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Norwegian participation in the EU Horizon 2020 SME Instrument and the future Horizon Europe

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Preface

This study, commissioned by Innovation Norway, was carried out by Samfunnsøkonomisk analyse AS (SØA) in collaboration with Technopolis Group. Innovation Norway is responsible for mobilising Norwegian firms to participate in Horizon 2020, the eighth EU framework programme for research and innovation.

The study maps Norwegian participants in the Horizon 2020 SME Instrument, assesses the value of the support that Innovation Norway has provided to applicants, and gives a view on the potential value for Norwegian SMEs of Norway's participation in the ninth EU framework programme Horizon Europe and the 2021-2027 Competitiveness of SMEs programme (COSME).

We would like to thank the firms and cluster representatives we have interviewed. Without their input we would have fallen short.

SØA is responsible for the content of the report.

Oslo, 1 November 2019

Karin Ibenholt
Project manager
Samfunnsøkonomisk analyse AS

Executive summary

This report maps Norwegian enterprises participating in EU's Horizon 2020 SME Instrument in the period 2014-2018. The report is commissioned by Innovation Norway and provides an overview of the development of the Norwegian success rate in the SME Instrument and characteristics of the Norwegian applicants, including those who obtain EU funding. The purpose of the mapping is to gain better knowledge of what characterises the Norwegian enterprises that succeed in the SME Instrument, how and why they succeed, how Innovation Norway has contributed to better understand how Innovation Norway can work in a more targeted manner with different target groups in the coming framework programme Horizon Europe.

Horizon 2020 (H2020) is the world's largest investment in research and innovation, with nearly €80 billion of funding available over seven years (2014-2020). Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

The H2020 SME Instrument has a total budget of about €3 billion over the period 2014-2020. The SME Instrument provides business innovation support to SMEs in the EU Member States and H2020 associated countries. It selects the best enterprises with the most innovative ideas, a real chance of disrupting the market and a very high growth potential. The instrument is delivered in three phases, including a coaching and mentoring service.

Phase 1 offers a lump-sum grant of €50,000 to carry out a concept and feasibility assessment. Phase 2 invests between €0.5 and €2.5 million in innovation activities such as demonstration, testing, prototyping, pilot lines, scale-up studies and market replication. In addition to funding, SMEs receive tailored business innovation coaching as well as other business acceleration services.[1]

Norwegian success rate

Compared to the overall success rate (all Member States and associated countries), Norwegian SMEs have experienced great success in the SME Instrument. In the period 2014-2018, 485 Norwegian SMEs have submitted 1,166 applications to Phase 1 and 2. The success rate among Norwegian applicants in this period is 9.5 per cent for Phase 1 and 10.0 per cent for Phase 2. Their success rate in Phase 2 is significantly higher than the overall success rate (all countries) of 4.8 per cent.

Innovation Norway's strategy in the early stage of the H2020 programme was to encourage SMEs to apply for funding from Phase 1. In recent years, the high success rate in Phase 2 proves that this has paid off; completing Phase 1 increases the chance of success in Phase 2.

Projects scoring above the threshold for EU funding, but not receiving funding due to budget constraints, are awarded a so-called Seal of Excellence (SoE). In 2016, Innovation Norway further strengthened their efforts to get SMEs through Phase 1 by offering funding to projects with SoE from this phase. Coaching is not included in Innovation Norway's funding, and data indicate that this effort has not in-

[1] https://ec.europa.eu/easme/sites/easme-site/files/smei_2018_impact_report_final_may_2018.pdf

creased the chance of success in Phase 2 notably, compared with applying directly for Phase 2.

Key figures. Norwegian applicants. 2014-2018

A total of 1,166 applications from 485 applicants.

Phase 1: Feasibility assessment
786 applications
75 funded projects (9.5 per cent success rate)
405 applicants (18.5 per cent with EU funding)
36 projects with funding from Innovation Norway

Apply on average 1.9 times before success in Phase 1

Phase 2: From concept to market
380 applications
38 funded projects (10.0 per cent success rate)
159 applicants (23.9 per cent with funding)

136 applications after completing Phase 1 with funding from the EU (11.8 per cent success rate)
32 applications after completing Phase 1 with funding from Innovation Norway (9.4 per cent success rate)
212 applications directly to Phase 2 (9.0 per cent success rate)

Apply on average 3 times before success in Phase 2

Funding from the EU:
Around €71.8 million allocated to 97 SMEs with a total of 113 projects. €3.8 million allocated to 75 projects in Phase 1 and €68.1 million to 38 projects in Phase 2.

The success rate for Norwegian SMEs applying directly for Phase 2 is almost double the overall (all countries) success rate for direct applications to Phase 2. This is likely a result of Innovation Norway's enhanced advisory efforts in 2018 (see below).

Profile on Norwegian applicants

Coming up with a breakthrough innovation, developing a sound business plan and putting together a credible team takes time and effort. A comparison of applicants according to their best outcome in the SME Instrument indicate that firm age and size (measured in both employment and turnover) correlate with success. We interpret this as a confirmation that success requires some degree of maturity.

Breakthrough innovations also require prior engagement in R&D&I activities. Nearly all Norwegian SMEs with funding from the SME Instrument have completed an R&D project prior to applying for EU funding, making use of the R&D tax incentive SkatteFUNN. For most of these, the completed project is directly linked to the EU funded project.

Apart from the "rights-based" project establishment support (PES2020), applicants to the SME Instrument have, to a small extent, participated in projects with support from the Research Council of Norway (RCN). However, it is worth noting that a significantly higher share of SMEs succeeding in the SME Instrument has completed a project with "proof-of-concept funding" from the RCN's FORNY programme, than applicants without funding from the SME Instrument.

Innovation Norway's contribution to success

Innovation Norway mobilises Norwegian SMEs to apply for EU funding, both directly through their regional EU advisors and indirectly through funding of EU advisors in several cluster projects. Most SMEs succeeding in Phase 2 have received advisory services from Innovation Norway, and our data suggests that the clusters' efforts in assisting the SMEs with their applications increase the likelihood of success in the SME Instrument. Based on our interviews, the clusters would not have been able to provide the EU advisory services without funding from Innovation Norway.

Current clusters in the Norwegian cluster programme, Norwegian Innovation Clusters (NIC), can easily reach out to more than a thousand SMEs

through their network.[2] Seen together with the clusters' ability to help the SMEs succeed in the SME Instrument and the scheme's limited costs, funding EU advisors in the clusters seems to be an efficient use of the available mobilisation resources.

It is expected that Innovation Norway aligns its mobilisation efforts according to their clients' needs and developments in H2020 and the future Horizon Europe, as well as playing an active role in securing the impact of Norwegian interests in Horizon Europe.[3] Through their presence in Brussels, Innovation Norway can influence the work of the European Commission to secure Norwegian interests, in addition to providing Innovation Norway with relevant information.

Innovation Norway has shown great adaptability in its advisory services with the introduction of its pitch training to meet the new requirements in Phase 2, leading to a notable increase in the success rate in 2018. A possible addition to this offer is to put applicants that have been invited to pitch their project in Brussel in contact with SMEs that have already done it.

Without Innovation Norway being drawn entirely in the direction of consultants who offer to write the entire application, it may be worth to consider simplify the application process for the SMEs by developing "templates" for the more bureaucratic parts of the application (all necessary formalities).

Norwegian participation in Horizon Europe

While the current stage of the Horizon Europe design process does not allow for a very detailed analysis of the specific focus of the upcoming framework programme, some observations can be made according to the available information.

It can be assumed that the action lines funded under Pillar 2 in Horizon Europe will target SMEs active in similar industry sectors as under the current H2020. The current policy priorities as well as budget indications suggest an increase in the share of budget allocated to the Horizon Europe clusters covering global challenge areas in "green" and "environmental" domains. This increase is evident for the "food and natural resources" cluster. Overall, the increased focus on R&I for environmental sustainability under Horizon Europe appears as a promising development for Norwegian SMEs.

The currently available description of the EIC suggests that the profile of SMEs involved in the two EIC sub-programmes can be expected to be quite different to that of the SMEs participating in the H2020 SME Instrument.

The EIC Pathfinder programme builds upon the FET Open Programme and will fund collaborative research oriented towards disruptive innovation. While the main component of the Pathfinder will be a bottom-up instrument, the Pathfinder scheme will also be used in a top-down approach to target emerging technologies of a strategic nature. Current data does not allow us to draw any conclusions on the extent to which Norwegian start-ups would have the competences or would be interested in participating in the EIC Pathfinder programme. Under H2020, few Norwegian SMEs applied for funding through the FET Open programme. The pilot of this programme under H2020 targeted areas such as micro- and nanotechnologies, artificial intelligence

[2] Based on number of members in 2018.

[3] See e.g. annual letters of assignment to Innovation Norway from the Ministry of Trade and Fisheries and the Ministry of Education and Research.

and advanced robotics, which are not the areas of expertise for most of the SMEs funded under the SME Instrument.

SMEs has stated investment of time and resources as a major barrier to apply for funding in H2020; SMEs not only struggle more than larger companies with the perceived complexity of procedures and ruling in H2020, but they are also discouraged by the management burden. The most requested improvement to the current mix of national support measures is the need for increased support to participants in finding collaboration partners and in building consortium.

It is widely acknowledged that addressing the challenges in climate change and sustainable development requires action at a global level. Non-participation in Horizon Europe would restrict access to the pool of international knowledge that the framework programme offers to the stakeholders operating in the Norwegian R&I system. This would limit their capacity to respond to the Norwegian national priorities and challenges. For SMEs, it would imply that they cannot take advantage of the opportunity to enhance their position in global value chains. For the highly innovative SMEs, it would equally imply a more limited access to financial support for their risky research or upscaling efforts.

Norwegian participation in COSME

While the focus of H2020 is predominantly on innovative SMEs, the current COSME programme targets non-innovative SMEs. In addition, COSME focuses on "soft", non-technological innovation, aimed at enhancing competitiveness by focusing on framework conditions, entrepreneurship, access to finance and/or markets.

Nevertheless, close links exist between H2020 and COSME, specifically in use of the Enterprise Europe Network (EEN) and the European cluster organisations as "gateways" to channel funds to SMEs in H2020 and directly or indirectly support them.

The upcoming COSME program (2021-2027) will continue to focus on non-innovative SMEs, with general objectives being (i) promoting the establishment and sustainable growth of businesses, especially SMEs, and (ii) strengthening business competitiveness, strengthening industrial modernising and promoting entrepreneurship.

While the analysis of the future COSME programme needs to be considered with caution, as it is based only on the proposal outlined in the staff working document and are not final, our interviews with European Commission representatives do not indicate any major changes to the programme's focus and planning.

Norway does not participate in the current COSME programme but participates in the EEN. A partial participation scenario – which is the current one – has consequences mainly from a financial perspective. The benefits are linked to Innovation Norway's and Norwegian SMEs' ability to continue to benefit from the international network and the services it offers. The main difference between members and non-members of COSME is that members are eligible to receive a reimbursement of up to 60 per cent of eligible costs. The reimbursement requires the development of a roadmap planning the services and addressing a relatively broader set of EEN activities in their work programme. In contrast, non-members are foreseen to primarily focus on partnering services and finance those by their own means. Lastly, COSME participating countries are also asked to implement measures related to open standards and the international market, as well as the SME feedback function, while non-participants can introduce similar measures or any other additional EEN service.

A full participation in COSME would first and foremost allow for a partial reimbursement of the costs linked to the support services to SMEs. However, the extent to which the reimbursement will outweigh the cost of participation is currently unknown.

Moreover, funding for a programme targeting the type of SMEs as the SME Instrument Phase 1 is expected to be made available through the COSME programme instead of Horizon Europe. Participating in COSME would also allow for a strengthening of the cluster ecosystems, enhancing internationalisation and reinforcing the cross-value chain dimension of either existing or new clusters. Taking into account the number of applications for funding of cluster projects in H2020 (under the INNOSUP programme), combined with the information given by clusters and Innovation Norway, it confirms the interest of the clusters and their managers to act as intermediaries for the delivery of support to their member SMEs, as foreseen in COSME.

A non-participation scenario entails that Innovation Norway would no longer host EEN in Norway. It would accordingly detach itself from a core international network in the delivery of support services to SMEs, supportive of research collaboration, technology transfer and business cooperation. Norwegian SMEs benefitting from Innovation Norway's advisory services have displayed a strong interest in internationalisation and the EEN virtual marketplace for the creation of international partnerships. A decision to not participate in COSME does therefore not come across as being aligned with the needs or interest of SMEs.

Sammendrag

Denne rapporten kartlegger norske bedrifter som deltar i EUs instrument for vekstbedrifter – SMB-instrumentet – under forsknings- og innovasjonsprogrammet Horisont 2020 (H2020). Kartleggingen dekker perioden 2014-2018. Rapporten er skrevet på oppdrag fra Innovasjon Norge og gir en oversikt over utviklingen i norsk suksessrate i SMB-instrumentet og kjennetegn ved de norske søkerne, herunder de som oppnår finansiering fra EU. Formålet med rapporten er å få bedre kunnskap om hva som kjennetegner de norske bedriftene som lykkes i SMB-instrumentet, hvordan og hvorfor de lykkes, hvilken betydning Innovasjon Norge har hatt for deltakelse og hvordan Innovasjon Norge kan jobbe mer målrettet med ulike målgrupper i det kommende rammeprogrammet Horisont Europa.

H2020 er verdens største satsing på forskning og innovasjon, med et samlet budsjett på nær 80 milliarder euro i perioden 2014-2020. H2020 er et integrert rammeprogram for forskning og innovasjon, ment å bidra til å gjøre Europa til et ledende forskningsområde i verden. Programmet omfatter aktiviteter fra grunnleggende til anvendt forskning og innovasjon.

SMB-instrumentet har et samlet budsjett på 3 milliarder euro i programperioden 2014-2020. SMB-instrumentet er tilgjengelig for innovative SMBer med stort potensial for vekst og med internasjonale ambisjoner. Ordningen tilbyr finansiering, coaching og akseleratortjenester. SMB-instrumentet gir støtte i tre faser, inkludert coaching- og mentortjenester.[4]

Innovasjon Norge har, sammen med Norges forskningsråd, i oppdrag fra Kunnskapsdepartementet å mobilisere norsk næringsliv til H2020, herunder SMB-instrumentet. I tillegg har Innovasjon Norge finansiering fra Nærings- og fiskeridepartementet til å følge opp SMBene som oppnår finansiering fra SMB-instrumentet.[5] Oppfølgingen av disse bedriftene gjøres gjennom Innovasjon Norges rolle som vert for Enterprise Europe Network (EEN) i Norge.

EEN er et globalt nettverk av bedriftsrådgivningsorganisasjoner som bistår små og mellomstore bedrifter, blant annet med å finne samarbeidspartnere i utlandet, løse utfordringer knyttet til eksport og rådgi om internasjonale markeder og muligheter.

Oppfølgingen av bedriftene med støtte fra SMB-instrumentet innebærer blant annet hjelp til å identifisere bedriftens utfordringer og coachingbehov, samt bistå bedriftene i valg av coach. I fase 1 tilbys bedriftene inntil tre dager med coaching, mens fase 2 tilbyr inntil 12 dager.

