as manager of a national research institution, you feel obligated to comply with requests from KD and RCN". National policy documents can also facilitate the implementation of organisational strategies, and support management in its efforts to stimulate increased international research collaboration. Though national strategies are highlighted as important for HEIs and institutes, interviewees generally do not express in-depth opinions on specific strategies, their content or implications. In fact, few interviewees appear to have any detailed opinions on KD's general strategies and RCN's action plan.

According to health authority representatives, strategies from KD and RCN merely play a small part in influencing their prioritisations in terms of international research collaboration. However, policy communications and annual instructions from HOD are attentively monitored and it has been understood that HOD strives to increase FP participation within the health sector.

National strategies for increased FP participation are not well known among company interviewees. Even when the strategies are known, they have little impact on FP participation; one company spokesperson explains that "the information we get from RCN is enough, we don't need our own strategy". Company decisions to participate in FP projects seem to be strictly opportunity-driven rather than stemming from a clear strategy for internationalisation. Our empirical evidence suggests that this holds true regardless of company size.

Several interviewees point out that national strategies and policy documents do not become effective, and do not have a direct impact on the actions of organisations and individual research groups until they are tied to some kind of support instrument, e.g. fiscal incentives like HEIs' rewards for FP funding or PES. Those who are aware of STIM-EU view it favourably, and expect this to be a useful addition to the arsenal of instruments.

4.2 Implementation of organisational strategies

Almost all research-performing organisations have a strategy in place for how to increase or maintain their international presence or how to enhance international collaboration. It is however uncommon that these strategies specifically highlight FP participation. For most research-performing organisations FP funding is only one part of the total international funding and therefore strategies to increase international R&D collaboration have a wider scope than just FP participation.

Some interviewees point out that it is not the written and approved strategy itself that is the most important, but rather the process of developing it. Strategies have a tendency to be forgotten by the time they are published and in place, but the development process puts the issue on the agenda and creates attention to FP participation among researchers. A notable number of organisations actually state that their strategy for international research cooperation is currently under development.

This may imply that these strategies are in fact "living documents" that regularly undergo revisions.

Strategies are often linked to some sort of internal multi-purpose EU support function, i.e. the implementation of the strategy has been followed by the establishment of an "EU office", internal funding support or collegial mentorship; these will be elaborated upon in Section 4.3. Strategies also often include prioritised areas where certain strengths or development areas have been identified.

In general, research institutes have the most developed internationalisation strategies. Some larger institutes have implemented a general strategy covering all research activities and then, in addition, separate division strategies. For institutes, external funding constitutes the majority of the total research funding, be it national or international, and thus the "internationalisation strategy" is often incorporated within the overarching research strategy of the institute.

Norwegian Institute for Air Research (NILU) is a case in point. The institute started out doing research on an international topic (acid rain), and this almost inevitably led to internationalisation of its staff and many international contacts. The institute's recently appointed EU coordinator points out that:

> *For us, internationalisation is such an important priority that we do not even state it explicitly – it is one of our foundations and goes without saying. We were not really aware of internationalisation as an issue – it is so natural for us.*

The Norwegian Institute of Public Health (FHI), on the other hand, illustrates how a multi-level strategy can be implemented. The overarching strategy and action plan for international cooperation covers all the institute's areas of responsibility, including international research cooperation.[47] The strategy states that the institute shall increase its participation in relevant EU programmes and identifies specific prioritisations (e.g. increased competence in preparation of proposals and stimulating researchers to serve as expert evaluators for the Commission). Furthermore, local strategies have been developed that shall reflect the common goals and prioritisations, but formulated according to the different contextual conditions and strong points of FHI's divisions.

The HEIs under study have well developed internationalisation strategies, and the strategies of University of Bergen (UiB) and University of Oslo (UiO) are currently undergoing revision. UiO is for example developing an action plan in preparation for Horizon 2020, as a complement to its overarching internationalisation strategy. However, it is our impression that HEIs, as well as large institutes, in several cases are struggling with significant variations in participation between faculties and divisions causing internal debates on how to formulate local strategies. Some interviewees perceive that organisational strategies and action plans run the risk of excluding some research areas and not fully reflecting different preconditions for participating in the FP.

The 2011 evaluation of biology, medicine and health research noted that across the scientific areas and the organisations reviewed, there was a general awareness of the importance of international collaboration and exchange, but that this awareness only occasionally had led to an increased number of external grants from international funding bodies.[48] This is said to have made some health authorities prioritise the issue more than before. Despite that, the health authorities do not seem to have specific internationalisation strategies at all, and where internationalisation aspects are

47 "Strategi og aktivitetsplan for internasjonalt samarbeid 2011–2013", FHI, 2011.

48 "Evaluation of Biology, Medicine and Health Research in Norway (2011), Report of the Principal Evaluation Committee", RCN, 2011

mentioned they are vaguely described. In some cases, the internationalisation strategy is not seen as having been implemented and therefore has had little impact.

As mentioned above, few of the companies interviewed have formal strategies for FP participation or international research collaboration, with the exception of some of the larger companies. Companies tend to act upon opportunities as they appear, and do not participate in FP projects as a result of any long-term strategic actions. FP participation is not an end in itself and decisions to participate are taken on a case-by-case basis, primarily based on expected short-term benefits for the company.

4.3 Organisational support instruments

In order to stimulate increased FP participation, almost all the major research-performing institutions have, or are in the process of setting up, internal EU support functions in one form or another. These resources vary depending on the size of the institution and its present level of FP participation. University colleges and smaller institutes often have a multi-purpose EU support function available for the entire organisation. Their responsibilities differ, but often include administrative support (accounting and general paperwork, RCN contact person etc.). Other common functions are to answer specific questions regarding proposal procedures and to monitor upcoming calls. Such a function needs to possess rather detailed insights into the FP, and the position is often held part-time by a researcher with significant personal experience from FP projects. According to several interviewees, the EU support resource in smaller research institutions is usually understaffed and does not always possess sufficient knowledge in all relevant fields, which results in a larger administrative workload for the individual researcher. Even so, such EU support resources are often a great help:

> *The EU support person is our all-purpose EU expert, and he knows everything about the FP. He was also my project manager when I coordinated an EU project. If you don't have someone who knows the EU system and on whom you can unload the administrative burden, then half your time goes to administration rather than to research. (Institute researcher)*

Small support functions tend to rely heavily on specific individuals, making the organisation vulnerable. One interviewee points to such an example, where short-sightedness led to the loss of valuable knowledge. Administrative personnel, recruited for a specific project to support researchers in coordinating the FP project, gained great insights into project management and the FP bureaucracy. This knowledge and experience, that should have been retained by the organisation for use in future projects, was lost when the project and thus the project-based employment ended.

Larger institutes and universities with a significant number of on-going FP projects have more elaborated support functions with several employees. Such organisations typically have a centralised support office with a mission to answer general questions and coordinate activities related to the FP (and often other international funding opportunities). In addition, some organisations also have a decentralised system of resources, where each faculty or division manages a small-scale local support function much like the one described above.

In general, health authorities do not have dedicated EU support functions and instead rely on the support functions of partner universities, which for reasons of resource efficiency is a solution that is encouraged by HOD. Oslo University Hospital (OUS), which expects to have its "EU office" operational in 2012, is the exception.

An observation made by several interviewees is that as useful as these support functions are, they tend to lack the resources to fulfil all demands. It is, of course, common practice for colleagues within an organisation to consult each other, and in particular many of the more experienced researchers point to this as perhaps the most common "support instrument". Experienced researchers also take on a mentoring role and help colleagues to get acquainted with the FP and provide advice on how to

navigate the Commission's bureaucracy. For some organisations, this routine is in accordance with its formal strategy on how to become more successful in the FP. In other institutions it is more *ad hoc* and depends on committed individuals. However, there is a general view among individual researchers that under-dimensioned support functions have a negative impact on researchers' ability – and thus motivation – to successfully participate within the FP. Coordinators find themselves in a particularly vulnerable position when the support function does not function properly. Several interviewees with coordination experience stress that the workload can become overwhelming without proper administrative support. One interviewee exclaims: "I will never undertake the role as coordinator again under these circumstances", referring to the understaffed EU support function in his organisation.

However, the lack of organisational support structures is not always seen as a drawback. The highly informal and "organic" way NILU handles these issues is highlighted as one of the explanations as to why the institute has become so successful in organising and implementing FP projects. It was pointed out that giving an existing and proven successful informal system a more formal and structured format is not necessarily a preferred solution; many researchers would not prefer such a change. Such an account may possibly be explained by NILU mainly having an interest in a rather limited part of the FP (the Environment theme), rather than in the entire FP (which likely would require considerably more resources).

SMEs manage FP participation centrally within the organisation and thus see no need for a formal support structure. Only a handful of individuals are engaged in preparing and managing FP projects, and experiences and knowledge are shared between colleagues. SME representatives emphasise the importance of good networks and personal contacts with other experienced FP participants.

4.4 Organisational incentive structures

Many organisations offer researchers the possibility to attend conferences and meetings targeted at developing consortia for future research cooperation, in an attempt to stimulate researchers to actively pursue FP participation. Such activities are also widely encouraged by management.

An effective way to create incentives for FP participation is to channel part of the government reward for FP funding directly to the research group responsible for the successful proposal. One example of this is the scheme that the Norwegian University of Science and Technology (NTNU) introduced in FP7. The scheme consists of a supplementary appropriation directly to the FP project's management upon contract conclusion, with 25% for projects coordinated by NTNU and 15% for projects in which NTNU participates as partner. FP projects that are coordinated by NTNU additionally receive funding for a fellow or a postdoctoral position. Funding is drawn from the government reward for FP funding, and goes directly to the researcher/research group engaged in the project. Funding is allocated as soon as the project is underway, meaning that the researcher can use the funding at his/her discretion while the project is in progress.

The scheme has become very popular at NTNU, and many researchers/research groups say that it is essential for the decision to apply, in particular as a coordinator. According to the NTNU EU advisor, "the scheme does not cost us any extra, but implies an internal reallocation of funds to research groups that succeed in the framework programme". Several other HEIs have apparently shown an interest in NTNU's incentive scheme.

At UiO, a large share of the government reward for FP funding is forwarded to the faculty to which the research group responsible for the successful proposal belongs, and faculties forward it to the group's department. UiO does not require that the funds should go to the researcher/research group, and it is said to be rare that this is the case. Two of the four regional health authorities are reported to funnel part of the

government reward for publications to the research group that (co-)authored the paper.[49]

Coordination of FP projects is generally perceived of as a demanding task, even for well experienced participants. It is associated with a heavy workload and responsibility but, according to several interviewees, most organisations do not provide sufficient incentives to match this demanding undertaking. With the exception of the NTNU scheme above, the general picture is that there are no clear organisational incentives for a researcher to take on the role as coordinator, but rather that scientific or personal motives tip the scale.

Researchers at HEIs, health authorities, and institutes are appraised based on scientific results and their ability to attract external funding. We have come across several different systems of performance-based incentive structures. They all emphasise different aspects, i.e. publications, teaching skills or external funding, but they all lack specific incentives to promote FP participation. It is not uncommon for institutes to value and promote researchers who attract substantial amounts of external funding, but funding from the FP is not more highly regarded than other forms of national or international funding. Researchers with international experience compare the conditions in Norwegian research institutions with their international counterparts and believe that there is a difference in culture. One interviewee claims that "research institutions in other European countries have more developed individualised fiscal incentive structures".

Companies lack direct formal incentive structures to stimulate FP participation. As mentioned above, FP participation is generally highly centralised and controlled by a small group within the organisation. And it is clear that most companies do not regard FP projects as being more valuable *per se*; the most important aspect is that the project corresponds to the company's needs. An interviewee representing a large company describes that FP projects are valued, and individuals responsible for bringing in external funding in general are rewarded.

[49] J. Kalseth, E. Lassemo and T. Rohde, "Evaluering av finansiering av forskning i helseforetakene", SINTEF Helsetjenesteforskning, 2010.