Fase	Varighet	Finansiering	Aktiviteter
Fase 1 Konsept-avklaring	6 mnd.	50 000 euro	Risikovurdering, design, markedsundersøkelser
Fase 2 Innovasjons-prosjekt	1-2 år	500 000 - 2,5 mill. euro	Demonstrasjon, testing, utvikling av prototyper, pilotering, oppskalering, markedstilpasning
Fase 3 Akselerator-tjenester			Matchmaking med nye forretningsforbindelser, tilgang til risikokapital, kurs mv.

SMB-instrumentet er organisert i flere faser for å dekke alle trinn i innovasjonssyklusen. Selv om søkerne står fritt til å søke direkte til fase 2, oppfordres

[4] https://www.innovasjonnorge.no/no/tjenester/innovasjon-og-utvikling/finansiering-for-innovasjon-og-utvikling/eu-finansiering/smb-instrumentet/

[5] Finansieringen fra Nærings- og fiskeridepartementet dekker også oppfølging av SMBer med støtte fra H2020s Fast Track to Innovation og FET Open.

de til å starte med fase 1. Fase 1 skal resultere i en mulighetsstudie (teknisk og kommersiell), samt en utvidet forretningsplan. Denne fasen er dermed ment å modne forretningskonseptet og videre øke sjansen for å lykkes i fase 2.

Norsk suksessrate i SMB-instrumentet

I perioden 2014-2018 har norske SMBer levert 1 166 søknader til fase 1 og 2 av SMB-instrumentet samlet. I fase 1 har 9,5 prosent av prosjektene oppnådd finansiering. Dette er litt høyere enn den samlede suksessraten i denne fasen for alle land på om lag 8 prosent. Med en suksessrate i fase 2 på 10 prosent er Norge landet med høyest suksess i denne fasen. Den samlede suksessraten (alle land) i fase 2 er om lag 5 prosent.

I begynnelsen av programperioden til H2020 fokuserte Innovasjon Norge på å mobilisere norske SMBer til å søke om finansiering fra fase 1 for å øke søkernes sjanse for å lykkes i fase 2. Suksessraten i fase 2 er høyere blant bedrifter som har gjennomført fase 1. Den relativt høye norske suksessraten i fase 2 de siste par årene kan indikere at denne strategien har vært vellykket. Det er ellers verdt å nevne at Innovasjon Norge også styrket rådgivningsinnsatsen for søkere til fase 2 i 2018. Dette omtales nærmere nedenfor.

I både fase 1 og 2 kan prosjekter vurderes som godt nok til at det burde finansieres (høy nok «karakter»), men likevel ikke bli finansiert på grunn av budsjettbeskrankninger. EUs SMB-instrument finansierer alle prosjekter over karaktergrensen for finansiering til det ikke er mer midler igjen i det avsatte budsjettet per utlysning. Prosjektene som er vurdert gode nok, men ikke finansiert, får tildelt et såkalt Seal of Excellence (SoE).

For å styrke satsingen på å få SMBer gjennom fase 1 innførte Innovasjon Norge i 2016 finansiering av prosjekter med SoE i fase 1. Norske SMBer med SoE fra denne fasen kan dermed søke Innovasjon Norge om samme sum som de ville fått fra SMB-instrumentet. Innovasjon Norges ordning dekker imidlertid ikke samme oppfølging og coaching som SMB-instrumentet.

Nøkkeltall SMB-instrumentet. Norske søkere. 2014-2018

Samlet 1 166 søknader fra 485 søkere.

Fase 1: Mulighetsstudie
786 søknader
75 finansierte prosjekter (9,5 prosent suksessrate)
405 søkere (18,5 prosent oppnådd EU-finansiering)
36 prosjekter med finansiering fra Innovasjon Norge

Søker i gjennomsnitt 1,9 ganger før de oppnår finansiering fra fase 1.

Fase 2: Fra konsept til marked
380 søknader
38 finansierte prosjekter (10,0 prosent suksessrate)
159 søkere (23,9 prosent oppnådd finansiering)

136 søknader levert etter gjennomført fase 1 med finansiering fra EU (11,8 prosent suksessrate)
32 søknader levert etter gjennomført fase 1 med finansiering fra IN (9,4 prosent suksessrate)
212 søknader levert uten å ha gjennomført fase 1 (9,0 prosent suksessrate)

Søker i gjennomsnitt 3 ganger før de oppnår finansiering fra fase 2.

Finansiering fra EU:
Om lag 590,2 millioner kroner allokert til 97 SMBer med til sammen 113 prosjekter. 34,3 millioner kroner allokert til 75 prosjekter i fase 1 og 555,9 millioner kroner til 38 prosjekter i fase 2.

Suksessraten i fase 2 blant SMBene som har gjennomført fase 1 med finansiering fra Innovasjon Norge er lavere en suksessraten for SMBene med EU-finansiering i denne fasen. Siden både prosjektene med EU-finansiering og finansiering fra Innovasjon Norge vurderes som gode nok, er det dermed grunn til å tro at coachingen som tilbys sam-

men med EU-finansieringen er svært nyttig for å forberede SMBene på fase 2.

Norske SMBer søker i gjennomsnitt nesten to ganger før de oppnår finansiering fra SMB-instrumentets fase 1 og tre ganger før de oppnår finansiering fra fase 2. De aller fleste som oppnår finansiering har prosjekter som ble vurdert som godt nok for finansiering (over karaktergrensen) allerede ved første forsøk.

Norske søkere til SMB-instrumentet

Av kjennetegnene vi har studert (næring, geografi, størrelse og alder), er det særlig alder som utmerker seg om en tilsynelatende avgjørende faktor for suksess i SMB-instrumentet; gjennomsnittlig bedriftsalder øker med beste utfall i SMB-instrumentet (høyere alder blant de som lykkes enn de som ikke lykkes). Litt over halvparten av alle norske deltakere i SMB-instrumentet er oppstartsbedrifter (under 5 år). Oppstartsbedrifter utgjør imidlertid en lavere andel av SMBene som har lykkes i SMB-instrumentet (om lag 55 prosent), sammenliknet med bedriftene med avslag (68 prosent av bedriftene med avslag er oppstartsbedrifter).

Gitt kravene som skal tilfredsstilles for å nå opp i konkurransen om EU-midlene er det ikke overraskende at bedriftsalder er avgjørende. Suksess i SMB-instrumentet krever en fremragende innovasjon med potensial til å skape helt nye eller revolusjonere eksiterende markeder, samt en klar global vekststrategi. Søknader til SMB-instrumentet evalueres på den foreslåtte teknologien, markedskunnskapen og kommersialiseringsplanen. Å kunne svare til disse kravene krever en viss modenhet. SMBenes alder gir en indikasjon på nettopp dette.

Å komme opp med en fremragende innovasjon krever trolig også at søkerne allerede har gjennomført noe forskning og/eller utviklingsarbeid. I overkant av 90 prosent av de norske SMBene som lykkes i fase 1 og/eller 2 av SMB-instrumentet har gjennomført et FoU-prosjekt med støtte fra SkatteFUNN før de søker om EU-støtte. Dette er en høyere andel enn blant SMBene som ikke oppnår EU-finansiering.

SkatteFUNN er en rettighetsbasert ordning for alle bedrifter med godjente FoU-aktiviteter. Bruken av SkatteFUNN er dermed en god indikator på hvorvidt norske bedrifter er FoU-aktive eller ikke.

Hovedbildet som tegner seg når vi ser alder, forskjeller i FoU-erfaring og forskjeller i gjennomføring av fase 1 sammen, er at suksess i fase 2 av SMB-instrumentet (hvor selve innovasjonsprosjektet gjennomføres) krever en hel del forberedelse.

Innovasjon Norges rolle i norsk deltakelse

Innovasjon Norge mobiliserer norske SMBer til SMB-instrumentet både direkte gjennom sine regionale EU-rådgivere og indirekte gjennom finansiering av EU-rådgivere i flere norske næringsklynger. De aller fleste SMBene som har lykkes med å få finansiering fra fase 2 i SMB-instrumentet har mottatt EU-rådgivning fra Innovasjon Norge. Våre data indikerer også at klyngerådgivernes bistand i søknadsprosessen øker sjansen for å lykkes i SMB-instrumentet. Intervju antyder at klyngene ikke ville vært i stand til å tilby EU-rådgivningen uten finansiering fra Innovasjon Norge.

Departementene[6] forventer at Innovasjon Norge innretter sine mobiliseringstiltak etter næringslivets behov og utviklingen i H2020 og kommende Horisont Europa, samt at Innovasjon Norge tar en fort-

[6] Nærings- og fiskeridepartementet og Kunnskapsdepartementet.

satt aktiv rolle i arbeidet med å sikre gjennomslag for norske interesser i Horisont Europa. Gjennom sin tilstedeværelse i Brussel kan Innovasjon Norge nettopp påvirke EU-kommisjonens arbeid for sikre norske interesser, i tillegg til å sikre seg relevant informasjon tidlig.

Det er vår vurdering at Innovasjon Norge har vist stor tilpasningsevne i sine rådgivningstjenester, blant annet med innføring av pitchetrening i 2018 for bedrifter som kommer videre etter første vurderingsrunde i fase 2. Den norske suksessraten i fase 2 økte markant i 2018. Etter innspill fra bedrifter som har søkt om støtte fra fase 2 i SMB-instrumentet, kan et mulig tillegg til pitchetreningen være å sette SMBene som kommer videre etter første runde i evalueringsprosessen i kontakt med bedrifter som har vært gjennom hele prosessen, inkludert pitching, før.

Uten at Innovasjon Norge skal trekkes helt i retning av konsulenter som tilbyr seg å skrive hele søknaden, kan det være verdt å vurdere å utvikle «maler» for de mer byråkratiske delene av søknaden (alle nødvendige formalia) for å forenkle søknadsprosessen for SMBene.

Norsk deltakelse i Horisont Europa

EUs rammeprogrammer for forskning og innovasjon skal være i tråd med de bredere EU-politiske prioriteringene i EUs flerårige økonomisk rammeverk. Endelige prioriteringer for det kommende rammeverket skal bestemmes av den nye EU-kommisjonen som tiltrer mot slutten av 2019. Det foreligger foreløpig kun en innledende avtale om fordelingen av EU-midler til de ulike komponentene i det økonomiske rammeverket, herunder det kommende rammeprogrammet Horisont Europa.

Uten en endelig beslutning om prioriteringer av programmene som finansieres under Horisont Europa, samt programmenes innhold, er vi ikke i stand til å gjøre detaljerte analyser av det spesifikke fokuset i det kommende rammeprogrammet. På bakgrunn av den innledende avtalen har vi imidlertid foretatt noen overordnede vurderinger.

Horisont Europa vil videreføre strukturen med tre pilarer fra H2020. Den foreløpige politiske avtalen om Horisont Europa foreslår en økonomiske ramme på 94,1 milliarder euro. Pilar 2, Globale utfordringer og europeisk konkurranseevne, forventes å utgjøre 54 prosent av budsjettet, mens Pilar 3 Et innovativt Europa er tiltenkt 14 prosent.[7]

Det kan antas at ordningene som finansieres under Pilar 2 i Horisont Europa vil være rettet mot SMBer i de samme næringene som under H2020. De nåværende politiske prioriteringene, samt budsjettindikasjoner antyder en økning i budsjettandelen til klima- og miljørelaterte temaer. På bakgrunn av de programmene norske bedrifter har vist interesse for i H2020, samt hvor de har hatt suksess, fremstår det økte fokuset på klima og miljø i det kommende Horisont Europa samlet sett som en lovende utvikling for norske SMBer.

Pilar 3 i Horisont Europa vil ha fokus på å skape et innovasjonsvennlig økosystem. Det europeiske innovasjonsrådet (EIC) er et av tre programmer i denne pilaren. EIC har to delprogrammer: Pathfinder og Accelerator. Sistnevnte er en videreføring av SMB-instrumentet, men med noen endringer. Den nåværende beskrivelsen av EIC antyder at profilen

[7] Pilar 1 Fremragende forskning er ikke relevant for denne analysen.

til aktuelle SMBer for EICs to delprogrammer kan forventes å være ganske forskjellig fra profilen til SMBene som har deltatt i det nåværende SMB-instrumentet.

EIC Pathfinder vil finansiere forskningssamarbeid rettet mot banebrytende (disruptiv) innovasjon. EIC Pathfinder bygger på H2020s program FET Open, som finansierer prosjekter for å utforske nye ideer for radikalt nye fremtidige teknologier. Mens hovedkomponenten i Pathfinder vil være et «bottom-up»-instrument, vil ordningen også brukes for å prioritere nye teknologier av strategisk karakter («top-down»-tilnærming). Under H2020 er det få norske SMBer som har søkt støtte fra FET Open. Videre var piloten for dette programmet under H2020 rettet mot områder som mikro- og nanoteknologi, AI og avansert robotikk, og få norske SMBer med suksess i SMB-instrumentet var aktive innenfor disse områdene. Vi klarer derfor ikke, på bakgrunn av tilgjengelig data, å si om norske SMBer har tilstrekkelig kompetanse eller vil være interessert i å delta i EIC Pathfinder.

EIC Accelerator er videreføringen av SMB-instrumentet. SMB-instrumentets fase 1 er imidlertid ikke lenger tilgjengelig i det nye programmet. EIC Accelerator vil også ha ulik finansiering avhengig av prosjektenes teknologimodenhet (TRL-nivå); bare tilskudd (TRL 6-8) eller tilskudd og egenkapitalinvestering (TRL over 8).[8] Profilen til de norske SMBene som har søkt støtte fra SMB-instrumentet kan gi et bilde av den potensielle målgruppen for EIC Accelerator.

Hvis Norge skulle velge ikke å delta i Horisont Europa ville tilgangen til den globale kunnskapen rammeprogrammet kan tilby aktører i det norske FoU-systemet begrenses. Dette vil videre begrense deres kapasitet til å svare på nasjonale prioriteringer og utfordringer. For norske SMBer vil dette særlig bety at de ikke kan benytte seg av muligheten til å styrke sin posisjonering i globale verdikjeder og for de svært innovative SMBene vil det innebære en mer begrenset tilgang til finansiering til risikofylte prosjekter og oppskalering.

Norsk deltakelse i COSME

Dagens Competitiveness of Enterprises and SMEs (COSME) er EUs program for å styrke SMBers konkurranseevne. Mens programmene i H2020 som retter seg mot SMBer hovedsakelig retter seg mot innovative SMBer, retter COSME seg mot «ikke-innovative» SMBer. COSME er ment å forbedre SMBers tilgang til finansiering og markeder. Norge deltar i dag ikke i COSME. Det er imidlertid tette koblinger mellom H2020 og COSME, særlig gjennom EEN. Norge deltar i dag i EEN.

Det kommende COSME-programmet (2021-2027) vil fortsette å fokusere på ikke-innovative SMBer, hvor generelle mål er (i) å fremme etableringen og bærekraftig vekst av virksomheter, særlig SMBer, og (ii) å styrke virksomhetenes konkurranseevne, styrke industriell modernisering og fremme entreprenørskap.

Vurderingen av det kommende COSME-programmet er basert på skisserte forslag og må derfor tolkes med forsiktighet. Videre diskusjoner om COSME er ifølge våre intervju satt på vent til den nye EU-kommisjonen er på plass. Intervju med representanter fra EU-kommisjonen antyder imidlertid at det ikke vil være store endringer fra det som er foreslått.

[8] TRL over 8 betyr at teknologien er kommersielt tilgjengelig og har vært i drift over tid. Formålet med prosjektet er kommersiell bruk.

Med tanke på deltakelse i EEN er den største forskjellen mellom medlemmer og ikke-medlemmer av COSME, at medlemmene har rett på refusjon på deler av støtteberettigede kostnader forbundet med tjeneste som tilbys. Full norsk deltakelse i COSME muliggjør først og fremst også delvis refusjon av kostnadene knyttet til støttetjenestene til SMBer som tilbys i programmet. Hvorvidt refusjonen vil oppveie kostnaden av deltakelse er imidlertid foreløpig ukjent.

I tillegg til de økonomiske hensynene i vurderingen av full deltakelse i COSME, bør flere faktorer vurderes. Disse er hovedsakelig relatert til endringer i støttemuligheter for SMBer i Horisont Europa. Eksempelvis er delprogrammene under EIC ment å støtte radikale innovasjoner framfor inkrementelle, som kunne få støtte under H2020s SMB-instrument. Finansiering av prosjekter som de som har fått støtte i SMB-instrumentets fase 1 er foreslått gjort tilgjengelig under det kommende COSME-programmet.

Videre er det er lagt betydelig vekt på klynger i forslaget til det kommende COSME-programmet, og muliggjør en styrking av klyngenes økosystem. På bakgrunn av antall søknader fra norske klynger om midler fra H2020 til å tilby tjenester til sine medlemmer, samt informasjon fra klyngene, er det grunn til å tro at det er stor interesse blant klyngen for norsk deltakelse i COSME.[9]

[9] Klyngene kan søke om finansiering til å tilby sine medlemmer ulike støttetjenester fra H2020s INNOSUP-program.

Contents

1 Introduction

With its ten-year strategy "Europe 2020" (EU2020), the EU aimed at creating smart, sustainable and inclusive growth to overcome the structural weaknesses in Europe's economy, improve its competitiveness and productivity and underpin a sustainable social market economy. To organise the necessary actions, the European Commission adopted seven flagship initiatives to drive progress towards the Europe 2020 goals (European Commission, 2010).

The EU's Research and Innovation (R&I) programme Horizon 2020 (H2020) is the financial instrument implementing the "Innovation Union", one of the seven flagship initiatives and aimed at securing Europe's global competitiveness. H2020 is the eighth EU framework programme funding research, technological development and innovation. With a budget of nearly €80 billion, H2020 is the largest multinational research programme in the world.

Norway has been associated with the EU framework programme for research and innovation for more than two decades. Norway participates in H2020 on the same basis as the EU member states (Norwegian Ministry of Foreign Affairs, 2017).

Another EU2020 flagship initiative, "An Industrial Policy for the Globalisation Era", emphasises the need to combine innovation, diversification and sustainability, and to encourage the creation and development of small and medium-sized enterprises (Technopolis Group, 2017). The Competitiveness of Enterprises and SMEs programme (COSME) is among the many actions that support this flagship initiative.

Norway is not participating in COSME but is member of the Enterprise Europe Network (EEN). EEN is a support network for small and medium-sized enterprises (SMEs) which is active in more than 60 countries worldwide. It is co-funded by the COSME and H2020 programmes. Consortia can apply for the opportunity to operate the network, usually in their region. A separate call applied for countries not participating in COSME ("third countries") to establish EEN Business Cooperation Centres. For third countries, there is no co-financing of the EEN through COSME.

Since 2015, EEN Norway has been hosted by Innovation Norway. With advisers in all Norwegian regions, Innovation Norway assists firms, service providers and recipients to exploit the opportunities of the EU Single Market.

Innovation Norway has been commissioned by the Ministry of Education and Research to mobilise Norwegian firms to H2020.[10] Innovation Norway's main responsibility is to mobilise SMEs for participation in the H2020 SME Instrument, Fast Track to Innovation and INNOSUP programmes as well as to cooperate with the Research Council of Norway to mobilise for collaborative projects. Through the EEN, Innovation Norway also has the formal role to follow-up Norwegian SMEs that are successful in H2020's SME Instrument, Fast Track to Innovation and FET Open as Key Account Managers (KAMs). The hours spent on tasks linked to these KAM services are co-financed by the EU under the EEN Horizon 2020 Cooperation Agreement.

In addition to the tasks linked to Horizon 2020, Innovation Norway also receives funding from the

[10] The mobilisations to H2020 is done in collaboration with the Research Council of Norway.

Ministry of Trade, Industry and Fisheries to deliver services "for the well-functioning of the EU Internal Market" and the other services delivered by the EEN in Norway that are not covered by the abovementioned EEN Horizon 2020 Cooperation Agreement.

Our analysis of the Norwegian SME participation in H2020 is limited to Innovation Norway's assignment to mobilise for the SME Instrument.

1.1 Objective of the analysis

Horizon 2020 will be followed by EU's ninth framework programme, "Horizon Europe", running from 2021 to 2027. The European Commission presented its proposal for Horizon Europe in June 2018. However, the framework programme is still subject to political negotiations and Norway is due to take a stance on participation in the upcoming framework programme.

Norway has submitted several inputs to the EU Commission's work. Further efforts must be made to obtain breakthrough for Norwegian views and priorities. The Ministry of Trade, Industry and Fisheries expects Innovation Norway to continue taking an active role in these efforts in the next framework programme (Norwegian Ministry of Trade, Industry and Fisheries, 2019).

The objective of this analysis is to gain a better understanding of what characterises the Norwegian firms that succeed in the programme under H2020 for which Innovation Norway is responsible, namely the SME Instrument. This includes assessing how and why they succeed and the role of Innovation Norway in their participation. Based on the attained knowledge of this analysis, Innovation Norway wants input on how they can focus their efforts towards relevant target groups in the coming framework programme.

Parallel with this mapping, the Ministry of Education and Research has initiated an evaluation of the impact of Norwegian participation in the seventh framework programme (FP7) and H2020. The evaluation also includes a cost-benefit assessment of Norwegian participation in Horizon Europe. This evaluation will provide information on the overall value of participation in EU's framework programmes, beyond the scope of this mapping.[11]

To assess this, we have mapped characteristics of the Norwegian applicants, including their economic development and other public support. This consists of matching lists of applicants with our accounting database and data on recipients of support schemes administrated by national funding agencies.

To assess how Innovation Norway has contributed to the success of Norwegian applicants we have interviewed a sample of firms receiving funding from the SME Instrument's Phase 2 (14 of 38) as well as firms applying but not receiving funding (11 of 64). We have further interviewed employees in Innovation Norway (in Oslo and Brussels) and EU advisors in two publicly funded clusters.

For purposes of understanding importance of the programmes in the next EU Multi-Annual Financial Framework (MFF), including Horizon Europe and COSME, to Norwegian SMEs, we have conducted an in-depth desk research and interviewed European Commission officials.

[11] The final evaluation report is due 1 February 2020.

1.2 Limits to the analysis

To assess Innovation Norway's contribution to the Norwegian participation in the SME Instrument, in addition to the mapping of potential target groups in Horizon Europe, it would have been ideal to send a survey to all Norwegian applicants to the SME instrument, as well as a sample of SMEs who have applied for funding from other programmes under H2020 (to assess their needs). Due to data protection regulations, it has not been possible to gather the necessary contact information within the scope of this project.

The focus of the interviews of successful and unsuccessful applicants has been on SMEs applying for Phase 2 of the SME Instrument, and not on a mapping of potential target groups in the coming framework programme.

Efforts have been made to reach an agreement on the budget for EU 2021-2027 and for the ninth framework programme before the European Union elections in May 2019. A final decision is expected only towards the end of 2019. This limits our assessment of the upcoming framework programme, both in terms of budgets for the different Horizon Europe programmes and their focus.

1.3 Outline of the report

Chapter 2 sets the background for the report by giving a brief historic overview of the development in support for SMEs in the EU Multi-Annual Financial Frameworks. Furthermore, it explains the framework of market and system failures sustaining the rationale of support to SMEs under the framework programme (FP) and the COSME programme before describing the current SME Instrument.[12]

Chapter 3 presents the development in the Norwegian success rate in the SME Instrument and characteristics of the Norwegian applicants to the SME Instrument, including their economic development and what other types of public funding (if any) these firms have received.

Chapter 4 focuses on firms that have received funding from Phase 2 and those that meet the criteria but have not received funding (awarded Seal of Excellence described in Chapter 2). The purpose of this part of the analysis is to assess Innovation Norway's role in the firms' participation in the SME Instrument, as well as whether and how they have helped firms with Seal of Excellence in receiving funding from national funding agencies and/or private investors.

In Chapter 5, we assess which target groups (firms) that are the most relevant for Pillar 2 and 3 in the upcoming framework programme (Horizon Europe) and what their needs are. Moreover, we assess how Innovation Norway can focus its efforts towards the identified target groups. Lastly, we give an assessment of the potential consequences for the target groups if Norway decides to not participate in Horizon Europe, and alternative compensation for non-participation.

Chapter 6 assesses the advantages and disadvantages for potential target groups in three different scenarios of Norwegian participation in the new Competitiveness of SMEs (COSME): (i) Norway continues with today's affiliation through EEN (par-

[12] For a more detailed description, we refer the readers to the EU Commission's website (link) and the Horizon 2020 SME Instrument impact report (EASME, 2018).

tially participates), (ii) Norway participates in full in the new Competitiveness of SMEs programme or (iii) Norway does not participate.

2 Support for SMEs in the EU Multi-Annual Financial Frameworks

In order to reach a proper understanding of the upcoming framework programme, Horizon Europe and the Competitiveness of SMEs programme, as well as their strategic objectives, we need to start from the Multi-Annual Financial Frameworks (MFF) and the EU overarching strategic priorities that influenced their design. We then set out to explain the rationale behind the EU policy interventions in support of SMEs, before describing the SME Instrument in more detail.

2.1 A historic overview

Throughout the MFFs, there has been a dynamic "division of labour", between the framework programmes (FP) and COSME (or EIP as it was called under the MFF 2007-2013). Lessons from one MFF is used to form the design of the next, "transferring" elements of one programme to the other (see the arrows in red in Figure 2.1). A constant element, however, was the close interconnection and complementarity between the two programmes.

In the MFF 2007-2013, one of the key objectives of the Framework Programme (FP7) was to make a substantial contribution to Europe's knowledge economy and the competitiveness of the European business sector. Compared to FP6, FP7 had a sharper focus on research excellence and a move towards more fundamental research, away from industrial applications and innovation more generally. This was reflected in the parallel expansion of the EU Competitiveness and Innovation Framework Programme (CIP) with the Entrepreneurship and Innovation Programme (EIP), which was run by DG Enterprise and Industry as one of the three "pillars".

The objective of the EIP was to support entrepreneurship and innovation, and to promote the development and growth of SMEs across the EU. The key objectives of the programme were to facilitate access to finance, create an environment favourable to SME cooperation, and promote all forms of innovation and a culture of entrepreneurship and innovation. Norway participated in both FP7 and CIP.

In its original conception, FP7 had no SME-specific measures, but was expected to work with SMEs primarily through the mainstream Cooperation Programme. The SME expenditure target of 15 per cent (up from a 10 per cent indicative target for "participations" in FP6) was deemed sufficient to ensure the necessary engagement. Upon pressure of the European Parliament, however, a dedicated instrument for SMEs was retained, i.e. the Research for the benefit of SMEs schemes (RSME) within the Capacities Programme. The aim of this instrument was to strengthen the innovative capacity of low and medium tech SMEs, through support for the outsourcing of R&D (Research for SMEs) and tackling more generic challenges (Research for SME associations).

The global financial crisis of 2007-2008 radically changed the political agenda and Europe's strategic priorities. The EU responded to the crisis in 2010 by adopting the Europe 2020 Strategy for smart, sustainable and inclusive growth, which influenced the objectives of FP7 and the focus of the projects it funded drastically. In the last years of FP7, the focus shifted from research excellence to technological innovation; research and innovation (R&I) was intended "to stimulate growth and productivity".

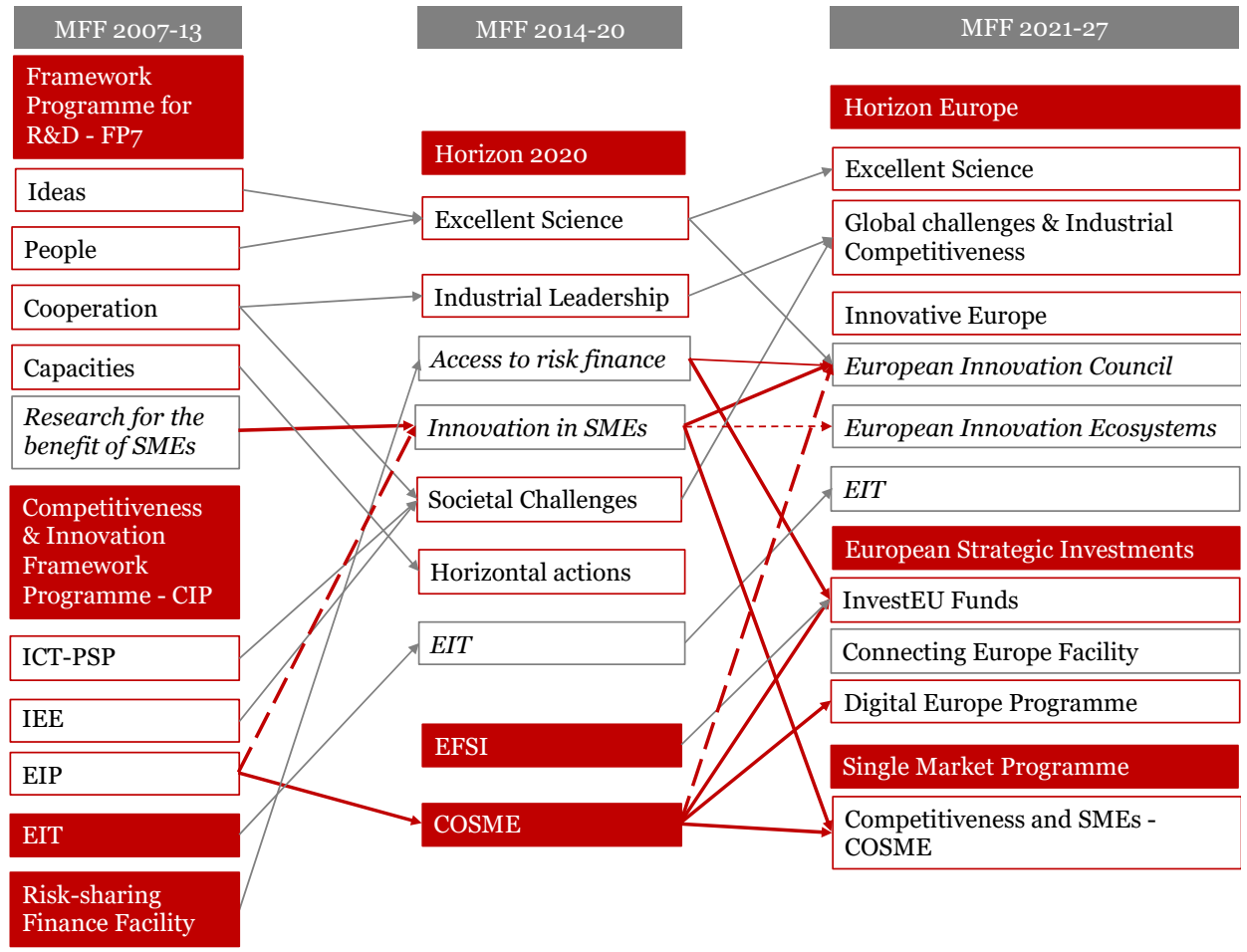
The MFF 2014-2020 was firmly set out to address the priorities set out in the Europe 2020 Strategy. The new FP, Horizon 2020 (H2020), marked a fundamental change in European policy-making due to its comprehensive approach to research and innovation (R&I). It took a systemic approach, integrating research and innovation into wider policy and society while offering a complete set of R&I funding programmes, stretching from basic research to innovation and commercialisation, and including both

supply- and demand-side instruments. Demand-side instruments were introduced and/or strengthened, including the Access to Risk Finance and Fast Track to Innovation (FTI) programmes.