5. The participants' perspective

This chapter summarises the *sentiments* of both individual FP researchers and those of managements of all types of participating organisations, as well as the *sentiments* of researchers and organisations that have not participated. Unless otherwise explicitly noted, the views stem from interviews and focus groups conducted during the present assignment (and thus not on insights gained from previous studies).

5.1 National information and support activities

Most organisations express satisfaction with the information services provided by RCN, as also illustrated by Table 8. RCN and its NCPs are easy to get a hold of and ask for information. Many interviewees have attended information meetings of one form or another and have generally found them informative. Such praise comes from all types of participants and regardless of sector. Some, including ministry representatives, are very positive towards RCN's information and support activities.

The few dissenting voices, without any obvious organisational or sectoral pattern, describe themselves as relatively passive (and therefore not in much need of RCN's services) or talk about what could be better, rather than what is not good.

> *We don't use RCN's services very much. We are approached by networks and consortia that want to have us on board, and we have a quite passive approach to this. It is rare that we approach RCN and ask for help to make contact; we take care of that ourselves. (Manager, large ICT company)*

> *We use RCN's services where they can provide competent advice, but they cannot help us to establish a project. That is rather a consequence of our own reputation. Information on upcoming calls does not help much. (Institute manager)*

Other interviewees are not directly critical of RCN's services, but have suggestions for improvements to the information activities and support instruments provided. Many reason in terms of more active support in preparing proposals. They wish that either the organisation's central support function (if there is one) or RCN would give advice and active help on how to formulate a winning proposal and on how to complete proposal formalities. Thus, they do not only want information about open or upcoming calls and access to the accompanying work programmes, but they want concrete help with writing the proposal, for example with "standard texts" for certain less critical parts and with competent pre-screening of more or less complete proposal drafts. These sentiments are put forth by a significant proportion of interviewees. Asked to think freely on what could be done to increase participation with respect to support instruments, one researcher says:

> *I would like professional administrative support with proposal preparation so that I can focus on the scientific content. I could imagine a network of experienced consultants who work together with us academics and SMEs to ensure that we get all formalities right. (Institute researcher, health sector)*

Another organisation had already taken that step:

> *The reason that we succeeded with this particular project that we are now about to undertake, is that we contracted an external consultant. It was very costly but without that help we wouldn't have had a chance. (University researcher, health sector)*

The very time-consuming work with writing the proposal text and correctly filling in all required forms is indeed an issue that is mentioned by many interviewees. From their point of view, the ideal situation would be if they could focus on the research bits and have someone else make sure that the proposal is professionally completed.

An issue that comes up in many interviews concerns the importance of Norway being proactive in the design of the FP and in preparations of the respective calls. Many interviewees believe that Norway could do better in this respect, and be more present and active in Brussels. One researcher notes that other universities than his own (in Norway and abroad) are much better at this and that the contacts with the Commission need to improve if participation in the FP is to increase: "direct contacts", he stresses. Other interviewees make similar points.

5.2 National support instruments

As described in Section 2.2, there is a range of support instruments with different scope and target audience. PES is the most well-known instrument and the one that is most often mentioned by interviewees. A majority of them are satisfied with PES, sometimes very much so. It is regarded as an important incentive in the early phases of consortium formation and proposal writing. Among our interviewees, there is also a handful or so expressing scepticism or negative sentiments. They consider that PES does not really change much and that it is irrelevant; even users of PES express such viewpoints. They argue that even though it may be a good instrument, grants are too small to make a difference. PES is particularly mentioned by HEIs and institutes; some company representatives mention it as well, but to a lesser extent.

STIM-EU is appreciated by the institutes and is, just like PES, most often regarded as an effective support instrument since it facilitates institutes' participation. However, many interviewees profess to not have heard of this instrument, which may possibly be explained by it being introduced in 2012 and applying solely to (certain) institutes.

Interviewees occasionally mention individual R&D programmes that, although they do not primarily aim to stimulate internationalisation, contribute to capacity-building that may be of use in future FP proposals. Norway's FP successes in the Environment theme are attributed to environmental and climate issues being high on the national agenda since the Brundtland Commission's report in 1987. This is said to have led to a succession of national R&D programmes, such as (for the moment) the NORKLIMA, HAVKYST, POLARFORSKNING and MILJO2015 programmes, which early on built up Norwegian capacity. BIA is used by some companies and they are mostly happy with it. Similarly, VERDIKT is an appreciated programme. Many companies use the possibility to get tax deductions for their R&D expenditure through SkatteFUNN, but whether it indirectly stimulates FP participation is unclear.

The accounts of the effectiveness of the system to reward HEIs for their FP income vary considerably. There are interviewees who consider the system to be a powerful incentive, while others completely disagree and see it as pointless. Those who view it as important often represent HEI management, while those who do not tend to be individual researchers. This may be explained but the fact that the additional funding goes to the HEI centrally. Researchers believe that if the additional funding went directly to the group that produced the successful proposal, it would be a powerful incentive to participate in the FP. As mentioned in Section 4.4, NTNU has set up such a system and several other HEIs are said to have shown interest in it.

The system to reward institutes for international revenue (private and public) is said to be less effective, since the "multiplication effect", according to RCN representatives, is less than half of that for HEIs. Also for institutes, the additional funding goes into a central pot, but in institutes this is not very controversial. Institute managers still consider this a notable – albeit weak – incentive, whereas individual researchers unsurprisingly do not.

One interviewee mentions that the system to reward regional health authorities for publications in international journals, and with twice the reward for papers with foreign co-authors, is an important motive for international collaboration. However, no interviewee mentions this as more than an indirect motive for FP participation, since you do not need FP funding to collaborate with foreign colleagues (you can do it equally well with national funding).

5.3 Motives for FP participation

The main motives for organisations to apply for FP funding do not differ much between organisation types. The main motives are access to funding, advanced knowledge and networks, in order to further develop and enhance the organisation's own research qualifications and profile. HEIs, institutes and private companies state that it is important for the organisation to be included in knowledge networks and to be at the forefront of developments within their field. If anything, organisational motives are typically a little bit less important and less emphasised at HEIs, which possibly may be explained by their management structure traditionally being less centralised. When motives for HEIs are expressed on the organisational level, they still often refer to actions and undertakings that take place on an individual level.

The funding motive is important for all types of participants, although less so for large companies. Representatives of ICT firms emphasise access to funding slightly more than representatives from the environment and health sectors. While some companies see access to research funding as one of the motives for applying to the FP, it is almost the other way around for institutes; they repeatedly stress the cost of applying and the insufficient funding they receive when successful, which is said not to cover their actual costs. Consequently, for institutes it is access to knowledge and networks that appears to be the primary motive.

Within the environment field, the research topics are often of such character that international collaboration is a prerequisite. This is particularly emphasised by institute representatives for whom FP participation is a most natural undertaking. Since environment, climate and energy issues have been Norwegian research priorities for decades, researchers and R&D organisations in these fields have become internationally very competitive and attractive as collaboration partners.

Individuals' motives to apply for FP funding are similar to the organisational motives. The most commonly mentioned motives are getting access to new knowledge, to be at the forefront of developments where things happen within their research field, and to build networks, as indicated by some representative statements:

> *Networking is of great importance! (University researcher)*
>
> *Participation gives me invaluable contacts that I can use in my research. (University researcher)*
>
> *The scientific cooperation is the most important. (Institute researcher)*

Some interviewees elaborate on the differences between organisational and individual motives. An institute researcher describes how there is great joy when a proposal is successful, not only for the individual but also among colleagues. Such positive sentiments can spread within the organisation and encourage others to apply as well. The same person says that for the organisation it is an important motive to make the institute visible and its name known, so as to strengthen its international reputation. That in turn leads to the institute becoming a more attractive collaboration partner, which facilitates further networking and stimulates more proposals.

An HEI researcher argues that for the organisation, access to funding is the most important motive; participating in FP projects is important for the department's economy. But for him and his colleagues, he says, it is more important to have a good time at work, to be able to travel, to discuss, and to experience things – and participating in FP projects is one way of achieving this. In response, one of his colleagues retorts that it can also be the other way around; in order to have a good time at work, it is better not to be in FP projects! Another researcher thinks she would not have developed as quickly as a scientist, had she not collaborated in international projects.

Some of the HEI interviewees describe strong encouragement from the organisation to apply for ERC funding. The ERC calls and their orientation are said to suit university researchers better than many other parts of the FP. Moreover, you apply as an

individual, not as a team or a consortium, and that is perceived as being more in line with how much academic research is still conducted. The same is mentioned regarding the Marie Curie programme. Obviously, the ERC presents very limited opportunities for institutes and companies, whereas some *randsoneaktiviteter* are better tailored to their needs. Eurostars is mentioned by some SMEs as being more straightforward to participate in, and "more development than research", than the core programmes of the FP. However, it is obvious that many interviewees do not know exactly where in the FP a specific programme or funding instrument belongs, but they know when calls of relevance to them are posted and what is required in order to apply. Whether the opportunity belongs to this or that part of the FP is seen as less relevant. We also note that there are no systematic differences in statements from participants in the core programmes of the FP and participants in *randsoneaktiviteter*, with the aforementioned exception of some SMEs' affinity for the Eurostars programme.

5.4 Deterrents and disincentives to FP participation

Commonly mentioned deterrents have to do with the proposal phase, which is described as both complex and time consuming, and the low success rate in most calls. These issues, which reflect a kind of return-on-investment thinking, are important at both organisational and individual levels. A university researcher notes that there is always a balancing act regarding the time he is willing to invest. Should he perform research and write papers, or should he produce yet another proposal? Which is most beneficial? He argues that with a success rate below 15%, it may be better to publish and instead rely on other funding sources than the FP. Also at the individual level, the complicated application routines are mentioned by many as a high barrier to climb over. However, it is said to get easier when you have been through the process a couple of times.

The example with a success rate below 15% in the previous paragraph comes from the ICT theme, in which the Norwegian success rate is particularly low (cf. Table 1). One interviewee explains that the structure of the Norwegian ICT industry may be part of the reason. A clear majority of ICT companies are said to be consumer-oriented and do not carry out any R&D. There are only a few large research-intensive ICT companies, and several do not participate much (or at all) in the FP; those that do not, explain this with a mismatch between their own development time frames and those of FP projects. There are some research-intensive SMEs – often spin-outs from research organisations – that participate in both the FP and in national R&D programmes, but quite few. Another interviewee claims that the ICT calls in FP7 have addressed R&D topics that in practice make them less relevant for companies to participate in than calls in previous FPs.

University researchers express concern regarding the fact that there are so few Norwegian ICT companies to collaborate with, since their chances of being invited to participate in foreign FP consortia is considerably lower if they cannot bring a company with them into a consortium. On the same note, if the presence of companies in a proposal is low, the chances of success are lower. Another reason for the low success rate in ICT proposed by an interviewee, is that the Norwegian academic research community in ICT is weak and fragmented, meaning that few Norwegian researchers are part of the "right" international networks and therefore are not invited to join the best consortia. Moreover, it is pointed out that Norwegian researchers in ICT have not been under pressure to seek their fortunes abroad:

> *Generous national funding, such as VERDIKT, has obviously been a disincentive to apply for FP funding. Now that VERDIKT nears its end, Norwegian proposers in ICT suddenly are more successful, even as coordinators! (Agency representative)*

One interviewee notes that certain Norwegian institutes do very well in the ICT theme and that it is HEIs that pull the average success rate down. He refers to the possible explanations above, but also to the fact that many HEIs have little or no quality control routines for outgoing FP proposals, in contrast to the most successful institutes that

are even prepared to stop substandard proposals in order to protect their good reputation.

University colleges find FP participation an uphill battle. On the one hand, they rarely have research groups that are sufficiently large and competitive enough to make a mark internationally. On the other hand, university colleges are hampered by an image problem; why should a consortium settle for a university college when there are willing universities?