Following the introduction of the European "ten policy priorities", better known as the Juncker Plan in 2014, these demand-side initiatives were expanded further by the means of the EFSI instruments.

One of the demand-side instruments introduced under H2020 was the SME Instrument, as a part of the Innovation in SMEs programme under the Industrial Leadership pillar, and an extension of the FP7 Research for the benefit of SMEs programme. The design of the SME Instrument was fully focused on the close-to-market objectives of H2020. The SME Instrument was introduced with the specific objectives to help fill the gap in funding for early stage high-risk research and innovation, to stimulate breakthrough innovations, and to increase private-sector commercialisation of research results. The SME Instrument therefore explicitly targets innovation projects that have reached TRL6[13] as a *minimum*, complement-

Figure 2.1 Support to SMEs in the Multi-Annual Framework Programmes



Source: Technopolis Group

[13] TRL refers to a type of measurement system assessing the technology readiness levels, ranging from TRL1 (basic principles observed) to TRL9 (actual system proven in operational environment).

ing the collaborative research instruments (Research and Innovation Actions and Innovation Actions) where research is conducted up to a *maximum* of TRL6.[14,15]

Reflecting the systemic approach to R&I under H2020, two of the three programmes of the Competitiveness and Innovation Framework Programme (CIP) were integrated into the Framework Programme in order to support and foster the valorisation of research results into new products, processes and services.[16] The exception was the EIP which was continued as the Competitiveness of Enterprises and Small and Medium-sized Enterprises programme (COSME). The "division of labour" between H2020 and the COSME programme means that while the focus of the former would predominantly be on innovative SMEs, the latter would target non-innovative SMEs. In addition, COSME was focused on "soft", non-technological innovation, aimed at enhancing competitiveness by focusing on framework conditions, entrepreneurship, access to finance and/or markets.

Nevertheless, close links exist between H2020 and COSME, specifically using the Enterprise Europe Network (EEN) and the European cluster organisations as "gateways" to channel funds to SMEs in H2020 and directly or indirectly support them. Both the EEN and the clusters were funded under the EIP and are still funded under the COSME programme.

The EEN network[17] provides key account management (KAM) services[18] to the beneficiaries of the SME Instrument programme. EEN members were one of the major groups of beneficiaries of the INNOSUP actions under the H2020 Innovation in SMEs programme.

The role of the Key Account Manager (KAM) is to ensure that each beneficiary of the SME Instrument receives the most appropriate support and services. The KAM helps beneficiaries with identifying the challenges they face, the coaching needs and in the selection of the most relevant coaches. Overall, the KAM ensures that the beneficiaries are supported in optimising the exploitation of their innovation projects.

INNOSUP aimed at helping intermediaries improve their skills in the field of, amongst others, open innovation, IPR, cross-sectoral industrial value chains, industry-PRO collaborations through effective innovation voucher systems, cluster management, and venture capital and risk finance. For the EEN members, the key action was the "Community building and competence development for SME Instrument coaching" action; for the clusters, the "Cluster-facilitated projects for new value chains" action constituted an opportunity to obtain H2020 funding for the creation of cross-value chain collaborations (e.g. agro-food and packaging), involving their SME members.

The key objectives of the upcoming MFF 2021-2027 are to simplify the financing structures and to reform the programmes in order to forge a stronger link with the political priorities of the European Union. Challenges such as climate change, new security threats, unemployment, and the need to build "a

[14] H2020 Work Programme 2016-2017, General Annexes.
[15] The SME Instrument is described in detail in Section 0.
[16] Commission Staff Working Papers, Impact Assessment accompanying the Communication from the Commission 'Horizon 2020 - The Framework Programme for Research and Innovation', SEC(2011) 1427 final

[17] The EEN is described in more detail in Section 0 and 6.3.1.
[18] For more information, please refer to: https://ec.europa.eu/easme/en/news/role-enterprise-europe-network-sme-instruments-coaching-process.

prosperous, secure and cohesive Europe" are at the core of the design.

The drive towards an improved EU investments structure has led to the creation of three framework programmes related to R&I in the MFF 2021-2027: the FP for R&I Horizon Europe; the FP European Strategic Investments; and the Single Market Programme.

The ninth FP, Horizon Europe, is rooted in the policy priorities emerging in the latest phases of H2020, i.e. the concepts of Open Innovation, Open Science and Open to the World. Under Horizon Europe, Pillar 3 "Innovative Europe" aims at creating an innovation friendly eco-system to reap the benefits from Europe's strong science and research.

The European Innovation Council (EIC), one of the three programmes in the Innovative Europe pillar, aims primarily at supporting top-class innovators as well as start-ups with radically different ideas. The underlying concept is that the scaling up and diffusion of innovation is a failure that needs to be addressed.[19] In addition, Europe should become better at generating disruptive and breakthrough technologies.[20] The SME Instrument is therefore substituted and expanded to encompassing a broader range of activities at various stages of TRL; Phase 1 (see Section 2.3.1) will be discontinued. The tailored support to SMEs provided through the EEN is expected to continue also under the EIC, while there will no longer be a separate INNOSUP programme. The COSME programme may take charge of these SME support actions.[21]

The 2021-2027 COSME programme will continue to focus its support on "non-innovative" SMEs. A new key programme, the Scaling-up instrument, is proposed to support scaling-up activities of SMEs across regional, sectoral and technological boundaries in order to help them embrace industrial transformations, access global industrial value chains and international markets, and engage in strategic interregional collaboration. Significant attention is dedicated to the Cluster Partnerships in the proposed 2021-2027 COSME programme. In the context of a specific programme dedicated to supporting SME development and internationalisation, the Cluster Partnerships are expected to act as intermediaries for the SMEs and use a standardised implementation tool (similar to the SME Instrument Phase 1) to channel lump sums to third-party SMEs. The second flagship in the 2021-2027 COSME programme is the EEN which will continue its support services.

A major change to the COSME programme, compared to the previous funding period, is the InvestEU Funds programme in the European Strategic Investments FP. This will aggregate all financial support programmes, including the SME loan guarantee facility that was a part of COSME. In addition, the Digital Europe Programme will presumably incorporate activities aimed at the digitalisation of industry that previously were funded under the COSME programme.

[19] See for instance European Commission, A renewed European Agenda for Research and Innovation -Europe's chance to shape its future, COM92018) 306 final, 15.5.2018.

[20] Independent High-Level Group, (2017), *Lab, Fab, App*; Maximising the impact of EU research and innovation programmes, Chaired by Pascal Lamy.

[21] COSME discussions are, according to our interviews, on hold until the incoming European Commission.

2.2 Rationale for supporting R&I

Both in order to understand the policy priorities for the funding of innovation in the EU programmes and to reach an understanding of how Innovation Norway could or should support SMEs, it is useful to classify policy instruments and activities, using some fundamental ideas about the purpose and functioning of different kinds of research and innovation instruments. The classification set out below will form the framework for our analyses throughout this study.

The state intervenes in research and innovation essentially to correct imperfections or failures in the way the research and innovation system works. Thinking about these failures has developed over time, through three "generations" (see Table 2.1). In the first generation, intervention in research was justified by the idea of market failure (Nelson, 1959; Arrow, 1962). That is, since it is hard for capitalists to generate and monopolise knowledge (especially more basic science) in order to make a profit out of it, they will invest less in research than what is optimal from a social perspective. This justifies public intervention to correct the market by funding research; the spill-overs from the research to the rest of society (or the social returns) justifies the public investment.

The second generation recognises that if innovation systems are interconnected but imperfect, then there is a need for the society to invest in combated system failures in order to improve the system. Discussion of "failures" in relation to the third generation has only just begun. Those identified so far in the third generation, the transitional system failures, are essentially government failures and relate to issues in the directionality of the R&I policy, policy coordination and reflexivity capabilities. These are more hypothetical than the ones of the two first governance generations and will undoubtedly be developed further.

Each of the three generations of intervention thus aims to rectify different failures in the research and innovation system, starting with the market failure of socially sub-optimal private investment in research, going on to failures within the way our research and innovation systems work, and culminating in the need to find ways to reach beyond market forces and intervene to address the societal issues and challenges. Current policy needs to tackle all three types of failures.

Research and innovation policy instruments have correspondingly evolved through the three governance generations, from simple grant funding for individual researchers, through bilateral research-industry collaborations, to increasingly large-scale and complicated funding programmes involving many actors at once. At its extreme, large and complex programmes aim to address major systemic shifts in national competitiveness and tackle socio-technical transitions.

Most research and innovation funding instruments focus on the supply side, subsidising the generation of research and innovation outputs (from knowledge to products) in the hope that these will find market success and support development and growth. A smaller number of instruments work on the demand side offering incentives to produce new knowledge that can satisfy identified needs. Others attempt to connect demand and supply together so that problems are identified and solved within a partnership or network. It has been increasingly recognised in mainstream discussions of innovation and economic performance that a systemic perspective is needed on research and innovation policy if it is to be effective.

Table 2.1 provides some examples of the types of instruments and activities that correspond to the two types of failures that are most relevant in this study, i.e. the market and system failures.

Table 2.1 Categorisation of Market and System Failures and associated correction measures

Failure	Main characteristics	Correction measures
Market failures		
Information asymmetry	Economic agents interacting within a market are not well informed; or information is not equally distributed among participants	▪ Promoting financing facilities by means of soft credits, grants, etc. ▪ Information programmes ▪ Public investment to reduce uncertainty
Externalities	Enterprises are involved in transactions where they cannot achieve the expected profits	▪ Measures which favour innovation performance and dissemination ▪ Innovation management training & specific IP support ▪ Facilitating allocation of knowledge and diffusion
Market power	Lack of adequate competition in markets	▪ Supporting the formation and start-ups of new innovative SMEs ▪ Access to seed-capital funds for SMEs ▪ Removing market barriers
System failures		
Capability	Lack of appropriate competencies and resources prevent the access to new knowledge, and lead to an inability to adapt to changing circumstances, to open novel opportunities, and to switch from an old to a new technological trajectory.	▪ Skill awareness programmes ▪ Measures launched to fulfil specific requirements for innovation ▪ Promotion of ICT use ▪ Business incubation
Network	The flow of information and cooperation between different actors in the innovation system is sub-optimal	▪ Specific cluster policies ▪ Facilitation of knowledge transfer ▪ Schemes aiming at adapting the public-science outcomes to commercial needs
Institutional	Effective innovation depends also on favourable regulatory frameworks, health and safety rules, as well as on sophisticated consumer demand	▪ Ensuring an efficient and transparent financial market ▪ Technology venture capital programmes ▪ Fiscal incentives for innovation activities
Infrastructural	Difficulty to provide innovative firms with the necessary human resources and knowledge base	▪ Innovation management training & IP support ▪ Science and technology parks ▪ Mobility programmes

Source: EC (2009) Pro Inno Europe paper nr. 13; Modified from Weber and Rohracher (2012)

2.3 The SME Instrument under H2020[22]

The SME Instrument addresses SMEs[23] with radical new ideas underpinned by a business plan for creating marketable innovation solutions and with an ambition to scale up. It supports high-risk, high-potential SMEs in developing and bringing new products, services and business models that could drive economic growth to the market. The main objective of the SME Instrument is to support growth of innovative firms in Europe. It provides funding where private investors consider the risk to be too high (European Commission, 2019; EASME, 2018).

The SME Instrument has three phases, including a coaching and mentoring service. It offers business innovation grants for feasibility assessment purposes (optional Phase 1), business innovation grants for innovation development and demonstration purposes (possible Phase 2), free-of-charge business coaching (optional) and access to a wide range of other business acceleration services and facilitated access to risk finance (Phase 3).

Business coaching is offered in parallel with the financial support. This aims to help the firms enhance their innovation capacity, align the project to the identified business development strategy, develop the commercial/economic impact and long-term sustainability and improving the ability to attract additional investments. The services offered are customised by the appointed Key Account Managers (KAMs) and coaches to best fit the needs of the beneficiaries. It is the Enterprise Europe Network (EEN) that appoints the KAMs. The KAMs are responsible for suggesting suitable business coaches (see Section 2.1).

Firms are recommended to apply for Phase 1 first, but may also apply directly for Phase 2, depending on the maturity of their project (European Commission, 2019).

2.3.1 Phase 1: Feasibility assessment

Phase 1 funds exploration and assessment of the technical feasibility and commercial potential of a breakthrough innovation that the firm wants to exploit and commercialise. Risk assessment, design or market studies and intellectual property exploration are typical activities funded in this phase.

Proposals to Phase 1 are evaluated remotely and scored by at least four experts with different profiles (e.g. expertise in for example technology, a specific industry sector, business and finance). Proposals are evaluated based on excellence (e.g. innovation potential), impact (e.g. meets a pressing need on European and global markets) and implementation (e.g. realistic timeframe and the team's competence).

Proposals are ranked in descending order and the best proposals are funded until the available budget is exhausted. This means that there may be proposals with a score above the threshold for funding not receiving funding due to budget constraints.[24]

[22] The description of the three phases is mainly based on the European Commission's current description of the SME Instrument available here.
[23] Enterprises with fewer than 250 employees and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million (European Comission, 2003).
[24] For Phase 1 the threshold for individual criteria (excellence, impact and implementation) is 4. If the proposal fails to achieve the threshold for a criterion, the evaluation is stopped. The overall threshold, applying to the sum of the three individual scores, is 13 (https://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/sme_en.htm). More information on the evaluation process is available here.

Approved projects receive a lump sum of €50,000 and typically last around six months. In addition to the financial support the firms are offered up to three days of free business coaching.