Institutes are keen to point to the fact that their costs are not fully covered in FP projects, meaning that they somehow have to co-fund their participation with, for example, their base grant or a national project on a similar topic. Considering the extensive institute participation in FP7, this deterrent is apparently outweighed by previously mentioned motives. Although institutes are well known for being creative in responding to co-funding requirements, it is quite possible that this funding issue sets a limit to how many FP projects a given institute can afford to participate in. The newly introduced STIM-EU programme, which had an FP6 predecessor (SAM-EU), will likely help matters. Several institute researchers mention the conflict between the fact that they are encouraged by their own management to apply for FP funding and to participate in international projects, while such projects are not fully funded. Differences between what topics are in focus in FP calls and what is in focus nationally are another potential conflict of interests.

The administrative burdens of FP projects are crucially important, particularly for many companies. Company representatives explain that an R&D project may require swift changes to the project plan, and that frequent shifts in a company's R&D orientation are normal. The FP's administrative requirements, particularly in terms of modifying a project's objectives, and the rather strict reporting requirements are not well adapted to this way of conducting R&D, meaning that the FP seems to suit many companies less well. We have heard some private-sector accounts that are very negative towards participating in FP projects because of their inflexibility and bureaucracy:

> *There are no motives for us to participate. We have the networks that we need. Since there are more negative aspects than positive, I choose not to apply. (Manager, SME in the health sector)*

However, most companies grin and bear the administrative burdens and there are of course always exceptions:

> *It gives us good liquidity, too. You get a lot of money in advance. (Manager, SME in the health sector)*

A company interviewee thinks that the size of FP projects makes them desirable to be part of, but there is a conflict in that administration tends to get cumbersome in large projects. Also, private companies live in a highly competitive business environment; collaboration is necessary in many respects, but there is a limit to how much information that can be shared with others. Sometimes, business information cannot be shared and conflicts may arise when participating in collaborative research projects. A manager of an SME explains:

> *If you work on a confidential topic, reporting requirements may become a problem. You may not want to describe what you do when you are in the start-up phase, meaning that you have to refrain from seeking EU funding. (Manager, SME in the environment sector)*

The high cost of Norwegian researchers is also brought up as a possible deterrent. Some interviewees suspect that Norwegian researchers are not invited to FP consortia because their high personnel costs "eat up" too much of the project budget, or that they get a smaller role than they otherwise would have.

The apparent low FP participation from the health authorities is noteworthy. However, first of all there is reason to believe that e-Corda data in this respect may be

misleading. Many researchers employed by health authorities also have a part-time position at an HEI. As previously described, HEIs receive a financial reward for their FP income, whereas health authorities do not. Also, with the exception of OUS, health authorities have not (yet) developed internal FP support units to assist their researchers. These two circumstances mean that for researchers with dual affiliations, it is more attractive to join a proposal as HEI researcher than as health authority researcher. This means that health authority researchers in reality participate more extensively in the FP than statistics would suggest, but it of course does not influence the overall Norwegian participation in Health (as measured in FP funding). Whether it also means that health authorities participate in a formal capacity, rather than part-time health authority employees only participating during their (other) part-time university employment, is unclear to us.

From the ministry level, it has been pointed out that taking part in FP projects is a relatively new venture for health authorities and that their participation is on the increase (the objective to increase FP participation is said to have been introduced in HOD's annual instructions to regional health authorities only a few years ago). However, our interviews with health authority personnel paint a different picture; in most cases, the attitude towards FP participation is lukewarm and interviewees point to both the fact that they are not pressed for financial resources and the fact that they are not assessed on whether they participate in the FP or not (this applies to both individual and organisation). The benign national funding situation is also pointed out by other interviewees; the following quote is representative: "HOD's funding to the health authorities is seen as lower-hanging fruit [than the FP] and result in less bureaucracy".

During the data collection for this study, we have mostly come across researchers and managers generous with their time and glad – at times enthusiastic – to share their experiences with us. In stark contrast to representatives of HEIs, institutes and companies, many health authority employees have been considerably less keen on taking the time to talk to us about their FP experiences (or lack thereof), which may also be an indication of a low interest in the FP.

6. Discussion

Previous chapters illustrate that the messages from the policy level that international R&D collaboration is beneficial to the Norwegian research system, and that FP participation therefore should increase, are loud and clear. To ensure that these messages have been received, a strong fiscal incentive has been introduced to entice HEIs to seek FP funding, as well as an incentive to reward institutes for their international revenue, where the latter in effect is reported to be a weak incentive to pursue FP funding. On a similar note, part of the research funding to regional health authorities depends on their publications in (highly ranked) international journals, where papers with foreign co-authors are weighted by a factor of two, but there is no reward for foreign funding. Thus, for HEIs and institutes the fiscal incentive is on the "input" (funding) side, whereas it is on the "output" (publications) side for regional health authorities.

Our evidence illustrates that to a certain extent, these policy-level initiatives have resulted in organisational strategies for internationalisation, and occasionally FP participation strategies. There are some examples of organisations that have developed their own fiscal incentive structures to stimulate FP participation, and others are expressing interest in introducing their own; still, organisations with fiscal incentive structures in place are exceptions to the rule. It is also obvious that a number of Norwegian organisations are very skilled in navigating treacherous FP waters, as evidenced by substantial FP revenue and impressive success rates.

Our evidence shows that Norwegian stakeholders largely share their main motives for FP participation with their counterparts in other countries (in no particular order): networking, knowledge acquisition, problem solving, methods development, staying abreast with international developments/competitors, accessing infrastructure, building reputation and accessing funding. When motives are described at this level, they generally apply to both organisations and individuals, although when you take a closer look some differences emerge.

The funding motive warrants special attention. Funding is stated as the top motive in most previous studies, including in Norway (although large companies generally rank funding as less important than other types of participants). However, we would like to argue that this motive is in another "dimension" than other motives. Public project funding (whatever its source) is more of a "boundary condition" than a motive; without it, there is – in most cases – no project. This is particularly true for HEIs and institutes that have very limited internal funds for discretionary use (most funds are already allocated to a specific purpose). In general, it also holds true for companies, particularly SMEs, although at least larger companies may opt to fund the work with internal funds; however, this usually means that the scope of the work and the partnership are reduced, or the duration of the work is prolonged, compared to if they, or their partners, had received public funding. For the private sector, public funding of a collaborative R&D project has a notable element of risk sharing to it, meaning that it is often an enabler.

By and large, the deterrents to FP participation are also universal: demanding proposals, low success rates, cumbersome project administration, complex rules for participation, complicated to protect IPR and high transaction costs. From an objective point of view, these objections are all valid to a certain degree, but they are often exaggerated (often as an excuse for lack of action). Many studies, and individual accounts, suggest that such deterrents are most often, and most loudly, voiced either by individuals without any FP experience at all (i.e. hearsay), or ones that have had an occasional unpleasant experience with the FP (e.g. have had a proposal rejected on grounds they do not understand or accept). In contrast, experienced FP participants are much less likely to bring up such complaints (although they typically grumble about administration when they get a direct question). Thus, in contrast to motives, most deterrents are notably experience-dependent.

In essence, the benefits of FP participation are well known (and documented in a wide range of evaluations and studies), and in most cases and for most participants the benefits outweigh the drawbacks. Then why is Norway's FP participation not higher – and particularly not as high as ministries and many stakeholders would like to see?

We believe that the possible answers to this question can be categorised into generic answers and specifically Norwegian answers. The generic answers are in essence based on alleviating the impacts of the aforementioned deterrents. Several of these possible solutions are essentially in the hands of the Commission and thus out of scope for this study, but in Chapter 8 we return to the ones that should be reasonably straightforward to address at national or organisational level. The specifically Norwegian issues are discussed in the remaining sections of this Chapter, and some possible solutions based on these observations are then proposed in Chapter 8.

6.1 National funding

A substantial proportion of interviewees and focus group participants argue that the funding situation for researchers in HEIs and health authorities is so generous that they have little reason to look abroad for funding. Such accounts come from individual researchers in all three themes, as well as from representatives of ministries and agencies. On the one hand, government R&D base grants to HEIs, particularly universities but to a lesser extent also university colleges, is more generous than in most other European countries, see Figure 2. On the other hand, national competitive funding from RCN is, with some exceptions, both abundant and associated with a weaker competitive element than foreign funding sources, see Table 12. As regards funding for R&D from regional health authorities to health authorities, competition is regional and success rates are reported to be significantly higher than for proposals submitted to RCN.[50] Thus, if you (more or less) already have the R&D funding you need, why bother spending your time writing lengthy proposals with questionable chances of success, instead of carrying out R&D with the funding you already have? Or at least write less demanding proposals with higher chance of success to a national programme or the regional health authority.

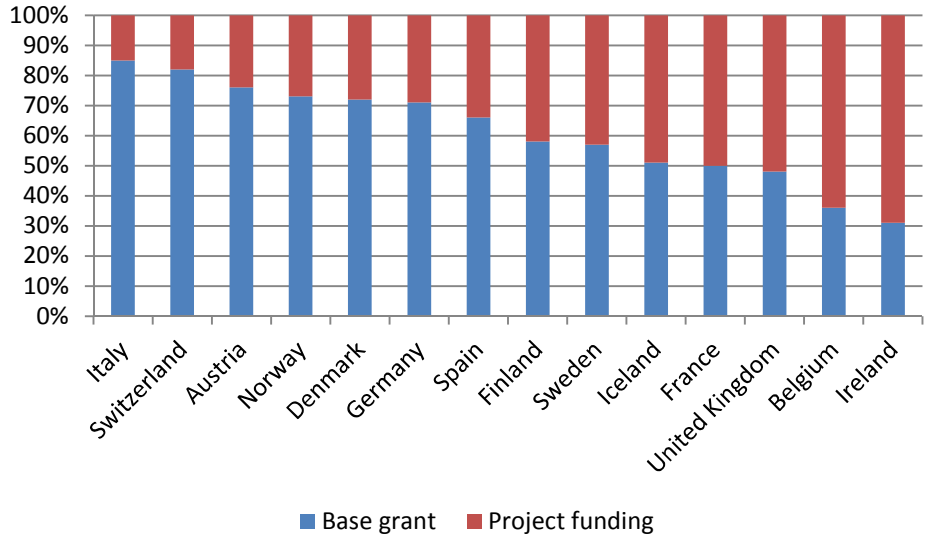

Figure 2 Ratio of government funding of R&D expenditure in the HE sector 2009.[51]

[50] J. Kalseth et al., op. cit.

[51] E. Arnold and B. Mahieu, "A Good Council?, Evaluation of the Research Council of Norway", KD, 2012. Figure redrawn from background data presented in quoted report.

Table 12 Comparison of success rates for Norwegian applicants to RCN and FP7 programmes.[52]

Programme type	RCN	FP7
RCN programmes vs. FP7 Cooperation programme	27%	23%
RCN FRIPRO vs. FP7 Ideas programme (i.e. ERC)	16%	11%

In contrast, most Norwegian research institutes have a considerably less benign funding situation, and this is most likely at least one reason why several institutes do very well in the FP. As previously mentioned, the percentage of non-competitive government funding in Norwegian institutes' total turnover ranges from 6% for technical/industrial institutes to 8.3% for environmental ones.[53] This is quite low by international standards, see Figure 3, although not dramatically different from selected Danish and Swedish institutes.

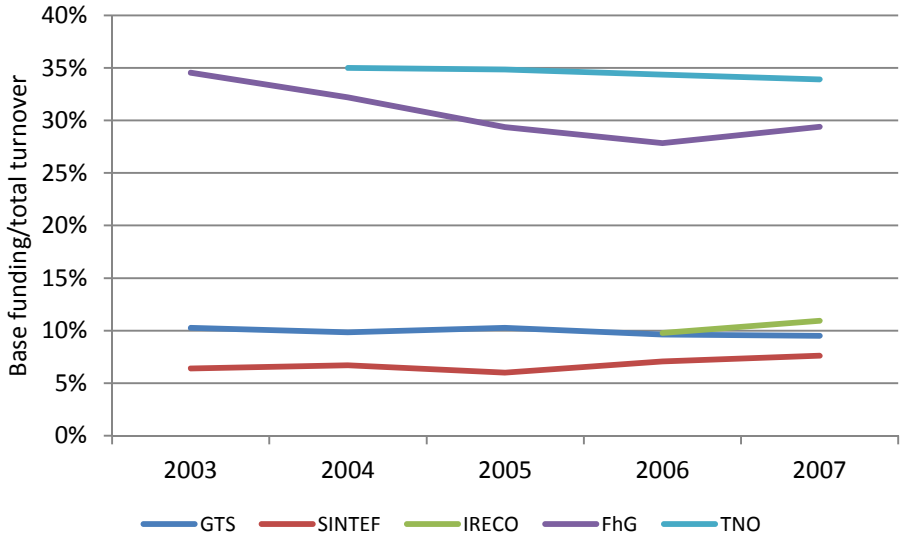

Figure 3 Comparison of base funding to research institutes in five countries.[54]

This comparison between HEIs, health authorities and institutes may arguably be interpreted as follows: if you are forced to explore all available funding opportunities (to stay in business/to keep your job/to conduct the kind of R&D you want) you will; if you are not, you will not.