Proposals scoring above the threshold for funding but not funded due to budget limitations are awarded a so-called Seal of Excellence. The Seal of Excellence recognises the quality of the proposal and is thought to help other funding agencies to take advantage of the Horizon 2020 evaluation process.

In 2016 Innovation Norway launched a national scheme for Norwegian applicants awarded Seal of Excellence in Phase 1. That is, Innovation Norway offers similar funding as in Phase 1 of the SME Instrument; €50,000 (Innovation Norway, 2018). Coaching is not included in Innovation Norway's funding.

Phase 1 (either funded by the EU or Innovation Norway) should result in a feasibility study (technical and commercial), including an expanded (credible) business plan. If the feasibility study concludes that the innovative concept has potential to be developed to the level of investment readiness/market maturity, but requires additional funding for commercialisation, the firm may apply for support from Phase 2.

2.3.2 Phase 2: From concept to market

Phase 2 helps firms develop their business concepts further into a market-ready product, service or process. This phase includes activities such as demonstrations, testing, development of prototypes, piloting, upscaling and market adaptions.

As of 2018, proposals to Phase 2 are evaluated in two steps.[25] First, proposals are evaluated remotely as in the evaluation of proposals to Phase 1. Second, a selection of firms that pass the initial evaluation will be invited to pitch their projects in front of a panel of jury experts. Around twice as many projects as it is possible to fund within the given budget is invited to pitch, e.g. around half of the attending projects are selected for funding in Phase 2.

This second step is intended to complement the paper-based assessment in order to take full account of the personal qualities and motivations of the applicants. The panel of jury experts consists of business angels, entrepreneurs, venture capitalists and other experts from innovation hubs and accelerators.[26]

Projects in Phase 2 typically receive between €0.5 and €2.5 million (covering up to 70 per cent of eligible costs). Following the cut-off date (application deadline) in June 2019, support in form of blended finance (combining grants and equity) will be provided in Phase 2. Projects funded in Phase 2 typically have a duration of one to two years.

Beneficiaries of financial support in Phase 2 are offered up to 12 days of free business coaching.

As for Phase 1, applicants meeting the threshold, but not receiving funding from the EU in Phase 2, are awarded the Seal of Excellence. However, unlike Phase 1, there is no national scheme that offers

[25] The two-step evaluation approach was introduced in late 2017 and first applied in 2018. Proposals submitted before 2018 were evaluated as proposals to Phase 1.

[26] As of April 2019, 5 of 108 jury experts are Norwegian.

similar funding as the EU for projects with Seal of Excellence in Phase 2.

Expected outcomes from Phase 2 is a greatly innovative product, process or service that is market-ready and/or a business innovation plan incorporating a detailed commercialisation strategy and a financing plan for launching the product on the market.

2.3.3 Phase 3: Business acceleration

To facilitate the commercial exploitation of the innovation activities resulting from Phase 1 and/or Phase 2, the SME Instrument offers business acceleration services. These services include support for further developing investment readiness, linking with private investors and customers through brokerage activities and events (incl. trade fairs), assistance in applying for further EU risk finance etc.

The business acceleration services are offered via the Enterprise Europe Network (EEN).

3 Norwegian participation in the H2020 SME Instrument

Success in the SME Instrument requires a breakthrough innovation with the potential to create entirely new markets or revolutionise existing ones, and a clear global growth strategy. Applications to the SME Instrument are evaluated on the proposed technology, market knowledge, commercialisation plan and financial angle. Applicants need to be convincing on each of these aspects.[27]

Innovation Norway has commissioned an assessment of which SMEs that are most relevant for the future framework programme Horizon Europe, including required competences to succeed and potential relevant support measures (see Chapter 5). Identifying firm characteristics of successful Norwegian SMEs before assessing their applications (ex-ante) is challenging. Whether they succeed and why is not clear until after the assessment of their applications (ex-post). However, some knowledge of the types of SMEs most likely to succeed can be deducted from characteristics of those who have succeeded.

Further, what support measures that may contribute to success in future programmes can be assessed by studying changes in the Norwegian success rate against changes in current support measures.

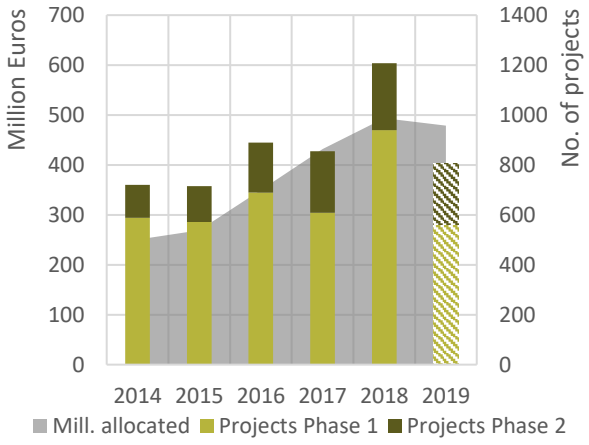
This chapter presents the Norwegian success rate in the SME Instrument in the period 2014-2018 and characteristics of Norwegian applicants, including use of national support measures. Changes in Innovation Norway's support measures, and how this coincides with changes in the success rate is discussed in more detail in Chapter 4.

3.1 Norwegian success rate

From a total budget of around €3 billion over the period 2014-2020, the SME Instrument has allocated €2.3 billion to 5,193 projects and 5,041 participants so far (by October 2019).[28] Phase 1 projects account for almost 80 per cent of all funded projects, whereas around 90 per cent of the funding is allocated to Phase 2 projects.[29]

The SME Instrument's budget has been constantly increasing throughout the programme period (EASME, 2018). With increasing budgets, the number of projects in both phases has increased (see Figure 3.1). While approved Phase 1 projects receive a lump sum of €50,000, the size of the Phase 2 projects has increased over time. Projects in Phase 2 have received on average €1.7 million per project.

Figure 3.1 Allocated funding and no. of funded projects by call year. SME Instrument. 2014-2019[1]



1) Number of funded projects in 2019 is based on five calls (incl. June 2019).
Source: EIC Accelerator data hub

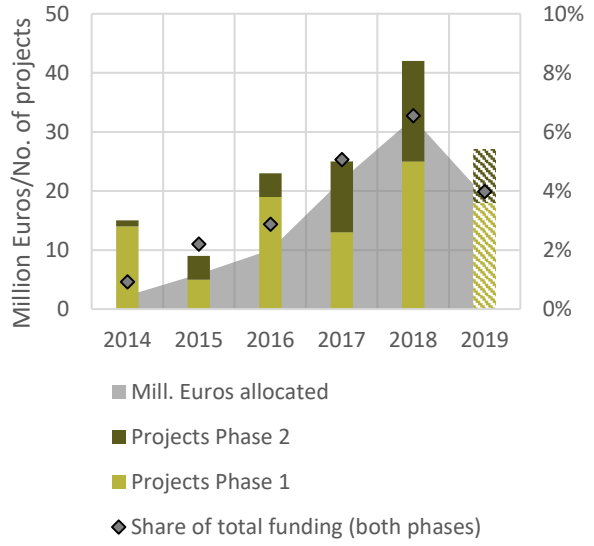
[27] https://ec.europa.eu/easme/en/eic-accelerator-sme-instrument/eic-accelerator-sme-instrument-essential-tips-your-application
[28] EIC Accelerator data hub.
[29] All Phase 1 projects receive €50,000. Projects in Phase 2 receive between €0.5 and €2.5 million (see Section 2.3.1 and 2.3.2).

Table 3.1 Norwegian applications to the SME Instrument by phase and status. 2014-2018

	Status	Application year					
		2014	2015	2016	2017	2018	Total
Phase 1	Funded	14	5	19	12	25	75
	Funded by IN		2	7	14	10	33
	Not funded	4	10		11	28	53
	Rejected	64	65	165	171	160	625
	Total	82	82	191	208	223	786
Phase 2	Funded	1	4	4	12	17	38
	Not funded	2	19	34	68	67	190
	Rejected	14	19	21	47	51	152
	Total	17	42	59	127	135	380
Grand total		99	124	250	335	358	1,166

Notes: Only eligible applications are included. Not funded projects are projects scored above the threshold for funding but not funded due to budget limitations.
Source: eCorda

Figure 3.2 Allocated funding to and no. of funded Norwegian projects by call year. 2014-2019[1]



1) Number of funded projects in 2019 is based on five calls (incl. June 2019).
Source: EIC Accelerator data hub

The SME Instrument is highly competitive. The overall success rate[30] is 8.0 per cent for Phase 1 and 4.8 per cent for Phase 2 (EASME, 2018).

Compared to the overall success rate (all countries), Norwegian SMEs have had great success in the SME Instrument. Since the introduction of the SME Instrument in 2014, Norwegian firms have in total submitted 1,166 applications to Phase 1 and 2 (see Table 3.1). The success rate among Norwegian applicants in the period 2014-2018 is 9.5 per cent for Phase 1 and 10.0 per cent for Phase 2, the latter being significantly higher than the average (all countries).

Norwegian applicants account for 4 per cent of total allocated funding in the SME Instrument. Norway's share of the total funding has increased from 0.9 per cent in 2014 to 6.5 per cent in 2018 (see Figure 3.2). This is mainly due to a significant increase in the share of funded Phase 2 projects. In 2014, one Norwegian project was funded in Phase 2, corresponding to 0.8 per cent of the number of funded Phase 2 projects. In 2018, 17 Norwegian projects were funded in Phase 2, accounting for 6.7 per cent of all funded projects in Phase 2.

3.1.1 Phase 1 – Phase 2 cycle[31]

Innovation Norway has the main responsibility for mobilising Norwegian SMEs to the SME Instrument. In the early stage of the H2020 programme period Innovation Norway focused on encouraging firms to apply for Phase 1 funding, expecting that this would increase the possibility for funding from Phase 2. Innovation Norway's funding of projects awarded Seal

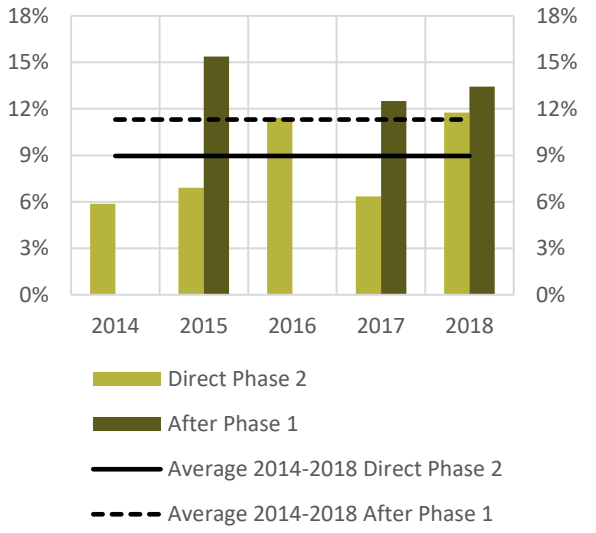
[30] Funded projects as share of all applications.

[31] This and the next section are inspired by similar sections in the H2020 SME Instrument impact report from 2018. For comparison with figures for the overall SME Instrument portfolio, we refer the reader to this report.

of Excellence (SoE) in Phase 1 (see Section 2.3.1) is in line with this strategy.

Almost half of the applicants awarded SoE in Phase 1 have applied for, and received, national funding from Innovation Norway to carry out the project. Firms that complete Phase 1 is more likely to succeed in Phase 2, compared to those who apply directly for Phase 2 (see Figure 3.3). Given the higher success rate in Phase 2 after completing Phase 1, the focus on Phase 1 at the beginning of the programme period and national funding of projects awarded SoE seems well founded.

Figure 3.3 Success rate in Phase 2, by application year. Direct application to Phase 2 versus after Phase 1. Norwegian applicants. 2014-2018



Notes: "After Phase 1" include applicants that have completed the Phase 1 project with funding from Innovation Norway. Of the four projects with funding from Phase 2 in 2016, none have completed a Phase 1 project (neither with funding from the EU or IN). Completing Phase 1 before applying for Phase 2 in 2014 was not feasible.
Sources: eCorda and Innovation Norway

Innovation Norway's funding of Phase 1 projects (those not receiving funding from the EU) does not cover parallel business coaching etc. As the EU funding includes more support, it is likely preferred to Innovation Norway's funding. In addition to gaining experience from the application process in Phase 1, the coaching included in the EU funding helps the SMEs develop their business plan to sharpen their commercial focus of their innovation and improve their market readiness (EASME, 2018). It seems that the likelihood of succeeding in Phase 2 is higher when completing Phase 1 with funding from the EU rather than with funding from Innovation Norway.

A little over half (19 of 36) of the SMEs completing Phase 1 with funding from Innovation Norway have not yet applied for Phase 2, at least not within 2018 (last year in our data). Thus, SoE ("not funded") in Phase 1 is so far their best outcome in the SME Instrument and their outcome in Phase 2 is still not known.[32]

The 19 SMEs completing Phase 1 with funding from Innovation Norway account for 43 per cent of all SMEs with SoE as their best outcome in the SME Instrument (see Table 3.2). The lack of SMEs applying for funding from Innovation Norway may indicate that the EU funding is preferred to Innovation Norway's funding, i.e. they rather keep reapplying for EU funding. It is worth noting that 18 of the 25 remaining SMEs with SoE in Phase 1 as their best outcome applied to Phase 1 in 2018 and we do not know whether they have applied for funding from Innovation Norway in 2019.

[32] According to the EIC Accelerator data hub 9 Norwegian projects are funded in Phase 2 so far in 2019 (by October). None of these SMEs have completed Phase 1 with funding from Innovation Norway.

Table 3.2 Applicants' path to Phase 2. Number of applicants (SMEs) per scheme and share of total (in parenthesis). Total for 2014-2018

		Best outcome SME Instrument			
Phase	Funding	Funded	Not funded	Rejected	Total
Phase 1	IN	Irrelevant	19	Ineligible	19
	1092 - SoE[1]		(43.2 %)		(5.8 %)
	Total	31	44	251	326
Phase 2	H2020	16	21	7	44
	Phase 1	(42.1 %)	(32.8 %)	(12.3 %)	(27.7 %)
	IN	3	10	4	17
	1092 - SoE[1]	(7.9 %)	(15.6 %)	(7.0 %)	(10.7 %)
	Direct	19	33	46	98
	Phase 2[2]	(50.0 %)	(51.6 %)	(80.7 %)	(61.6 %)
	Total	38	64	57	159

1) Innovation Norway funds Phase 1 projects through their scheme 1092 - Seal of Excellence. This scheme is not relevant for applicants receiving EU funding. Firms with rejection from the EU (H2020) are not eligible for funding from this scheme.
2) Includes SMEs that have applied for Phase 1 but never received funding (neither from the EU nor IN).
Sources: eCorda, Innovation Norway and SØA

Innovation Norway introduced their funding of Phase 1 projects in 2016, i.e. two years after the first year of H2020's SME Instrument. Thus, comparing the number of SMEs succeeding in Phase 2 after completing Phase 1 with funding from Innovation Norway with SMEs with funding from the EU is not a "fair" comparison. However, while the success rate among those who have completed Phase 1 with funding from the EU is higher than for those who apply directly for Phase 2, this is not the case for those who have completed Phase 1 with funding from Innovation Norway.