Several interviewees have explicitly, and numerous implicitly, stated that the generous government base funding systems for HEIs and health authorities are direct disincentives to internationalisation in general and FP participation in particular. An agency representative concludes that "the generous Norwegian funding system works

52 "Forskningsrådet i tall, Prosjekt-, bevilgnings- og søknadsstatistikk for Norges forskningsråd i 2011", RCN, 2012.
www.forskningsradet.no/servlet/Satellite?c=Nyhet&pagename=fripro%2FHovedsidemal&cid=1253973080259, as viewed on September 29, 2012.
"Forskningssamarbeidet Norge–EU, Årsrapport 2011, del 1", RCN, 2012.

53 J. Fagerberg et al., op. cit.

54 T. Åström, M. Eriksson, L. Niklasson and E. Arnold, "International Comparison of Five Institute Systems", Danish Agency for Science, Technology and Innovation, 2009. GTS is a Danish institute group, IRECO (now RISE) is a Swedish institute group, FhG the German Fraunhofer-Gesellschaft and TNO a Dutch institute.

against FP proposals." Were national funding scarce, Norwegian researchers would most likely be more prone to look for other funding opportunities, including the FP.

6.2 Competitiveness and quality

Few would question the hypothesis that being exposed to competition enhances your competitiveness (unless you consistently lose out in the competition and perish). The generous funding situation for HEIs and health authorities described in the previous Section thus may be detrimental to the development of such organisations' competitiveness. Moreover, producing R&D of internationally recognised quality is a necessary – but not sufficient – requirement to be internationally competitive (where "quality" may have different meanings).

Several evaluations and analyses have found that the quality and competitiveness of Norwegian research overall are good, but still express concerns as to whether "good" is good enough. Based on bibliometric analyses, the Fagerberg Committee found that the number of Norwegian publications and the extent to which they are cited is significantly lower than for its Nordic neighbours when weighted by public R&D expenditure.[55] The low success rates for Norwegian proposals for ERC Starting grants (6.8% below average; cf. Table 2) and MCA (5.7% below average) are possibly other indications of Norwegian scientific quality and/or competitiveness not being high enough. The recent evaluation of RCN concluded that "clearly, research quality improvement to the high level needed for Norwegian long-term competitiveness is an important challenge for RCN and the research-performing system."[56]

The 2011 evaluation (peer review) of biology, medicine and health research determined that:[57]

> *Most of the funding for clinical research is channeled via regional funding instruments and not through national competition. Regional funding is intrinsically less competitive than national funding and does not necessarily promote the highest quality clinical research in Norway. The different health regions are the major funders and offer "bottom-up"-funding while a majority of the RCN funding is within thematic areas or programs. The differences in the local funding of clinical research at the hospitals, and the national funding of basic research performed at the universities, are prone to decrease collaboration, sharing and optimal use of techniques, research infrastructures, knowledge and other resources necessary for successful translational research.*
>
> ...
>
> *Across the scientific areas and the organizations being reviewed, there is a general awareness of the importance of international collaboration and exchange. However, this awareness does not seem to have resulted in an increased number of external grants from international funding bodies. Rather few units reported having applied for grants and even fewer had received grants from, for example, EU or US NIH (US National Institutes of Health). Researchers should be encouraged to apply for international funding, as it would not only have the potential to increase the research budget, but also contribute to the internationalization of Norwegian research.*

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55 J. Fagerberg et al., op. cit.

56 E. Arnold and B. Mahieu, op. cit.

57 "Evaluation of Biology, Medicine and Health Research in Norway (2011), Report of the Principal Evaluation Committee", RCN, 2011.

However, bibliometric studies have found that the research quality, as measured in citations, is above world average in most sub-disciplines of biology, medicine and health, and well above in clinical medicine.[58] Since the Norwegian success rate in the FP7 Health theme is comfortably above average (cf. Table 1), it would seem that the quality and competitiveness of Norwegian research in Health is quite good. The question is how much better the quality and the competitiveness would be if Norwegian researchers in health-related disciplines faced international competition, instead of mainly regional (regional health authorities) and national (RCN)? The point here is not really whether the quality of Norwegian research is good or not, it is that regional and national competition is always intrinsically less competitive than international, meaning that the full potential of the Norwegian research community is not reached. An overall increase in quality of Norwegian research in health-related disciplines would certainly enhance the chances of increasing Norway's FP participation, since additional researchers and research groups then would be competitive by European standards.

The 2012 evaluation (peer review) of ICT research noted that "many groups continue to fall below international standards in quantity and, in particular, in quality of research output".[59] A bibliometric study found that the quality (again as measured in citations) is significantly below world average in ICT, but above average in related sub-disciplines.[60] Although obviously insufficient as single explanation, the low quality in some fields and in some groups likely contributes to Norway's (relatively speaking) low success rate in the ICT theme (cf. Table 1). Clearly, there is room for improvements in quality and competitiveness of Norwegian research in ICT-related disciplines, but in this case increased international competition alone may be a too simplistic solution as the international competitiveness is not evident and the Norwegian research community is fragmented, see further Section 6.4.

In contrast, the 2012 evaluation (peer review) of climate research summarised that "the number of Norwegian climate research papers is high with Norway producing the highest number of climate research papers per inhabitant in the World" and that "the impact of Norwegian climate research publications demonstrates a high visibility in the international research community".[61] The aforementioned bibliometric study found that the quality is significantly above world average in the relevant sub-disciplines.[62] These observations are in concert with the remarkably high Norwegian success rate in the Environment theme (cf. Table 1). RCN sees a potential to reap further victories within the Environment theme, both through Norwegian participants assuming larger roles in projects and through additional organisations participating. To this end, RCN announced a call for proposals aimed at Norwegian organisations that have assumed leadership roles in Environment. The call, which closed in September 2012, was a joint initiative of the HAVKYST, NORKLIMA and POLARFORSKNING programmes. One interviewee points out that the organisations that are successful in Environment should be able to exploit their competitiveness and FP experience to increase their participation also in other FP themes.

In conclusion, it deserves to be pointed out that the evaluations both of biology, medicine and health research and of ICT note that developments in terms of competitiveness and quality in general are on upwards trajectories.

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58 D. W. Aksnes, "Evaluation of research in biology, medicine and health in Norway (2010-2011), Publication and citation analysis", RCN, 2011.
T. van Leeuwen, "Bibliometric Analysis of the Research Output of Norway in an International Context, Analysis of the research output of Norway and funding effects of the RCN", KD, 2012.

59 "Research in Information and Communication Technology in Norway, An evaluation", RCN, 2012.

60 T. van Leeuwen, op. cit.

61 "Evaluation of Norwegian Climate Research", RCN, 2012.

62 T. van Leeuwen, op. cit.

6.3 Cost level

Norway's high costs, and in particular personnel costs, present problems in several respects. On the one hand, anecdotal evidence suggests that the high hourly costs make Norwegian partners less competitive in the proposal stage. This may either result in a smaller role than otherwise, or in Norwegian partners being pushed out of consortia (in favour of foreign organisations offering better value for money). On the other hand, institutes claim that the Commission does not allow them to charge their full costs, meaning that they can afford fewer participations (thus the STIM-EU programme). These issues naturally have implications on Norwegian participants' competitiveness, since they may be seen as not delivering value for money (as suggested by the Fagerberg Committee[63]).

The high Norwegian earnings level may make the prospect of spending some time at a foreign institution economically unattractive for the individual researcher (unless (s)he continues to be paid by Norwegian standards). On a similar note, acting as proposal evaluator for the Commission is particularly unattractive to a Norwegian from an economic perspective.

6.4 Critical mass and networking

All three previously mentioned evaluations (peer reviews) point to the issue of fragmentation of the research community, including a low level of collaboration with other groups within and outside the country. The biology, medicine and health research evaluation notes that "far too often, the research landscape was fragmented and many units lack critical mass", the ICT evaluation mentions "insularity, lack of critical mass within a research area, or lack of long-term focus in research teams", and the climate evaluation laments that there are "many research institutes which have co-authored only few climate research articles, which might imply a strong fragmentation of the research system". Such fragmentation coexists with some strong research groups in the respective research fields. University colleges are particularly vulnerable in terms achieving critical mass, since they often lack the resources to reach it on their own.

As the biology, medicine and health research evaluation points out, "critical mass can be achieved through collaboration, often at the same time securing the level of multi-disciplinarity needed." Although some international project-level collaboration already exists in certain national programmes, there is obviously room to expand Norway's presence on the European scene. However, insufficient participation in projects funded by the FP and other foreign funding sources means that networks have not expanded to the extent they could have, which makes increased FP participation a greater challenge; it is a vicious circle. The fact that Norway's outward-bound researcher mobility is very low also means that its researchers lose out on an important opportunity to expand their personal networks. For example, the number of Norwegian researchers funded in Marie Curie Actions 2007–2012 is curiously low compared to its Nordic neighbours; there is a similar trend for incoming researchers (Finland being the exception).[64] Table 2 similarly illustrates that Norwegian participation in the Marie Curie programme is remarkably low.

A related aspect is that Norway's industry structure in the health, ICT and environment fields is relatively weak, meaning that there are not that many potential FP participants in the private sector. In the health and environment fields there are plainly rather few companies. In the ICT field the majority of companies have no R&D needs, and several of the ones that have cannot accept the long lead times of FP projects since they need to move much faster than that to stay abreast of the competition. This has implications for HEIs and institutes since a common

63 J. Fagerberg et al., op. cit.

64 FP7-PEOPLE Marie Curie Actions, Country fact sheets, European Commission, 2012.

requirement to get invited to someone else's FP consortium is that you bring a company along.

6.5 Additional issues

In the beginning of this Chapter we claimed that on an aggregated level the motives for FP participation generally apply to both organisations and individuals. However, we would like to point to two important exceptions:

- An HEI gets a funding reward for FP income (an extra NOK1.8 for each NOK1 from the FP), but this reward goes to the HEI centrally, and in most cases does not trickle back to the individual researcher or research group; thus, this is no incentive for the individual (NTNU is an exception in this respect funnelling 15–25%, of the 180% that the HEI receives, to the research group)
- Many HEIs state that they want to increase their participation in the FP, and thus encourage its researchers to apply, but the researcher is not appraised on his/her performance in FP terms, so the direct incentive is missing

Proposals are written by individuals and to increase the number of individuals undertaking such a venture, transparent and effective incentives are required. At present there is in almost all R&D performing organisations a missing link between the organisational and individual levels.

In the beginning of this Chapter we also mentioned some deterrents, the solutions to which are essentially in the hands of the Commission. The deterrents we referred to were mainly cumbersome project administration and complex rules for participation, and simplifications in these respects have indeed been on the Commission's agenda for a long time, but so far with rather modest results. While Norway has limited possibilities to have much impact in these respects on its own, there is of course room for lessening some of the impacts at both national and organisational levels. In the long term, Norway has the possibility – along with other nations participating in the FP – to encourage the Commission to keep up its simplification efforts.

In many other countries, there are consultants assisting consortia with FP proposals. At the one extreme they take full responsibility for the entire production process, all the way from administering, ghost-writing and editing, to delivery, or on a more modest scale merely pre-screen proposal drafts. Interviewees have told us that such consultants are rare in Norway, which may be unfortunate and arguably constitutes a business opportunity for foreign consultancies or would-be Norwegian entrepreneurs.

Although the PES programme is praised by most interviewees, there is always a risk that such a programme is subject to free-riding, e.g. organisations receiving the grant would have written the proposal anyway. Similar Irish and Austrian schemes have been discontinued since they were proven to be ineffective, and in the Austrian case due to excessive free-riding, so there may be reason to evaluate PES in some detail to ensure that it has the anticipated effects and really is money well spent.

7. Differences between themes, participant types and parts of the FP

This study was to explore what differences there may be in motives and deterrents between themes, between participant types and between core FP programmes and *randsoneaktiviteter*. Summarising our findings in these three dimensions inevitably results in a certain degree of repetition of what has already been discussed in previous chapters and in particular Chapter 6, since this chapter merely presents the findings from different viewpoints.

7.1 Differences between themes

The short assessment is that differences in motives between participants in the three themes are subtle, as also indicated by survey results (cf. Table 10). There are however substantial differences between participant types (see Section 7.2), and since organisational participation patterns vary notably between themes (cf. Figure 1) one may be led to believe that these are in fact differences between themes, but we would like to argue that this is not the case.

From survey results (cf. Table 10), we find that **Health** participants place somewhat greater emphasis on addressing specific scientific problems, as well as on accessing complementary capabilities or expertise that is not available within Norway. In contrast, Health participants rate development of tools, methods and techniques lower than participants in ICT and Environment. Previous studies provide a mixed picture regarding the quality and competitiveness of Norwegian health-related research, but the fact that the Norwegian success rate in the Health theme is comfortably above average indicates that competitiveness is quite good.[65]

Similarly, survey data indicates that **ICT** participants value knowledge and capacity acquisition slightly higher than Health and Environment participants. Moreover, ICT participants largely consider inherently "international issues", such as tackling problems with an international dimension and accessing complementary capabilities or expertise that is not available within Norway, unimportant. From our interviews, we learn that ICT companies appear to value funding somewhat higher than companies in other themes, and that HEIs and institutes find it a disadvantage that there are relatively few Norwegian companies to collaborate with (on R&D matters). From previous studies of Norwegian ICT research, we learn that many R&D groups do not measure up to international standards in quantity, quality and competitiveness, and that the research community is fragmented.[66] These observations may in part explain the relatively low success rate in the ICT theme, although some institutes are reported to strongly pull up the average success rate.

Both interviews and survey data confirm that the need to tackle problems with an international dimension is a key feature for **Environment** participants. In fact, many environment and climate issues are inherently international, and addressing them on an international arena is both a necessity and taken for granted by participants. Moreover, environment and climate issues have been high on the national agenda for decades, in part due to significant national needs, and there has been a succession of national R&D programmes that early on built up Norwegian capacity. From previous studies, we learn that the quality and competitiveness of the Norwegian research

65 "Evaluation of Biology, Medicine and Health Research in Norway (2011), Report of the Principal Evaluation Committee", RCN, 2011.
T. van Leeuwen, op. cit.

66 "Research in Information and Communication Technology in Norway, An evaluation", RCN, 2012.
T. van Leeuwen, op. cit.

community is very good, as also illustrated by the remarkably high Norwegian success rate in the Environment theme (cf. Table 1).[67]

Lessons that arguably may be learned from the successful Norwegian participation in the Environment theme are that it takes long time and consistent national funding to gradually build competitiveness. There is little doubt that compared to participants in Health and ICT, Environment participants have the advantage of working on inherently international topics, and since Norway started focusing on environment and climate issues decades ago, Norwegian R&D providers were "early movers". Thus, Norwegian R&D providers act from a position of strength and are apparently internationally competitive, despite their high cost. It is also noteworthy that Norway's participation in Environment is dominated by institutes (cf. Figure 1), which have low base funding and therefore have to take all available funding opportunities (cf. Section 6.1).

7.2 Differences between participant types

There are some noteworthy differences in motives brought up by representatives of different organisation types, once again pretty much in line with survey results (cf. Table 11), but the differences are still not that large. In contrast, there are substantial differences between the deterrents declared, in part due to differences in preconditions.

According to survey results, the motives put forth by **HEI** participants are the same as for the total sample (cf. Table 11). However, despite funding being HEIs' top motive according to both survey data and interviews, a relatively large number of interviewees from all three themes, including ministry and agency personnel, profess that HEIs' funding situation is so beneficial that they have little reason to look abroad for funding. On the one hand, government R&D base grants to HEIs, particularly to universities but to a lesser extent also to university colleges, is more generous than in most other European countries (cf. Figure 2). On the other hand, national competitive funding from RCN is, with some exceptions, both abundant and associated with a weaker competitive element than foreign funding sources (cf. Table 12). Several interviewees state that the generous government base funding system for HEIs is a direct disincentive to internationalisation in general and FP participation in particular. University colleges find FP participation an uphill battle. On the one hand, they rarely have research groups that are sufficiently large and competitive enough to make a mark internationally. On the other hand, university colleges are hampered by an image problem; why should a consortium settle for a university college when there are willing universities? The system to reward HEIs for their FP income is reported as effective, but mainly on the organisational level, since it is rare that any of this extra funding makes its way back to the individual researcher or research group; thus, it is no incentive for the individual.

In analogy with the situation for HEI researchers, a relatively large number of interviewees, including ministry and agency personnel, profess that also the funding situation for **health authority** researchers is so generous that they have little reason to look abroad for funding. The funding for R&D from HOD to regional health authorities is allocated to health authorities following call procedures within each of the four regions, meaning that the competition that health authority researchers are exposed to is regional. The system to reward regional health authorities for their scientific output, and particularly papers produced in collaboration with foreign co-authors, is at best reported to be an indirect motive to participate in the FP; as an incentive to apply for FP funding, it is certainly much weaker than the direct reward that HEIs (and to a lesser extent institutes) receive. Two of the four regional health authorities are reported to funnel part of the government reward for publications to

[67] "Evaluation of Norwegian Climate Research", RCN, 2012.
T. van Leeuwen, op. cit.

the research group that (co-)authored the paper.[68] However, it may be a bit unfair to compare research in health authorities with that in HEIs, since health authorities' research is mainly a means to improve quality in the health care services they provide. Having said that, it is still obvious that researchers in health authorities face regional competition where others face international, which means that they miss out on opportunities to hone their competitiveness on the international scene, and that the incentives to apply to the FP are weak for both organisation and individual.

Additional disincentives for health authority researchers to participate in the FP are created by the fact that it is common practice that they also hold part-time university positions. As health authority researchers they do not have access to an internal FP support function (unless they work at OUS) and there is no financial reward for FP income. In contrast, as university researchers they have access to an FP support function and for the university there is a financial reward for FP income. Thus, the university affiliation creates notable disincentives to participate as health authority researcher.

In contrast, most Norwegian **institutes** have a considerably less benign funding situation than HEIs and health authorities (cf. Section 6.1), and this is most likely at least one reason why several institutes do very well in the FP. This comparison may arguably be interpreted as follows: if you are forced to explore all available funding opportunities (to stay in business/to keep your job/to conduct the kind of R&D you want) you will, which over time inevitably enhances competitiveness. It may also be argued that FP participation matches institutes' business model better than other types of participants. However, due to their high costs Norwegian institutes are not allowed to charge their full costs in FP projects, which limits the number of FP projects that they can afford to participate in. This is the reason for the STIM-EU programme (as well as for its FP6 predecessor SAM-EU).

According to survey data, **companies** set themselves apart from other types of participants in that they place considerably greater emphasis on development of products and services (cf. Table 11). SMEs are less interested in knowledge and capacity acquisition, whereas large companies are less dependent on funding, which is also pointed out by interviewees. Irrespective of size, company interviewees point out that the long time perspectives (both lead time and project duration) and procedural rigidity of FP projects do not match their R&D needs very well; this is said to be a notable deterrent.

7.3 Differences between core FP programmes and *randsoneaktiviteter*

In the intelligence we have gathered through interviews and focus groups, we have detected only one systematic difference between the motives for and deterrents to FP participation put forth by participants in the core FP programmes and in *randsoneaktiviteter*: SMEs seem to prefer the Eurostars programme for reasons of simplicity and that it is better suited for applied development work. One possible reason for us not having found additional differences is obviously that there are none. Another possibility may be that the sample of participants in *randsoneaktiviteter* is too small to spot additional differences. Yet another may be that *randsoneaktiviteter* is quite a nonhomogeneous group, so the question may need to be more precisely formulated to reveal additional differences. Ultimately, we cannot be certain whether there are additional differences in motives and deterrents, or not.

[68] J. Kalseth et al., op. cit.

8. Possibilities to increase FP participation

Based on intelligence gathered through interviews and focus groups, as well on analyses of previous studies, we tentatively propose some actions that may be worth considering in order to attempt to increase Norway's participation in the FP. The tentatively proposed actions are aimed at ministries, RCN and management of R&D-performing organisations.

The actions that there may be reason for ministries to consider are to:

- Provide RCN with additional resources so as to expand its FP information and support services
- Require HEIs, institutes and health authorities to develop and really implement more strategic approaches to internationalisation and FP participation, so as to achieve a genuine structural effect
- Develop and implement a strategy to strengthen and defragment the Norwegian R&D community in the ICT field
- Amend the HEI and regional health authority funding systems to include a requirement that recipients should have a certain degree of FP engagement to receive the full extent of the government base grant, with the intent of enhancing competitiveness, increasing research quality, stimulating a wider FP participation, and counteracting fragmentation through increased collaboration. For regional health authorities this would mean adding an "input" indicator. For HEIs it would increase the stakes on the input side. Possible indicators are FP income, FP proposals submitted (whether successful or not), or for that matter international (rather than merely FP) income or activity. Two caveats are warranted:
  - It will be challenging to formulate such a requirement in a fair and reasonable manner, in part due to unpredictable FP success rates and in part since FP funding is not regular even when a project is on-going. Thus, some form of "smoothing" between years will probably be required, particularly for small organisations with few participations
  - Given that university colleges' preconditions for FP participation in most cases are unfavourable (insufficient mass and image problem), such a requirement will probably not be realistic until reasonable preconditions are in place (such as through gradual building of mass, increased collaboration or merger, and awarding the university title)

Although we are aware that RCN already has some aspects of these actions suggested below in place, particularly through a 2011 action plan[69], we mention them anyway for the sake of completeness. The actions that there may be reason for RCN to consider are to:

- Strengthen the existing, competent FP information and support system so as to offer genuine added value compared to the Commission's own web sites through:
  - Providing targeted domain-specific intelligence on the latest FP developments *before* it becomes public
  - Stimulating companies to participate through matching of the particular interest of a sector/niche and calls for proposals
  - Catering to the needs of both novices and experienced FP participants (although it may also be argued that the latter should be able to fend for

69 "Tiltakspakke for økt og styrket deltakelse i siste del av EUs 7. rammeprogram for forskning", KD, 2011.

themselves, so that the information and support system instead should focus on the less experienced)

- Being the ultimate, knowledgeable source of information on rules for participation, IPR, reporting, auditing etc.; this is a need that also experienced FP participants have, since rules often change
- Providing more hands-on support, such as pre-screening of proposals by experienced proposal authors and evaluators, for organisations that do not have their own EU support functions
- Utilising experienced FP participants in information campaigns to disarm some of the rumours regarding deterrents, and instead focus on the positive aspects of participation