Further, the share of SMEs completing Phase 1 with funding from the EU is highest among the SMEs succeeding in Phase 2 and lowest among the SMEs with rejection in Phase 2 as their "best" outcome. The share of SMEs completing Phase 1 with funding from Innovation Norway is highest among those with SoE in Phase 2 as their best outcome in the SME Instrument (see Table 3.2).

Out of the 17 SMEs that have applied for funding from Phase 2 after completing Phase 1 with funding from Innovation Norway, three have succeeded in Phase 2, i.e. a little under 20 per cent. Nearly 60 per cent of these SMEs have SoE in Phase 2 as their best outcome in the SME Instrument, whereas the remaining (4 SMEs) have rejection in Phase 2 as their "best" outcome.

It is worth noting that Norwegian SMEs are relatively successful in Phase 2, regardless of Phase 1 completion. The success rate of Norwegian SMEs applying directly for Phase 2 is almost twice as high as the overall (all countries) success rate for direct applications to Phase 2.[33] Further, most Norwegian applications to Phase 2 score above the threshold for funding from the EU.

Though most Norwegian projects, at least in Phase 2, meet the evaluation criteria and score above the threshold for funding, they do not always receive funding at the first attempt. EASME's SME Instrument impact report show that the success rate is higher among resubmitted applications than first submissions, as applicants learn from the process and can improve their applications based on feedback received on their previous applications.

3.1.2 Newcomers to the programme

The SME Instrument allows firms to resubmit their applications for funding. The resubmitted applica-

[33] Of the total 11,089 applications that have been submitted directly to Phase 2, 4.1 per cent are funded (EASME, 2018).

tions are evaluated by a different panel of evaluators to ensure impartial assessment. The success rate of the resubmissions is higher than first submissions, likely because applicants learn from the process and can improve their applications. However, most firms failing the second resubmission (third attempt) stop applying (EASME, 2018).

Norwegian SMEs apply on average 1.9 times before they succeed to receive funding from Phase 1 and three times before success in Phase 2. Since 2015, there has been four cuts (deadlines) each year for both phases in the SME Instrument. Thus, most attempts at succeeding in the SME Instrument is within a year from the first application.

With the average number of attempts it takes to succeed receiving funding from the SME Instrument, in addition to several firms applying for funding from both Phase 1 and 2, the number of applicants is significantly lower than the number of applications. The rest of this chapter focuses on what characterises the applicants.

3.2 Profile on Norwegian applicants

The 1,166 Norwegian applications submitted to the SME Instrument's two phases in the period 2014-2018 were submitted by 485 firms. As shown above (see Figure 3.2), Norway has increased its share of funded projects throughout the programme period. The number of Norwegian SMEs applying for funding from Phase 1 is more than doubled in the period 2014-2018 and more than four times as many SMEs applied to Phase 2 in 2018, compared to 2014 (see Table 3.3).

The share of applicants eventually succeeding (as share of all applicants) is significantly higher than the share of applications with funding each year (comparing Table 3.1 and Table 3.3). Almost 19 per cent of the SMEs applying for funding from Phase 1 have succeeded, whereas nearly 24 per cent have succeeded in Phase 2.

Table 3.3 Norwegian applicants to the SME Instrument by phase and status. 2014-2018

		Application year					
	Status	2014	2015	2016	2017	2018	Total
Phase 1	Funded	14	5	19	12	25	75
	Funded by IN		2	7	14	10	33
	Not funded (SoE)	4	8		7	25	41
	Rejected	50	57	102	109	112	334
	Total	61	63	121	131	143	405
Phase 2	Funded	1	4	4	12	17	38
	Not funded	2	12	21	38	41	86
	Rejected	14	17	19	38	41	108
	Total	17	29	34	73	74	159
Grand total		76	90	154	201	213	485

Notes: Rows and columns does not necessarily equal the totals (firms apply several times and to both phases). Not funded projects are projects scored above the threshold for funding but not funded due to budget limitations.
Source: eCorda

Though projects may score above the threshold for funding (receive SoE) after several attempts, the project may never obtain funding from the EU. Data on Norwegian applicants indicate that most of the applicants who succeed have in common that their application qualify for funding the first time they apply. That is, the majority of those who succeed, both in Phase 1 and 2, receive either funding on their first attempt or Seal of Excellence.

3.2.1 Programme distribution

Prior to the introduction of the EIC pilot in 2018, calls for proposals in the SME Instrument were linked to programmes under Pillar 2 and 3 in Horizon 2020 (H2020). Pillar 2, Industrial Leadership, supports key technologies, such as microelectronics, advanced manufacturing, etc. across existing and emerging sectors. It also aims at attracting more private investment into R&I and supporting the increase of innovative SMEs in Europe. Pillar 3, Soci-

etal Challenges, supports R&I that target society and citizens (climate, environment, energy, transport, etc.). It supports the development of breakthrough solutions coming from multi-disciplinary collaborations, which include social sciences and humanities.[34]

With the introduction of the EIC pilot, the SME Instrument became a complete bottom-up scheme. Thus, from 2018, applications are no longer submitted under a specific thematic programme. In the years prior to this change the SME Instrument was organised according to 13 predefined topics (EASME, 2018).

Before 2018, the ICT programme, under the pillar Industrial Leadership, was by far the programme with the most Norwegian applicants, followed by the Food programme (marine and maritime research etc.) under Societal Challenges (see Table 3.4). The latter is the programme with the highest share of Norwegian applicants succeeding in receiving funding from Phase 1, with projects mainly related to aquaculture and marine research.

Nearly 40 per cent of the applicants to the Food programme are firms within technical consultancy activities This does not necessarily explain the relatively high share of funded applicants, as the same

Table 3.4 Norwegian applicants, by programme, phase and application status. Total for 2014-2018[1]

		Phase 1					Phase 2				
Pillar	Programme	Funded	Not funded	Rejected	Total	Share funded	Funded	No funded	Rejected	Total	Share funded
Industrial Leadership	INNOSUPSME[1]	25	35	112	143	17.5 %	17	41	41	74	23.0 %
	BIOTECH	1	2	10	13	7.7 %	1	2	2	4	25.0 %
	ICT	15	10	73	90	16.7 %	4	15	19	29	13.8 %
	NMP[2]	3	4	20	23	13.0 %	3	3	5	8	37.5 %
	Total	44	51	205	257	17.1 %	25	55	65	107	23.4 %
Societal Challenges	ENERGY	6	6	29	35	17.1 %	3	8	12	16	18.8 %
	ENV[3]		4	23	24			1	5	6	
	FOOD[4]	11	7	30	38	29.0 %	4	10	12	21	19.1 %
	HEALTH	5	6	29	35	14.3 %	1	11	13	20	5.0 %
	SECURITY	4	1	19	21	19.1 %	1	3	2	4	25.0 %
	SOCIETY		1	11	12			1	1	2	
	TPT[5]	5		26	29	17.2 %	4	8	7	13	30.8 %
	Total	31	25	161	187	16.6 %	13	41	51	80	16.3 %
Total		75	74	334	405	18.5 %	38	86	108	159	23.9 %

Note: Rows and columns does not necessarily sum up to equal the totals (firms may apply to different programmes and achieve different statuses). Not funded projects are projects scored above the threshold for funding but not funded due to budget limitations. No Norwegian application have been scored above the threshold for funding in the SPACE programme.

1) From 2018 (introduction of the EIC pilot) all applications are pooled in INNOSUPSME.

2) Nanotechnologies, Advanced Materials and Advanced Manufacturing and Processing.

3) Climate Action, Environment, Resource Efficiency and Raw Materials.

4) Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy.

5) Smart, Green and Integrated Transport.

Source: eCorda

[34] See https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/applying-for-funding/find-a-call/h2020-structure-and-budget_en.htm#IndLs. This is elaborated in more detail in Chapter 5.

industry accounts for half of the applicants to the Energy programme, with a lower share of funded applicants.

Applicants' age (firm age) may explain some of the difference in success rates between the different programmes. The link between firm age and success in the SME Instrument is discussed in further detail in Section 0.

Compared to all other programmes (both pillars), the share of established firms (older than five years) is significantly higher among the SMEs that have applied to the Food programme. Of all applicants to Pillar 3 (Societal Challenges) in Phase 1, about one third were established firms at the time of application. In comparison, half of the applicants to the Food programme are older than five years. Six of the eleven succeeding applicants were established firms when they obtained funding from the EU.

In Phase 2, NMP (advanced materials and manufacturing etc.) and TPT (smart, green and integrated transport) are the programmes with the highest shares of funded SMEs. In terms of industry sector and topic, there are few common features between the SMEs that have succeeded in these two programmes (they are all from different industries). Further, the share of established firms among the applicants to NMP in Phase 2 is high compared to the other programmes under the same pillar, but two out of the three SMEs that have received funding were start-ups when applying.

Without predefined topics, the introduction of the EIC pilot might shift the distribution of sectors within the SME Instrument portfolio (EASME, 2018). This does, however, not seem to be the case for Norwegian applicants so far; the industrial distribution (elaborated below) in 2018 is the same as in the years prior to the EIC pilot. This is not surprising considering the industrial distribution of Norwegian firms engaging in R&I activities.

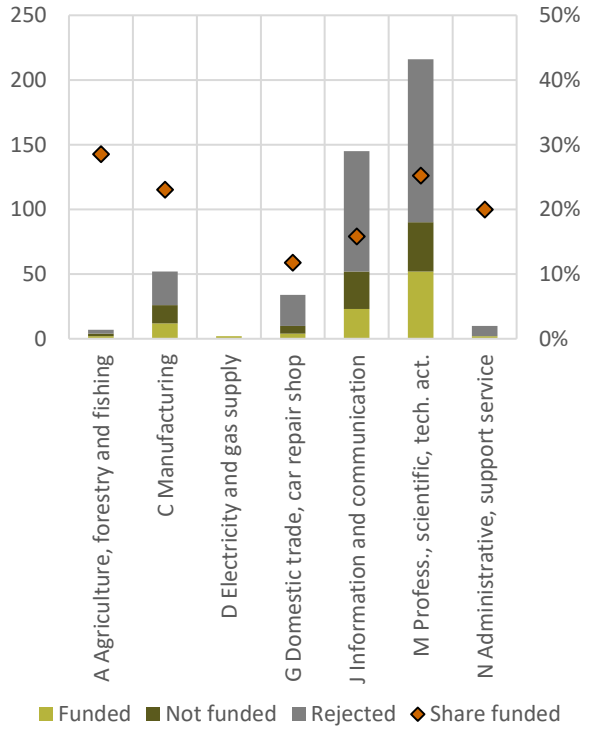
3.2.2 Industrial distribution

The share of firms engaging in innovation activities is highest within advanced manufacturing (pharmaceuticals, electronic and optical products, machinery and equipment), scientific research and development and ICT (Statistics Norway, 2017). These are also among the industries with the highest share of firms performing R&D (Statistics Norway, 2019).

Professional, scientific and technical activities, ICT and manufacturing are the largest industry groups, measured in number of applicants to the SME Instrument (see Figure 3.4). Apart from production of electricity (where both firms applying for funding have succeeded), manufacturing of electronic and optical products, manufacturing of chemical products, manufacturing of fabricated metal products and aquaculture (within agriculture, forestry and fishing) are the industries with the highest share of SMEs succeeding in receiving funding from the SME Instrument. However, these industries represent only a small part of all applicants to the SME Instrument.

If we split up the abovementioned industry groups, computer programming (within ICT) is the largest industry measured in number of applicants, followed by engineering activities and scientific R&D (within professional, scientific and technical activities). These three industries account for two thirds of all applicants to the SME Instrument. The share of funded SMEs within these industries is in opposite order, i.e. the share of funded SMEs is highest within scientific R&D, and almost twice as high as the share of funded applicants within computer programming (with the lowest share of the three).

Figure 3.4 Norwegian applicants by industry sector and application status. Total for 2014-2018



Notes: Only industries with at least one funded firm is included. Applicants are only included in the category (application status) which defines their best outcome.
Sources: eCorda and SØA

Comparing the industrial distribution of SMEs with funding from the SME Instrument with selected national funding schemes, it resembles the industrial distribution of SMEs receiving R&D tax credit from the SkatteFUNN scheme and/or SMEs with funding from schemes related to innovation activities in Innovation Norway.[35] The share of SMEs engaging in engineering activities (technical consultancy) is, however, markedly higher among the beneficiaries of funding from the SME Instrument, whereas manufacturing industries and wholesale trade make up a slightly higher share among SkatteFUNN and Innovation Norway beneficiaries.[36]

The ranking of these three industries according to the share of funded applicants corresponds to their ranking according to the share of established firms at time of application. About 44 per cent of the applicants within scientific R&D were established firms when applying, compared to 27 per cent of the applicants within computer programming activities. This relationship holds when we look at the three largest industry groups; the ICT sector has both the lowest share of funded applicants and applicants older than five years (see Table 3.5).

Table 3.5 Share of established applicants at time of application and share of funded applicants by industry sector.[1] Total for 2014-2018

Industry sector	Established SMEs[2]	Funded SMEs
A Agriculture, forestry and fishing	71.4 %	28.6 %
C Manufacturing	59.6 %	23.1 %
G Domestic trade, car repair shop	44.1 %	11.8 %
J Information and communication	33.1 %	15.9 %
M Profess., scientific, tech. act.	37.5 %	24.1 %
N Administrative support service	30.0 %	20.0 %
Total	40.0 %	20.0 %

1) Only industries with at least one funded firm are included. Shares are share of total no. of applicants per industry.
2) SMEs older than five years at time of application.
Sources: eCorda and SØA

3.2.3 Geographical distribution

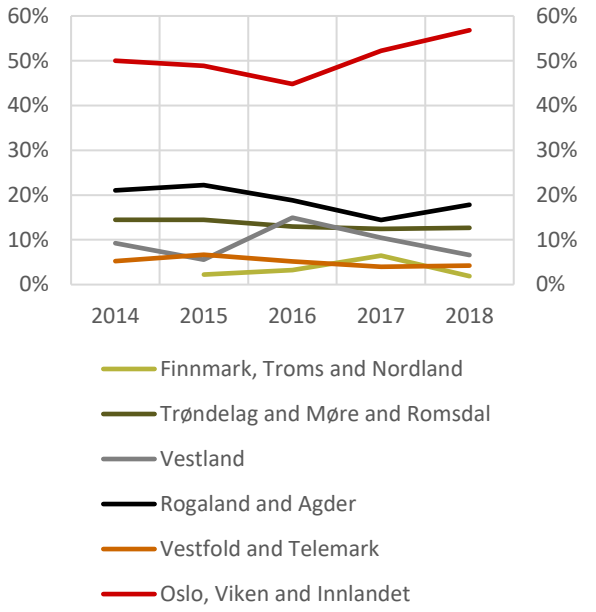
In 2018, Oslo and neighbouring counties' (Oslo, Viken and Innlandet) accounted for nearly 60 per cent of all applicants to the SME Instrument. This

[35] See Samfunnsøkonomisk analyse (2018) *Evaluation of SkatteFUNN* for a detailed description of the scheme and its beneficiaries, including some comparisons with beneficiaries of other Norwegian funding agencies.

[36] It is worth noting that firms within wholesale (e.g. domestic trade) are tightly linked to manufacturing industries such as wholesale of pharmaceutical products and wholesale of shipping equipment and electronic and telecommunications equipment.

region's share of applicants has increased over time, solely driven by a concentration of applicants from Oslo (see Figure 3.5). Oslo, Viken and Innlandet is also the region with the highest share of funded applicants.

Figure 3.5 Geographical distribution of all Norwegian applicants, by region[1]. 2014-2018



1) Regions in accordance with Innovation Norway's regional EU advisors (https://www.innovasjonnorge.no/no/tjenester/snakk-med-en-radgiver/eu-finansiering/).
Sources: eCorda and SØA

The applicants' geographical distribution differs somewhat from that of SMEs receiving R&D tax credit from SkatteFUNN and/or with funding related to innovation activities from Innovation Norway. Compared to these schemes, the share of applicants from Eastern Norway (incl. Oslo) is relatively high, while Western Norway (Møre and Romsdal, Vestland and Rogaland) is somewhat "underrepresented".[37]

Measured in number of applicants, Rogaland and Agder is the second largest region, followed by Trøndelag and Møre and Romsdal. The three regions (accounting for 82 pct. of all applicants), has a relatively equal share of applicants with funded projects in Phase 1 (see Table 3.6).

Table 3.6 Number of applicants, by region, phase and application status. Total for 2014-2018

		Application status			
Region	Phase	Funded	Not funded	Re-jected	Share funded
Troms, Finnmark and Nordland	Phase 1	2	4	9	15.4 %
	Phase 2	2	2	7	25.0 %
Trøndelag and Møre og Romsdal	Phase 1	9	7	50	17.0 %
	Phase 2	7	9	10	43.8 %
Vestland	Phase 1	9	6	32	22.5 %
	Phase 2	1	9	11	6.7 %
Rogaland and Agder	Phase 1	12	15	64	16.4 %
	Phase 2	7	13	22	21.9 %
Vestfold and Telemark	Phase 1	5	5	11	29.4 %
	Phase 2	1	8	8	9.1 %
Oslo, Viken and Innlandet	Phase 1	38	37	168	18.2 %
	Phase 2	20	45	50	26.0 %

Sources: eCorda and SØA

Trøndelag, however, has a significantly higher share of funded applicants in Phase 2, compared to all regions. The share of applicants from Trøndelag engaged in manufacturing activities is significantly higher than in all other regions and, though few, Trøndelag is the only region with funded applicants from the fishing industry. Further, all but one of the

[37] See Samfunnsøkonomisk analyse (2018) *Evaluation of SkatteFUNN* and Cappelen, et al. (2016) *Innovasjons- og verdiskapingseffekter av utvalgte næringspolitiske virkemidler* for comparison.

funded applicants in Phase 2 from Trøndelag was established firms at the time they obtained funding.

3.2.4 Firm size

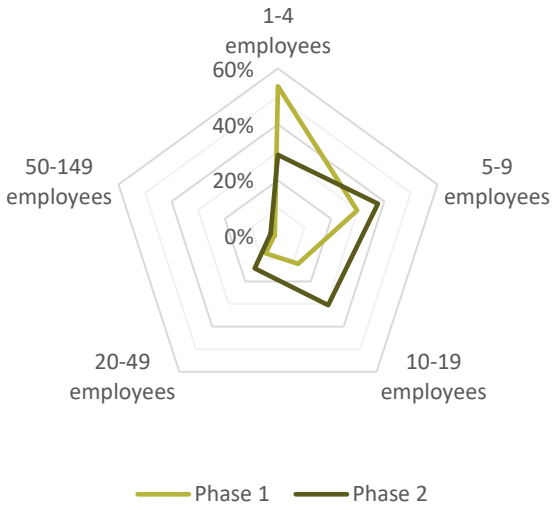
Only applicants with less than 250 employees (i.e. SMEs) are eligible for funding from the SME Instrument. In Norway, as for Europe in general, around 99 per cent of all firms are SMEs. Thus, "all" Norwegian firms are theoretically eligible for funding from the SME Instrument. However, the share of firms engaging in innovation activities is shown to increase with firm size, and half of Norwegian SMEs are firms with less than five employees.

Among SMEs with more than five employees, more than half report being engaged in an innovation project in the latest national innovation survey (Statistics Norway, 2017).[38] SMEs further account for somewhere between 50 and 60 per cent of the intramural R&D expenditures in the business enterprise sector (Statistics Norway, 2019).

Of all SMEs participating in the SME Instrument (all countries) almost 90 per cent are firms with less than 50 employees, regardless of phase. The share of micro-enterprises (less than 10 employees) selected for funding both in Phase 1 and 2 has increased over time (EASME, 2018). Compared to the SME Instrument's total portfolio of funded applicants, micro-enterprises are somewhat "overrepresented" among Norwegian beneficiaries, i.e. the share of micro- enterprises are higher among Norwegian beneficiaries than otherwise in Europe.

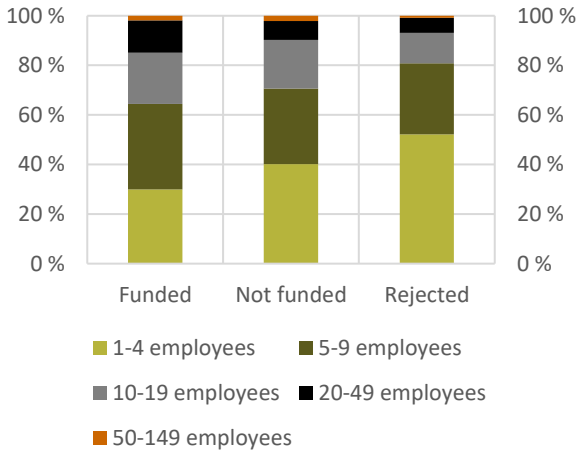
Comparing Norwegian applicants in Phase 1 and 2, it is apparent that the share of "larger" firms is higher among applicants to Phase 2 (see Figure 3.6).

Figure 3.6 Firm size distribution, by phase. Share of Norwegian SMEs. Total for 2014-2018



Sources: eCorda and SØA

Figure 3.7 Firm size in application year, by application status. Total for 2014-2018



Notes: Applicants are only included in the category (application status) which defines their best outcome.
Sources: eCorda and SØA

[38] Firms with less than five employees are not included in the survey.

It is apparent that there is a relationship between firm size and success in the SME Instrument; the share of micro-enterprises decreases with outcome (see Figure 3.7). However, firm size increases with firm age, and it is more likely that firm age is the underlying explanation for the relationship between firm size and success.

3.2.5 Firm age

The SME Instrument attracts a significant number of start-ups. Half of all participants in the SME Instrument are start-ups, and their share has increased over time (EASME, 2018).[39] With the introduction of the EIC pilot the European Commission set out to identify and fund Europe's most innovative start-ups and SMEs. The increased focus on start-ups has further given a marked shift in the share of start-ups among Norwegian applicants, from an average of 58 per cent in the period 2014-2017 to 67 per cent in 2018 (first year with the EIC pilot).

This increase has not yet materialised in the distribution of start-ups and established firms among those who have obtained funding. Start-ups accounted for a little over half (55 pct.) of all funded Norwegian applicants in the period 2014-2017, and still did in 2018 (52 pct.).

So far, it seems that higher firm age increases the likelihood of succeeding in the SME Instrument; the share of start-ups is significantly lower among firms with funding, compared to applicants with rejected applications as their "best" outcome (see Figure 3.8). Though the share of start-ups also is higher among firms with SoE as their best outcome, than among the funded, this difference is smaller. Considering that applications with SoE are scored above the threshold for funding, but not funded due to budget limitations, this is not surprising; applicants with SoE have also convinced the evaluators that they meet all evaluation criteria (impact, excellence, implementation).

Figure 3.8 Share of start-ups[1], by application status.[2] Total for 2014-2018

1) Firm age up to five years.
2) Applicants are only included in the category (application status) which defines their best outcome.
Sources: eCorda and SØA

Convincing the evaluators that there is a market for the firm's product, process or service, that the product is better than existing products (solutions) and that the firm can make it essentially requires maturity. It is reasonable to assume that firm age corresponds with the firm's maturity.

Simply put, funded applicants (at least in Phase 2) have identified a market for their product and have been "trusted" to get their product on the market. Another question is whether the results of the projects are reflected in in their economic development.

[39] EASME defines start-ups as unlisted small enterprises up to five years following their registration, which are not formed through a merger and have not distributed profits yet. For simplicity we have defined start-ups only based on firm age.

3.3 Economic development

The ultimate objective of the SME Instrument is to get SMEs ready to scale up and go global. For SMEs "coming out" of Phase 2 with a market-ready product, we should expect to see changes in turnover shortly after the end of the project. Contrary to some programmes, there is no requirement in the SME Instrument stating that the project must lead to a market-ready product, or that the product must reach the market within a certain time after the end of the project. Thus, it might take some time before one can observe changes in turnover or other economic parameters.

Phase 1 funds the exploration and assessment of the technical feasibility and commercial potential of the innovation and is intended to determine whether it is worth proceeding with Phase 2. Phase 1 is not expected to lead to a new idea (product, process, service) that can be launched on the market. Thus, in an assessment of economic development after participation in the SME Instrument, Phase 1 is less interesting.

The Executive Agency for Small and Medium-sized Enterprises (EASME) assessed the effects of Phase 2 funding in the H2020 SME Instrument impact report from 2018. They used both self-declared data taken from periodic and final reports, and financial information from accounting registers (Orbis database). Based on the latter they found that total employment rates in SMEs that had finalised Phase 2 increased by 30 per cent, turnover by 18 per cent and total assets by 37 per cent. For all three parameters the growth was higher than for their control group, defined as applicants with SoE as their best outcome (see Figure 3.9).[40]

Figure 3.9 Growth in SMEs with finalised Phase 2 projects compared with the control group. 2013-2016

Note: The control group are SMEs with projects scored above the threshold but not funded.
Source: EASME (2018)

With sufficiently long time series, "delays" in product launch after completion of the funded project would not be a challenge in analysing the effects of support from the SME Instrument. However, the SME Instrument under H2020 was launched in 2014 and the last year of accounting data (required for assessing firms' economic development) is 2018. This limits the number of years with data to analyse the SMEs' economic development after completion of the project. In addition, as shown above (see Table 3.3), most Norwegian SMEs participating in the SME Instrument received funding for their Phase 2 project in 2017 or later.

[40] The report does not say whether the differences are significant.

Figure 3.10 Average turnover. NOK mill. Constant 2017-prices. Applicants to Phase 2. Years prior to best outcome

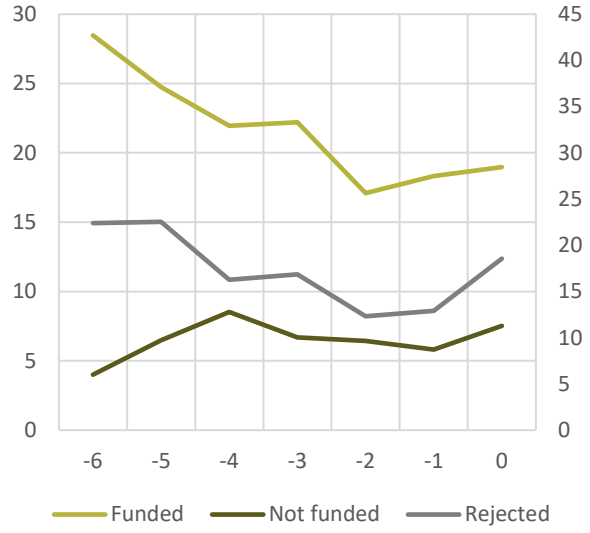


Figure 3.11 Sum turnover. NOK mill. Constant 2017-prices. Applicants to Phase 2. Years prior to best outcome

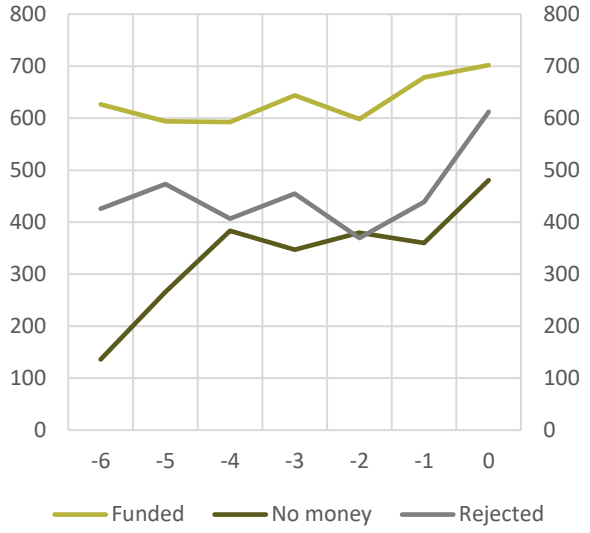


Figure 3.12 Average total assets. NOK mill. Constant 2017-prices. Applicants to Phase 2. Years prior to best outcome

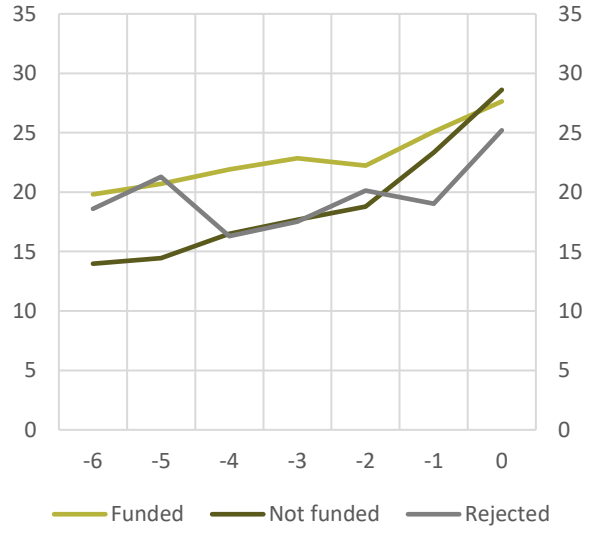


Figure 3.13 Sum total assets. NOK mill. Constant 2017-prices. Applicants to Phase 2. Years prior to best outcome

Note: Applicants are only included in the category (application status) which defines their best outcome.
Source: eCorda and SØA

In addition to the limited time series, the sample of Norwegian SMEs with funding from Phase 2 is small (38 firms in total). Due to the various limitations in data availability, this analysis focuses on the applicants' economic development up to the time of application, to map whether those who succeed differ from those who do not (on indicators not mapped above).[41] Applicants are assigned to the group defining their best outcome.

We have already shown that the funded SMEs are larger, in terms of number of employees, than firms with SoE or rejection as their best outcome (see Section 3.2.4). They are also larger in terms of average turnover (see Figure 3.10), which is closely related to the number of employees in firms with human capital as their main input factor.

A comparison of average total assets shows smaller differences between the three groups of applicants (see Figure 3.12).

Data on economic performance supports our findings in the previous sections – success in the SME Instrument is correlated to firm maturity, here expressed by size.