- Devise an instrument to convince more Norwegians to act as proposal evaluators for the Commission, since this is an excellent way to learn how to produce more competitive proposals. Given Norwegian earnings levels, this may require some form of financial sweetener to compensate for the Commission's low reimbursement rates (unless the work can be carried out during regular office hours and as part of employment)
- Devise an instrument to persuade Norwegian organisations to assume larger roles in FP consortia, i.e. to advance along the value chain from R&D performer to task leader, work package leader and, ultimately, coordinator. The higher you are in this value chain, the greater your influence on the R&D direction of the project and the greater your share of the budget
- Devise instruments (or retain existing ones) to support newcomers to the European arena (e.g. young researchers, high-technology companies) in building up their networks by attending conferences, exhibitions etc., since a European network is a prerequisite to form, or to be invited to, a consortium. This may be particularly important for young researchers, so efforts and instruments to increase the Norwegian Marie Curie participation should be developed (in addition to IS-TOPP)
- Devise instruments (or retain existing ones) to stimulate institutes and HEIs to bring Norwegian companies with them into consortia (such as STIM-EU does). It is notoriously difficult to entice inexperienced companies, particularly SMEs, to participate in the FP. With the exception of a few experienced private FP participants, newcomers are often brought into a consortium by an institute or occasionally by an HEI
- Depending on what the rules for participation will be in Horizon 2020, it may be inevitable to have some form of compensatory programme for institutes also in the long run. If so, an extra allotment to projects with Norwegian companies, such as in STIM-EU, appears sound
- Evaluate the PES programme to ensure that it has the desired effects

Management of R&D-performing organisations are in a position to produce persuasive support systems and internal incentive structures for FP participation, should they so desire:

- Set explicit objectives for FP participation and integrate them in organisational strategies
- Introduce internal quality-control routines, including proposal pre-screening by experienced proposal authors and evaluators, using private consultants, if needed. This will significantly increase success rates and will thus lessen the low-success-rate disincentive for both individuals and organisation. It will with time also be beneficial for the organisation's image as a professional R&D performer

The fact that proposals are written by individuals, not organisations, provides the foundation for possible additional actions; management could devise measures to:

- Support and encourage would-be proposal authors, both morally and administratively, to undertake the task of writing a proposal, or contributing to someone else's. Administrative support is also required during a project, particularly to reduce the workload for coordinators. Researchers rarely appreciate administration (and it is therefore probably not their forte), so qualified administrative support will reduce the administration disincentive for individuals
- Entice more individuals to write, or to participate in, FP proposals, by devising individualised incentives; for example by:
  - Sending a reasonable share of the organisation's funding reward for its FP income back to the research group that was responsible for the successful proposal (as already done at NTNU)
  - Starting to appraise individual researchers on their FP performance (naturally only as one of several criteria) and let it influence both career development and pay

  Corresponding incentive structures would probably be equally effective in health authorities and institutes

Throughout this report we have worked with the presumption that increased Norwegian FP participation is desirable, and there is little doubt in our minds that an increase indeed would be advantageous for Norway from most points of view. There is nevertheless reason to keep in mind that a nation's economic return from the FP is but one measure of success. As described in this report, the benefits of FP participation go way beyond the direct economic return, and Norway has little realistic choice but to also participate in Horizon 2020.[70] However, Norway probably needs to set its R&D quality objectives well above world average to be able to provide value for money in the long run, and thus retain its competitiveness. Although Norwegian participants can most certainly collectively draw more funding from the FP in the future, it seems unlikely that Norway will be able to achieve *juste retour* any time soon, courtesy of its petroleum-boosted GDP. Also, it should be borne in mind that an increased Norwegian FP participation is a political goal that is not automatically shared by all organisations and individuals that would need to be convinced to collectively work towards this goal, meaning that some unpopular decisions may need to be taken to create the incentives required.

Another issue related to quality rather than quantity is within which topics Norway should increase its participation. It would seem reasonable for this to happen either in areas where Norwegian industry is (or has the potential to become) strong, so that R&D investments can be valorised within the country, or where there are other reasons to have a strong Norwegian presence, e.g. in health care. This means that there may be a need for further national prioritisation; increased FP participation is hardly a goal in itself, only a means to an end.

[70] Boekholt et al., op. cit.

Appendix A KD's understanding of the assignment

Norges deltagelse i EUs rammeprogram for forskning utgjør en betydelig del av de samlede bevilgningene til forskning over statsbudsjettet. I dag betaler Norge om lag 1,2 milliarder kroner årlig for å delta i EUs forskningsprogrammer, og den årlige kontingenten er ventet å øke de neste årene.

Hvor mye støtte til forskning fra EU som tilfaller norske forskningsaktører, avhenger bl.a. av hvor mye disse aktørene søker og i hvilken grad de når opp i konkurransen. Det er derfor sentralt å forstå hvilke motivasjonsfaktorer som påvirker norske institusjoner og forskere til å søke prosjekter fra EU. En slik forståelse er viktig for å kunne føre en mer målrettet politikk for å øke deltakelsen og utbyttet fra den EU-finansierte forskningen.

Kunnskapsdepartementet ønsker en studie av motivasjonsfaktorene for norske forskere i ulike virksomheter til å delta i EUs rammeprogrammer for forskning med tilhørende randsoneaktiviteter – innenfor helse, IKT og miljø. Helse-, IKT- og miljøforskning er viktige prioriteringer i det 7.rammeprogram og vil trolig også bli høyt prioritert i programmet Horizon 2020 som er under planlegging. Samlet har norske forskere over tid hatt en høy deltakelse i EUs forskningssatsinger innenfor miljø, men har hatt relativt lavere deltakelse innenfor helse og IKT. Den norske deltakelsen innen eksempelvis IKT har imidlertid vært sterkere innenfor noen virkemidler enn andre.

Studien skal ikke bare se på rene økonomiske insentiver, men bør også undersøke om størrelse og kvalitet i forskernes internasjonale nettverk, interne organisering, tilgang på administrative støttefunksjoner og andre forhold (snevre utlysninger, manglende tradisjoner osv) som virker (de)motiverende til å delta i den EU-finansierte forskningen. I tillegg til å se på de nasjonale virkemidlene er det viktig kartlegge hvordan virksomhetene bruker egne virkemidler til å motivere ulike deler og nivåer av virksomheten og den enkelte forsker til å delta. Det vil være nødvendig å se på erfaringer fra tidligere satsinger.

Det er ønskelig at tilbyderen skal ta kontakt med miljøer og erfarne forskere i de fire forskningsutøvende sektorene, UH-sektoren (særlig universitetene), instituttsektoren, næringslivet (særlig små og mellomstore bedrifter) og helseforetakene, både de som deltar aktivt i EUs forskningssatsinger og de som ikke deltar. Tilbyderen bør i stor grad basere seg på informasjon innhentet gjennom dybdeintervjuer og/eller gruppeseminarer.

Utfordringene innenfor i de ulike sektorene og fagområdene er forskjellige. Det er derfor viktig at analysen rettes mot de virksomheter og problemstillinger som er særskilt relevant innen hvert enkelt fagområde.

KD vil foreta separate vurderinger av kvaliteten på løsningsforslagene for de tre delområdene. Dette kan eventuelt utløse ønsker om å be ulike tilbydere med komplementær kompetanse om å samarbeide om gjennomføringen av prosjektet.

Det vil bli lagt stor vekt på forståelsen av oppdraget, på originaliteten i løsningsforslaget og på det analytiske refleksjonsnivå i tilbudet.

Appendix B Abbreviations

AAL	Ambient Assisted Living
BIA	Brukerstyrt innovasjonsarena
COST	European Cooperation in Science and Technology
EARTO	European Association of Research and Technology Organisations
EC	European Commission
EEA	European Economic Area
EFTA	European Free Trade Association
ERA	European Research Area
ERC	European Research Council
EUA	European University Association
FHI	Norwegian Institute of Public Health
FP	Framework Programme
GDP	Gross Domestic Product
HEI	Higher Education Institution
HiG	Gjøvik University College
HOD	Ministry of Health and Care Services
ICT	Information and Communication Technologies
IFU	Industrielle forsknings- og utviklingskontrakter
IMI	Innovative Medicines Initiative
IP	Integrated Project
IPR	Intellectual Property Right
IS-TOPP	Toppfinansiering av Marie Curie-stipender
JTI	Joint Technology Initiative
KD	Ministry for Education and Research
LERU	League of European Research Universities
MCA	Marie Curie Actions
MD	Ministry of the Environment
NCP	National Contact Point
NHD	Ministry of Trade and Industry
NHO	Confederation of Norwegian Enterprise
NILU	Norwegian Institute for Air Research
NINA	Norwegian Institute for Nature Research
NOKC	Norwegian Knowledge Centre for the Health Services
NTNU	Norwegian University of Science and Technology
OUS	Oslo University Hospital
PES	Prosjektetableringsstøtte

RCN	Research Council of Norway
RI	Research Infrastructures
R&D	Research and Development
SE	Science Europe
SME	Small and Medium-sized Enterprise
STIM-EU	Tiltak for økt deltakelse av forskningsinstitutter i EUs rammeprogram
S&T	Science and Technology
UiB	University of Bergen
UiN	University of Nordland
UiO	University of Oslo
UiT	University of Tromsø
UNN	University Hospital of North Norway
VRI	Virkemidler for Regional FoU og Innovasjon
WHO	World Health Organization

Appendix C Interviewees and focus group participants

C.1 Interviewees

Jan Alexander	FHI
Kjetil Berge	Aker BioMarine
Wilfred Booij	Sonitor Technologies
Are Borgesen	Tidal Sails
Tomas Brusell	Brusell Communication/Brusell Dental
Christoph Busch	HiG
Thorfinn Ege	SantoSolve
Håkon Eggemoen	AnsuR Technologies
Frank Elter	Telenor
Maiken Engelstad	HOD
Simen Ensby	NFR
Yngve Foss	NFR
Erik Framstad	NINA
Michael Gauss	Norwegian Meteorological Institute
Sverre Gotaas	Kongsberg Maritime
Sameline Grimsgaard	UNN/UiT
Thomas Gundersen	Vitas
Jennifer Harris	FHI
Jutta Heix	Oslo Cancer Cluster/Norwegian Radium Hospital Research Foundation
Reid Hole	UiN
Arne Holte	FHI
Öystein Hov	Norwegian Meteorological Institute
Anne Husebekk	UNN/UiT
Per Ivar Høvring	NFR
Morten Irgens	HiG
Peter Kaspersen	Norsk Elektro Optikk
Per Magnus Kommandantvold	NFR
Kari Kværner	OUS
Till Christopher Lech	NFR
Ingunn Borlaug Lid	NFR
Viggo Lindahl	MD
Per Magnus	FHI
Dagfinn Myhre	Telenor
Norunn Myklebust	NINA

Sten Tore Nilsen	Helse Stavanger
Jan Erik Nordrehaug	UiB/Haukeland universitetssykehus
Berit Nygaard	NFR
Magne Nylenna	NOKC
Ragnvald Otterlei	Simicon
Pål A Pedersen	UiN
Anders Platou	Hospital IT
Garcelia Rusch	NINA
Martin Sending	OUS
Erlend Smeland	OUS
Pål Sørgaard	KD
Arne Christian Vangdal	Breivoll Inspection Technologies
Eskild Westby	SensoNor

C.2 Focus group KD, June 27, 2012

Signe Astrid Engli	NHD
Yngve Joseph Foss	RCN
Jorunn Birgitte Gjessing-Johnrud	Innovation Norway
Pål Gretland	NHD
Dag Gustafson	NHD
Aris Kaloudis	KD
Per Koch	Innovation Norway
André Kristiansen	KD
Gudrund Langthaller	RCN
Till Christopher Lech	RCN
Ingunn Borlaug Lid	RCN
Hanne Monclair	KD
Berit Nygaard	RCN
Charlotte Rustad	KD
Morten Størseth	KD
Yngve Schrøder Tufteland	NHD

C.3 Focus group SINTEF, August 23, 2012

Gloria Azalde	SINTEF Teknologi og samfunn
Reidar Buvik	SINTEF Head Office
Jorid Kalseth	SINTEF Teknologi og samfunn
Birgit Risholt	SINTEF Byggforsk
Henrik Ræder	SINTEF Materials and Chemistry
Bjørn Skjellaug	SINTEF IKT
Petter Støa	SINTEF Energi

C.4 Focus Group NILU, August 23, 2012

Eva Beate Andresen	NILU
Alena Bartonova	NILU
Paal Berg	NILU
Ola Engelsen	NILU
Lise Fjellsbø	NILU
Mike Kobernus	NILU
Øivind Kure	University Graduate Center
Hai-Ying Liu	NILU
Kjetil Tørseth	NILU

C.5 Focus group NTNU, August 24, 2012

Ralf Müller	NTNU
Sveinung Saegrov	NTNU
Öyvin Saether	NTNU
Nina Sindre	NTNU
Johan Pettersen	MISA
Geir Öien	NTNU

C.6 Focus group UiB, August 27, 2012

Emmanuel Babatunde	UiB
Jan Petter Myklebust	UiB
Roland Jonsson	UiB
Eystein Husebye	UiB
Berit Rokne	UiB
Svenn-Åge Dahl	UiB
Sumathi Subramaniam Håvik	UiB
Helge Dahle	UiB

C.7 Focus group UiO, August 28, 2012

Bjørn Haugstad	UiO
Ingrid Sogner	UiO
Anders Elverhøi	UiO
Ingse Noremsaune	UiO
Mette Topnes	UiO
Lena Tallaksen	UiO
Ludvig M. Sollid	UiO
Nils Christian Stenseth	UiO
Erik O. Pettersen	UiO

Appendix D FP7 participants survey

As part of a study undertaken by Technopolis and NIFU-Step into Nordic participation in the European Union's Framework Programmes (FP6 and FP7), a questionnaire survey was directed to all Norwegian participants in these two programmes. The study was undertaken for NordForsk, which has kindly given us permission to reanalyse survey results.[71] This document presents selected results from the NordForsk survey, and in particular analyses the responses of participants in the FP7 thematic areas of Health, ICT and Environment. The selected results relate to motives for participation, and the support received by participants.

D.1 Introduction

In this section we briefly introduce the survey data used for the analysis of Norwegian participation in FP7, and provide details of sample sizes and response rates - overall, by thematic area and by organisation type.

D.1.1 Sample size and responses

At the time of the survey, FP contact databases showed that Norway had 1,299 participations in FP6 and 467 participations in FP7. In most, but not all, cases the databases included the name and e-mail address of the participant, which would be necessary for sending our survey request. In addition, roughly 20% of the entries related to multiple participations by the same person, so there were in fact slightly fewer individuals ("participants") who could be sent the survey request. Undeliverable and "opt out" messages further reduced the pool of possible respondents slightly.

The survey was administered online, with individual e-mail requests sent to each potential respondent. The survey remained open for over four weeks in April–May 2010, with reminder e-mails sent to non-respondents as the deadline approached. A total of 212 respondents from Norway provided a *useable* questionnaire return, giving an overall response rate of 23% (based on the 940 possible respondents). This included 73 responses from individuals known to have participated in FP7; a response rate for this group of 26%, see Table 13.

Table 13 Summary of survey contacts and responses.

	Total participations	Participants with email	Possible respondents	Responses	Response rate
FP6 and FP7	1,766	1,175	940	212	23%
FP7 only	467	355	284	73	26%

At the start of the questionnaire, respondents were asked to provide information about their involvement in FP6 and FP7 proposals and projects. This process revealed a further 58 Norwegian FP7 participants within our respondents (presumably FP6 participants who had participated in an FP7 project after we drew down the contact databases), taking the number of useable responses from Norwegian participants in FP7 to 131.

The analyses presented in this Appendix are based on this total pool of 131 Norwegian responses. However, it is important to note that some respondents skipped certain questions and so the sample size varies between questions. The actual number of respondents providing an answer to a question is used as the basis of calculations within the analysis and is indicated in the heading or final column of the relevant figure (n=x).

[71] J. Stroyan et al., op. cit.

D.1.2 Thematic areas and organisation types

For those participants listed in the FP7 database, we held details of the programme area (i.e. theme) that they participated in and were able to identify those of particular interest for this analysis (in the Health, ICT and Environment themes). Respondents were also asked through the questionnaire to select their field of research from a list of 10 broad areas. Where thematic information for a participant was not held within our FP7 database, their response to this question has been used to allocate them to a thematic area (the proxy fields are shown in the table).

The resulting spread of Norwegian respondents between themes is shown in Table 14. There were 84 responses from the Environment, Health and ICT themes combined, accounting for nearly two thirds (64%) of all respondents from Norway.

Table 14 Share of responses by theme.

FP7 Theme	Proxy field of research	Count	% of total
Environment	Environmental sciences (earth sciences, marine sciences, etc.)	38	29%
Health	Medical sciences + Life sciences (biology, biotechnology, etc.)	29	22%
ICT	IT and computer science	17	13%
Subtotal		*84*	*64%*
Other	All other fields	47	36%
Total		**131**	**100%**

The questionnaire also asked respondents to indicate the organisation type that best described the organisation to which they are affiliated, or to provide an alternative classification. From the responses to this question, we have classified each respondent's organisation to a broad organisation type and for companies and public bodies an organisation sub-classification, as shown in Table 15.

Table 15 Share of responses by organisation type.

Organisation type	Sub-classification	Count	%
HEI	–	34	26%
Institute	–	50	38%
Company	SME	17	13%
	Large company	12	9%
Public body	Public agency	12	9%
	Health authority	4	3%
Other	–	2	2%
Total		**131**	**100%**

Although the number of responses in individual themes and organisation types is small, Table 16 shows a cross-tabulation of the two categories.

Table 16 Number of responses by theme and organisation type.

Organisation type	Sub-classification	Environ-ment	Health	ICT	Three themes	Other	Total
HEI	–	10	13	1	24	10	**34**
Institute	–	17	10	9	36	14	**50**
Company	SME	6	2	4	12	5	**17**
	Large company	3	–	1	4	8	**12**
Public body	Public agency	1	1	1	3	9	**12**
	Health authority	–	2	1	3	1	**4**
Other	–	1	1		2		**2**
Total		**38**	**29**	**17**	**84**	**47**	**131**

D.2 Analysis

In this section we present an analysis of selected results from the survey of Norwegian participants in FP7. These results relate to the support received by participants (Section D.2.1), and the motives for participation (Section D.2.2).

D.2.1 Support to increase participation and success

Respondents were asked to indicate which forms of support their organisation had received from a national agency in order to help them participate in FP7. A list of some of the main forms of possible assistance was provided, but respondents were also able to indicate other forms of assistance used as well. The overall results are shown in Table 17. The most common form of assistance used (reported by over three-quarters of respondents) was "advance notification of forthcoming calls". "Advice on EC rules and procedures" and "information on live calls" were accessed by approximately two thirds of respondents. Other forms of assistance were less commonly accessed, being cited by 53% or less of respondents.

Table 17 Extent to which different forms of support were received.

Support received (n=99-101)	Used
Advance notification of forthcoming calls	78%
Advice on EC rules and procedures	69%
Information on live calls	65%
Provision of national funding for FP projects	53%
Help with the preparation of ideas for proposals	42%
Help with identifying partners	31%
Advice/feedback on draft proposals	27%
Help with preparing/drafting proposals	20%
Other	24%

Table 18 shows the proportion of respondents in different thematic areas that used each type of support. The pattern of support received is broadly similar for each of the three themes as for Norway overall (i.e. with advance notification of forthcoming calls the most common, etc.). However, for all forms of support, the proportion of users in the Environment, Health and ICT themes (combined) is higher than for the remaining Norwegian respondents. Participants in the ICT area are making most use of the given forms of support, followed by participants from the health field.

Table 18 Extent to which different forms of support were received by theme.

Used...	Environ-ment	Health	ICT	Three themes	Total
(n=x)	(30-32)	(23-24)	(15)	(69-71)	(99-101)
Advance notification of forthcoming calls	75%	83%	100%	**83%**	**78%**
Advice on EC rules and procedures	72%	67%	93%	**75%**	**69%**
Information on live calls	66%	70%	87%	**71%**	**65%**
Provision of national funding for FP projects	60%	46%	67%	**57%**	**53%**
Help with the preparation of ideas for proposals	50%	30%	47%	**43%**	**42%**
Help with identifying partners	28%	29%	40%	**31%**	**31%**
Advice/feedback on draft proposals	32%	21%	47%	**31%**	**27%**
Help with preparing/drafting proposals	26%	17%	33%	**24%**	**20%**
Other	44%	25%	25%	**33%**	**24%**

Table 19 shows the same results, but by organisation type. The sample sizes here are smaller and so there is more variability in the results, but these still broadly align with the overall picture for Norway in terms of the forms of support most frequently

accessed. In aggregate, participants from universities and research institutes are more likely than companies and public bodies to access the available support.

Table 19 Extent to which different forms of support were received by organisation type.

			Company		Public body			
Used...	**HEI**	**Inst.**	**SME**	**Large**	**Agency**	**Health**	**Other**	**Total**
(n=x)	(27-28)	(39-40)	(11-12)	(10)	(4-5)	(4)	(2)	(99-101)
Advance notification of forthcoming calls	86%	85%	67%	70%	80%	50%	0%	**78%**
Advice on EC rules and procedures	71%	80%	67%	50%	60%	50%	0%	**69%**
Information on live calls	81%	63%	58%	60%	80%	25%	0%	**65%**
Provision of national funding for FP projects	43%	77%	45%	40%	20%	0%	0%	**53%**
Help with the preparation of ideas for proposals	50%	43%	42%	30%	50%	25%	0%	**42%**
Help with identifying partners	39%	33%	17%	40%	20%	0%	0%	**31%**
Advice/feedback on draft proposals	29%	36%	33%	10%	0%	0%	0%	**27%**
Help with preparing/drafting proposals	29%	21%	25%	10%	0%	0%	0%	**20%**
Other	38%	8%	67%	20%	0%	0%	100%	**24%**

Where respondents had received support in order to take part in FP projects, they were also asked to rate the effectiveness of the support provided. The spread of responses for Norway overall is shown in Table 20, with the types of support that attract the highest effectiveness ratings (quite + very combined) appearing at the top of the table.

The provision of national funding to support the costs of participations was the area of support most commonly reported as quite/very effective (by 75% of users). However, a majority of users (>60% in each case) gave "quite/very effective" ratings across most of the different forms of support (shaded in grey), with the exception of two areas. The effectiveness ratings of "advice/feedback on draft proposals" and of mechanisms to "help with identifying partners" are both significantly lower than the others listed, with less than half of users (41% and 35% respectively) reporting the support they received was quite or very effective.

Table 20 Effectiveness of support received.

	Not very effective	Quite effective	Very effective
Provision of national funding for FP projects (n=52)	25%	38%	37%
Information on live calls (n=65)	34%	65%	2%
Advance notification of forthcoming calls (n=79)	37%	52%	11%
Help with preparing/drafting proposals (n=20)	40%	45%	15%
Help with the preparation of ideas for proposals (n=42)	40%	50%	10%
Advice on EC rules and procedures (n=70)	40%	53%	7%
Advice/feedback on draft proposals (n=27)	59%	30%	11%
Help with identifying partners (n=31)	65%	29%	6%

The ratings shown in Table 20 above have been used to identify an "average score" for the effectiveness of each form of support. This was done by assigning numerical values

for each rating (1=not very effective, 2=quite effective, 3=very effective), and calculating the average ratings assigned to each factor.[72]

The results for Norway overall, as well as for the themes, are shown in Table 21. This shows that there is little variation, with average scores for all support measures, across all themes, only varying between 1.5 and 2.5 (i.e. somewhere in the range of "quite effective").

Table 21 Effectiveness "scores" for support received by theme.

Support used	Environ-ment	Health	ICT	Three themes	Total
(n=x)	(8-24)	(4-20)	(5-15)	(17-59)	(20-79)
Provision of national funding for FP projects	1.94	2.27	2.40	2.15	2.12
Help with preparing/drafting proposals	1.88	1.75	1.60	1.76	1.75
Advance notification of forthcoming calls	1.92	1.75	1.67	1.80	1.75
Help with the preparation of ideas for proposals	1.63	1.86	1.43	1.63	1.69
Information on live calls	1.71	1.56	1.77	1.68	1.68
Advice on EC rules and procedures	1.70	1.75	1.79	1.74	1.67
Advice/feedback on draft proposals	1.60	1.80	1.43	1.59	1.52
Help with identifying partners	1.56	1.57	1.33	1.50	1.42

The same set of "average scores" has been calculated for groups of respondent based on their organisation type. The results are shown in Table 22, and reveal some variations. However, it should be noted that the sample sizes for many of the cells shown are very small and many of the differences are unlikely to be statistically significant.

Table 22 Effectiveness "scores" for support received by organisation type.

			Company		Public body			
Support used	HEI	Inst.	SME	Large	Agency	Health	Other	Total
(n=x)	(8-24)	(8-34)	(2-8)	(1-7)	(1-4)	(1-2)		(20-79)
Provision of national funding for FP projects	1.83	2.20	2.20	2.00	3.00	-	-	2.12
Advance notification of forthcoming calls	1.88	1.76	1.50	2.00	1.25	1.00	-	1.75
Help with preparing/drafting proposals	1.75	1.38	2.67	2.00	-	-	-	1.75
Help with the preparation of ideas for proposals	1.64	1.71	1.80	1.67	2.00	1.00	-	1.69
Information on live calls	1.77	1.68	1.57	1.67	1.50	1.00	-	1.68
Advice on EC rules and procedures	1.70	1.72	1.50	1.80	1.33	1.50	-	1.67
Advice/feedback on draft proposals	1.50	1.43	2.00	1.00	-	-	-	1.52
Help with identifying partners	1.27	1.46	3.00	1.00	1.00	-	-	1.42

D.2.2 Motives of participation

Norwegian participants were asked to rate a number of given factors in terms of their importance as motives for their organisation's or research group's participation in FP projects. Table 23 lists each of the given factors and shows the spread of importance ratings assigned by respondents. It confirms that the primary motives for participation are "to develop new or improved relationships or networks" (67% of high importance), "to access research funding" (70%), "to develop and extend internal knowledge and

[72] The Likert-type scale used in the question seeks to capture variation that might point to an underlying phenomenon, but only uses a nominal scale that does not have defined interval values. The presentation of these results using the assignment of numeric scores is therefore intended to be indicative only, and is employed for the purposes of simplicity.

capabilities" (59%), "to address specific scientific or technical questions, problems or issues" (54%), and "to develop new or improved tools, methods or techniques" (49%).

Other factors rated as of medium or high importance by over three-quarters of Norwegian respondents are (i) to tackle problems that have a European or international dimension, (ii) to access capabilities that do not exist in their own country (i.e. complementary expertise), and (iii) to improve the coordination of research.

Table 23 Motives for involvement in FP projects.

Motive (n=111–115)	Of low importance	Of medium importance	Of high importance
To develop new or improved relationships or networks	4%	29%	67%
To access research funding	7%	23%	70%
To develop and extend internal knowledge and capabilities	7%	34%	59%
To address specific scientific or technical questions, problems or issues	8%	38%	54%
To develop new or improved tools, methods or techniques	12%	39%	49%
To tackle problems that have a European or international dimension	14%	45%	41%
To access capabilities that do not exist in your own country (complementary expertise)	21%	49%	30%
To improve the coordination of research	32%	45%	23%
To access research facilities/infrastructure that do not exist in your own country	44%	41%	15%
To facilitate the mobility of researchers	47%	39%	13%
To provide training (e.g. for PhD students or early stage postdocs)	50%	31%	19%
To develop new or improved regulations or policies	50%	32%	18%
To create new or improved facilities or infrastructure	51%	32%	18%
To share the costs/risks association with the project	53%	33%	14%
To develop new or improved commercial products or services	55%	21%	23%

The ratings shown in Table 23 have been used to identify the ranked order of each motive, overall, for each theme and for each organisation type. This was done by assigning numeric scores for each rating (1=low importance, 2=medium importance, and 3=high importance), calculating the average ratings assigned by each group to each factor and then sorting the results in ranked order.

The results by theme are presented in Table 24. There is a good degree of alignment as to the most important motives across the Environment, Health and ICT themes, and between these areas and Norway overall. Within each of the three themes of interest, respondents considered "accessing research funding", "developing new or improved relationships or networks", and "developing and extending internal knowledge and capabilities" as a "top 5" motive for participation.

Table 24 Ranked motives for involvement in FP projects by theme.

Motive	Environ-ment	Health	ICT	Three themes	Total
(n=x)	(32-35)	(24-26)	(15)	(72-76)	(111-115)
To develop new or improved relationships or networks	1	2	3	2	1
To access research funding	1	1	1	1	1
To develop and extend internal knowledge and capabilities	5	4	1	3	3
To address specific scientific or technical questions, problems or issues	4	3	6	5	4
To develop new or improved tools, methods or techniques	3	5	4	4	5
To tackle problems that have a European or international dimension	6	7	5	6	6
To access capabilities that do not exist in your own country (complementary expertise)	7	6	8	7	7
To improve the coordination of research	8	9	10	8	8
To access research facilities/infrastructure that do not exist in your own country	14	11	11	11	9
To facilitate the mobility of researchers	9	10	14	10	14
To develop new or improved regulations or policies	11	13	13	12	12
To provide training (e.g. for PhD students or early stage postdocs)	9	8	12	9	10
To create new or improved facilities or infrastructure	12	14	9	12	13
To share the costs/risks association with the project	13	12	15	14	15
To develop new or improved commercial products or services	15	16	7	15	11

Table 25 Ranked motives for involvement in FP projects by organisation type.

			Company		Public body			
Motive	HEI	Inst.	SME	Large	Agency	Health	Other	Total
(n=x)	(28-30)	(42-44)	(14)	(17-19)	(9-10)	(4)	(2)	(111-115)
To develop new or improved relationships or networks	2	3	3	1	1	2	4	1
To access research funding	1	2	1	5	5	1	1	1
To develop and extend internal knowledge and capabilities	4	1	5	7	2	6	4	3
To address specific scientific or technical questions, problems or issues	3	3	5	4	10	3	7	4
To develop new or improved tools, methods or techniques	5	5	4	2	2	7	9	5
To tackle problems that have a European or international dimension	8	5	7	6	5	3	1	6
To access capabilities that do not exist in your own country (complementary expertise)	6	7	8	8	5	7	9	7
To improve the coordination of research	10	8	10	10	8	3	7	8
To access research facilities/infrastructure that do not exist in your own country	11	9	12	14	11	7	12	9
To facilitate the mobility of researchers	8	12	14	15	13	7	12	14
To develop new or improved regulations or policies	14	15	10	9	4	14	1	12
To provide training (e.g. for PhD students or early stage postdocs)	7	11	15	16	14	14	9	10
To create new or improved facilities or infrastructure	13	10	13	12	8	7	12	13
To share the costs/risks association with the project	15	14	9	11	16	7	4	15
To develop new or improved commercial products or services	16	13	1	3	15	7	12	11

The results by organisation type are presented in Table 25 and again indicate that there is a good degree of alignment as to the most important motives across the

different types of organisation. In particular, "accessing research funding", and "developing new or improved relationships or networks", are both considered as a "top 5" motive for participation in all cases.

Survey respondents were also asked to indicate which of the given motives (mentioned in the previous section) were the three *most important* motives for participation in FP projects, in order. The responses largely confirmed the picture shown in the figures above, although there were some small differences in the outcome when participants were only permitted to identify three items from the list.

The results for Norway overall are shown in Table 26 and signal that, when asked to identify only the most important objectives, "accessing research funding" becomes the most important. In total, 41% of respondents selected it as the most important motive, while a further 13% and 12% selected it as second and third most important respectively. In total, two-thirds (66%) put this factor in their top three. Another four motives were selected in the "top three" most important by at least 20% of respondents. These are shaded in grey.

Table 26 Motives for involvement in FP projects overall.

	Most important			Key
Motive (n=111)	**1st**	**2nd**	**3rd**	**motives**
To access research funding	41%	13%	12%	66%
To develop new or improved relationships or networks	14%	17%	26%	57%
To address specific scientific or technical questions, problems or issues	12%	8%	19%	39%
To develop and extend internal knowledge and capabilities	9%	21%	7%	38%
To develop new or improved tools, methods or techniques	5%	9%	6%	21%
To tackle problems that have a European or international dimension	5%	6%	5%	16%
To access capabilities that do not exist in your own country (complementary expertise)	1%	5%	9%	15%
To develop new or improved commercial products or services	4%	6%	3%	12%
To improve the coordination of research	2%	4%	4%	9%
To access research facilities/infrastructure that do not exist in your own country	1%	1%	4%	6%
To create new or improved facilities or infrastructure	4%	2%	0%	5%
To share the costs/risks association with the project	0%	2%	2%	4%
To develop new or improved regulations or policies	0%	4%	0%	4%
Other	3%	0%	1%	4%
To provide training (e.g. for PhD students or early stage postdocs)	0%	2%	1%	3%
To facilitate the mobility of researchers	0%	2%	1%	3%

The same results are shown below by theme (Table 27) and by organisation type (Table 28). For simplicity, only the overall proportion of respondents selecting each motive as a key motive (1st, 2nd or 3rd most important) is shown in these figures. The five most commonly selected motives in each case are again shaded.

Table 27 Motives for involvement in FP projects by theme.

Motive	Environ-ment	Health	ICT	Three themes	Total
(n=x)	(33)	(26)	(15)	(74)	(111)
To access research funding	68%	77%	73%	72%	66%
To develop new or improved relationships or networks	57%	54%	60%	56%	57%
To address specific scientific or technical questions, problems or issues	32%	50%	33%	39%	39%
To develop and extend internal knowledge and capabilities	32%	31%	53%	36%	38%
To develop new or improved tools, methods or techniques	29%	19%	33%	26%	21%
To tackle problems that have a European or international dimension	25%	8%	0%	14%	16%
To access capabilities that do not exist in your own country (complementary expertise)	13%	23%	7%	15%	15%
To develop new or improved commercial products or services	9%	4%	13%	8%	12%
To improve the coordination of research	10%	8%	0%	7%	9%
To access research facilities/infrastructure that do not exist in your own country	3%	4%	0%	3%	6%
To create new or improved facilities or infrastructure	9%	0%	13%	7%	5%
To share the costs/risks association with the project	3%	4%	0%	3%	4%
To develop new or improved regulations or policies	3%	4%	7%	4%	4%
Other	3%	4%	0%	3%	4%
To provide training (e.g. for PhD students or early stage postdocs)	0%	4%	7%	3%	3%
To facilitate the mobility of researchers	3%	8%	0%	4%	3%

Table 28 Motives for involvement in FP projects by organisation type.

			Company		Public body			
Motive	**Uni.**	**Inst.**	**SME**	**Large**	**Agency**	**Health**	**Other**	**Total**
(n=x)	(28)	(42)	(14)	(11)	(10)	(4)	(2)	(111)
To access research funding	86%	67%	71%	18%	45%	75%	100%	66%
To develop new or improved relationships or networks	54%	63%	50%	64%	46%	50%	50%	57%
To address specific scientific or technical questions, problems or issues	36%	48%	36%	27%	13%	75%	50%	39%
To develop and extend internal knowledge and capabilities	29%	53%	14%	27%	59%	0%	50%	38%
To develop new or improved tools, methods or techniques	18%	17%	36%	36%	23%	0%	0%	21%
To tackle problems that have a European or international dimension	18%	12%	14%	18%	11%	25%	50%	16%
To access capabilities that do not exist in your own country (complementary expertise)	14%	20%	7%	9%	10%	25%	0%	15%
To develop new or improved commercial products or services	4%	2%	29%	45%	11%	25%	0%	12%
To improve the coordination of research	7%	2%	0%	9%	53%	25%	0%	9%
To access research facilities/infrastructure that do not exist in your own country	7%	2%	7%	18%	0%	0%	0%	6%
To create new or improved facilities or infrastructure	7%	2%	7%	0%	20%	0%	0%	5%
To share the costs/risks association with the project	0%	2%	21%	0%	0%	0%	0%	4%
To develop new or improved regulations or policies	0%	2%	7%	18%	0%	0%	0%	4%
Other	7%	0%	0%	9%	10%	0%	0%	4%
To provide training (e.g. for PhD students or early stage postdocs)	7%	2%	0%	0%	0%	0%	0%	3%
To facilitate the mobility of researchers	7%	2%	0%	0%	0%	0%	0%	3%

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