3.4 Support from national funding agencies

We have obtained information on the applicants' participation in national support schemes by merging information on all applicants to the SME Instrument with a database covering all public R&D&I-related measures in the period 2000-2017.[42] Given that H2020 was launched in 2014, we have limited the time period in the following analysis to 2012-2017, i.e. including a couple of years prior to the first possible year with funding from the SME Instrument.[43] As above, we have divided the applicants in groups according to their best outcome.

We have only included national schemes with a certain number of recipients (relatively high shares of the total number of SMEs in the sample). We comment on the schemes according to what kind of activities they fund and when the SMEs have received the funding (mainly prior to EU funding).

Of 485 applicants to the SME Instrument in the period 2014-2018, 470 (96.9 pct.) have received support from a national funding scheme.[44] The 16 applicants that have not benefited from national funding schemes have all but three applied for funding from Phase 1 and been scored below the threshold for funding.

3.4.1 Start-up activities and advisory services

Regardless of their best outcome, about half of all applicants to Phase 1 have received a start-up grant from Innovation Norway (see Table 3.7). The share of applicants to Phase 2 with a start-up grant is somewhat lower, with around 40 per cent of the applicants succeeding in Phase 2.

As we have limited the time period to 2012-2017, receiving a start-up grant within this period will indicate that the SME is relatively young when applying for EU funding. We have shown above that the probability of success increases with firm age. This is likely to explain some of the lower share of firms succeeding in Phase 2 receiving a start-up grant

[41] For a more comprehensive impact assessment of EU support, we refer the readers to the upcoming evaluation of Norwegian participation in EU FP7 and H2020, due 1 February 2020.
[42] Our database covers 2018 for Innovation Norway, Siva SF and Horizon 2020.
[43] Including all years does not change the findings.
[44] Based on data from national funding agencies in the period 2000-2017 (and 2018 for some agencies).

within in the given period. However, they may have received a start-up grant prior to 2012.

Among other advisory services, Innovation Norway offers advice on international marketing, intellectual property rights (IPR) and international trade rules. Nearly one third of the applicants succeeding in Phase 2 have received international market advisory, all prior to receiving funding from Phase 2.

Innovation Norway's advisory services is further commented in Section 4.1 and Section 6.3.

Table 3.7 Applicants to the SME Instrument's use of national support schemes before, during and after applying for EU funding. Number of applicants (SMEs) per scheme and share of total (in parenthesis). Selected schemes (schemes with high shares). Total for 2012-2018[1]

			Best outcome SME Instrument		
Phase	Funding agency	Scheme	Funded	Not funded	Rejected
Phase 1	SkatteFUNN	R&D tax incentive	28 (90.3 %)	32 (72.7 %)	173 (68.9 %)
	The Research Council of Norway (RCN)	Total[2] RCN	23 (74.2 %)	23 (52.3 %)	170 (67.7 %)
		FORNY2020	7 (22.6 %)	4 (9.1 %)	9 (3.6 %)
		EUROSTARS	3 (9.7 %)	5 (11.4 %)	13 (5.2 %)
	Innovation Norway	Total[2] Innovation Norway	28 (90.3 %)	38 (86.4 %)	210 (83.7 %)
		Start-up grant[3]	16 (51.6 %)	23 (52.3 %)	125 (49.8 %)
		International market advice	6 (19.4 %)	9 (20.5 %)	46 (18.3 %)
		Innovation contracts	5 (16.1 %)	8 (18.2 %)	64 (25.5 %)
		Environmental technology	3 (9.7 %)	4 (9.1 %)	24 (9.6 %)
	Siva	Total[2] Siva	19 (61.3 %)	7 (15.9 %)	98 (39.0 %)
		Incubation programme[4]	18 (58.1 %)	7 (15.9 %)	94 (37.5 %)
	Total no. of applicants		31 (100 %)	44 (100 %)	251 (100 %)
Phase 2	SkatteFUNN	R&D tax incentive	35 (92.1 %)	60 (93.8 %)	48 (84.2 %)
	The Research Council of Norway (RCN)	Total[2] RCN	33 (86.8 %)	54 (54.7 %)	41 (71.9 %)
		FORNY2020	7 (18.4 %)	5 (3.1 %)	3 (5.3 %)
		EUROSTARS	6 (15.8 %)	10 (9.4 %)	2 (3.5 %)
	Innovation Norway	Total[2] Innovation Norway	37 (97.4 %)	60 (84.4 %)	45 (68.4 %)
		Start-up grant[3]	16 (42.1 %)	20 (31.3 %)	17 (24.6 %)
		Innovation loan[3]	16 (42.1 %)	17 (26.6 %)	7 (10.5 %)
		International market advice	15 (39.5 %)	22 (34.4 %)	13 (19.3 %)
		Environmental technology	12 (31.6 %)	14 (21.9 %)	8 (14.0 %)
		Innovation contracts	11 (28.9 %)	29 (45.3 %)	17 (26.3 %)
	Siva	Total[2] Siva	14 (36.8 %)	21 (32.8 %)	20 (28.1 %)
		Incubation programme[4]	14 (36.8 %)	20 (31.3 %)	19 (26.3 %)
	Total no. of applicants		38 (100 %)	64 (100 %)	57 (100 %)

1) The database lack data for programmes in the RCN in 2018.
2) Sub totals is not the sum of rows. Firms may have received support from several schemes. Totals for the RCN and Innovation Norway includes PES2020 (see Section 3.4.4) and IN's funding of Phase 1 projects (see Section 3.1.1) respectively.
3) Combination of similar schemes.
4) No. of SMEs in incubation.
Source: SØA (Samspillsdatabasen)

3.4.2 R&D activities prior to EU funding

It is reasonable to assume that, for purposes of convincing the evaluators that their innovation is both excellent and superior to existing solutions, applicants should engage in R&D activities before applying.[45]

SkatteFUNN is the single most used scheme among all applicants to the SME Instrument, regardless of outcome (see Table 3.7). The scheme is an R&D tax incentive designed to stimulate R&D in the business sector. All firms liable to pay corporate tax to Norway seeking to develop a new or improved product can apply for this (Reserach Council of Norway, 2019). Thus, any R&D oriented firm should exploit the opportunities in this scheme.

Given that all firms engaged in innovation-oriented R&D are eligible for SkatteFUNN, we consider the use of this scheme to be a good indicator of a firm's innovation activity.

More than 90 per cent of the applicants with funding from the SME Instrument have taken advantage of the opportunity to get tax credit on their R&D expenditures, before, during and after carrying out the project funded by the EU. Mapping the title of the 38 projects with funding from Phase 2, we identify 31 projects directly linked to completed SkatteFUNN projects.

Compared to applicants with SoE and rejection in Phase 1 as their best outcome, the share of SkatteFUNN beneficiaries is relatively high among the funded applicants in Phase 1. This might imply that those not obtaining funding lack R&D experience. Further, the share of SkatteFUNN beneficiaries is higher among applicants with funding or SoE from Phase 2 as their best outcome, compared to those scoring below the threshold for funding (rejected).

In addition to SkatteFUNN, around 20 per cent of the projects funded in both Phase 1 and 2 have received funding from the Research Council of Norway's (RCN) FORNY2020, prior to their EU project. This is a markable higher share than among the SMEs not receiving funding from the SME Instrument.

FORNY2020 (Commercialising R&D Results) allocates proof-of-concept funding to projects that can be expected to have a high degree of commercial or socially beneficial potential. Projects from all research fields can apply for funding.

FORNY facilitates the commercialisation of results from projects conducted at publicly funded research institutions and helps to bring the products and services to the market (VIS, 2018). The programme provides funding directly to entrepreneurs and Technology Transfer Offices (TTOs) affiliated with the research institutions. Several of the incubators (partly) funded by Siva also operates as TTOs, and the number of SMEs in our sample with funding from FORNY should be seen in relation with the number of SMEs in incubation (10 of 14 recipients of FORNY funding have also been in incubation in one of Siva's incubators while carrying out the EU project).

11 of the 14 projects receiving funding from FORNY can be directly linked to the project funded in the SME Instrument (based on the title of the projects). All Norwegian participants in the SME Instrument

[45] https://ec.europa.eu/easme/en/eic-accelerator-sme-instrument/eic-accelerator-sme-instrument-essential-tips-your-application

receiving funding from FORNY have also received an R&D tax credit.

A higher share of SMEs succeeding in the SME Instrument or with SoE from either Phase 1 or 2 have participated in an Eurostars project than SMEs with rejected applications.

The Eurostars programme is aimed at R&D-performing SMEs that wish to exploit the benefits that come with international collaboration. Within two years of completion the product of research should be ready for market introduction.[46] Eurostars support consists of national funds and funds from H2020. All support to Norwegian partners in the project is provided through the RCN.

For the SMEs with funding from both Eurostars and Phase 2 of the SME Instrument it seems that the Eurostars projects mainly start prior to the project funded through the SME Instrument and completed prior to or in parallel with the latter.

3.4.3 Innovation activities prior to EU funding

A little over 40 per cent of the applicants obtaining funding from Phase 2 have received an innovation loan (risk loan) from Innovation Norway, mainly prior to funding from the EU. This is a significantly higher share than among firms with SoE or rejection from Phase 2 as their best outcome.

Innovation loans are mainly an offer to SMEs for commercialisation of new products, strengthening working capital, growth and internationalisation.[47]

Innovation Norway's Innovation contracts offers support to SMEs developing new products or services in collaboration with firms representing the market. Among applicants to Phase 2, a little under 30 per cent have received funding from this scheme, regardless of their best outcome.

Interestingly, the share of applicants receiving support from Innovation contracts among applicants to Phase 1 is highest for those with rejection as their best outcome. Without more detailed information on the projects with support from Innovation contract (e.g. title) it is challenging to link these projects to the EU application.

Nearly one third of the SMEs with funding from Phase 2 have received funding from Innovation Norway's environmental technology scheme, of which 9 (of 12) received this funding prior to receiving funding from the EU.

Both the innovation contracts and environmental technology scheme is discussed further in Section 4.4.

3.4.4 Support for writing the application

EU advisory, courses, financial support for writing applications or help to apply for EU funding is provided by the RCN and Innovation Norway, though with various areas of responsibility. In this section we look at RCN's project establishment support, while Innovation Norway's schemes are described in more detail in Chapter 4.

The RCN's Project Establishment Support for H2020 (PES2020) is designed to relieve costs for Norwegian applicants associated with the design of project proposals and to increase competence regarding participation in H2020. Any organisation

[46] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/eurostars-programme

[47] https://www.innovasjonnorge.no/no/tjenester/innovasjon-og-utvikling/finansiering-for-innovasjon-og-utvikling/innovasjonslan/ (in Norwegian).

that may receive RCN funding is eligible for PES2020 support, thus one would expect that all applicants to the SME Instrument make use of the opportunity to get support from this scheme.

Nearly 60 per cent of all applicants to the SME Instrument have received funding from PES2020. About 80 per cent of all SMEs with funding from Phase 2 have made use of the scheme, and 45 per cent of the SMEs with funding from Phase 1 (see Table 3.8). These shares, especially the latter, should be interpreted with caution. All but one of the applicants with funding from Phase 1 as their best outcome and without funding from PES2020, completed Phase 1 in 2018. We do not have data on beneficiaries of PES2020 in 2018, i.e. missing data is likely the explanation of the low share.

Table 3.8 Applicants' use of the RCN's Project Establishment Support. Total for 2014-2017[1]

		Best outcome SME Instrument			
			Not		
Phase	Scheme	Funded	funded	Rejected	Total
Phase 1	PES2020	14	17	146	177
		(45.2 %)	(38.6 %)	(58.2 %)	(54.3 %)
	Total	31	44	251	326
Phase 2	PES2020	30	45	36	111
		(78.9 %)	(70.3 %)	(63.2 %)	(69.8 %)
	Total	38	64	57	159

1) All applicants to the SME Instrument in the period 2014-2018 are included. The database lack data for programmes in the RCN in 2018.
Source: SØA (Samspillsdatabasen)

Although a subject to missing data, it appears that the share which has exploited the opportunity to cover some application costs through PES2020 increases with outcome within each phase of the SME Instrument. This can be interpreted as a confirmation that writing a persuasive application requires time and preparation.

3.5 Summary of findings

In the period 2014-2018, 485 Norwegian SMEs have submitted 1,166 applications to Phase 1 and 2 of H2020's SME Instrument. The success rate among Norwegian applicants in this period is 9.5 per cent for Phase 1 and 10.0 per cent for Phase 2. The Norwegian success rate in Phase 2 is significantly higher than the overall success rate (all countries) of 4.8 per cent.

Coming up with a breakthrough innovation, developing a sound business plan and putting together a credible team takes time and effort. A comparison of applicants according to their best outcome in the SME Instrument indicate that firm age and size (measured in both employment and turnover) is correlated with success. We interpret this as a confirmation that success requires some degree of maturity.

Breakthrough innovations also require prior engagement in R&D&I activities. Nearly all Norwegian SMEs with funding from the SME Instrument have completed an R&D project prior to applying for EU funding, making use of the R&D tax incentive SkatteFUNN. For most of these, the completed project is directly linked to the EU funded project.

Apart from the "rights-based" project establishment support (PES2020), applicants to the SME Instrument have, to a small extent, participated in projects with support from the RCN. It is, however, worth noting that a significantly higher share of SMEs succeeding in the SME Instrument has completed a project with "proof-of-concept funding" from the RCN's FORNY programme, compared to applicants without funding from the SME Instrument. The main picture is that the SMEs complete the project with funding from FORNY prior to or the same year as they apply for EU funding. As for the SkatteFUNN projects, these projects are directly linked to the EU

funded project (i.e. the SkatteFUNN projects are also directly linked to the FORNY projects).

In order to cover all stages of the innovation cycle, the SME Instrument is organised in different phases. That is, Phase 1 funds exploration and assessment of the technical feasibility and commercial potential of the firm's innovation. The learning process from Phase 1 is meant to prepare the firm for Phase 2.

Innovation Norway's strategy in the early stage of the H2020 programme period was to encourage SMEs to apply for funding from Phase 1. The high success rate in Phase 2 in recent years is proof that this has paid off; completing Phase 1 increases the chance of success in Phase 2.

Innovation Norway further strengthened their efforts to get SMEs through Phase 1 in 2016 by offering funding to projects with Seal of Excellence from this phase (scored above the threshold for funding but not funded due to budget limitations). However, Innovation Norway's funding of Phase 1 does not include coaching and data indicate that this effort has not increased the chance of success in Phase 2 notably compared with applying directly for Phase 2.

The success rate for Norwegian SMEs applying directly for Phase 2 is almost twice as high as the overall (all countries) success rate for direct applications to Phase 2. This might be a result of Innovation Norway's enhanced advisory efforts in 2018, which is discussed further in Chapter 4.

4 Innovation Norway's contribution to success in the SME Instrument

Innovation Norway is commissioned to mobilise Norwegian firms to participate in Horizon 2020 (H2020), including being the national contact point for innovation in SMEs and financial instruments in the framework programme. Innovation Norway is also responsible for following up SMEs with funding from the EU. The latter is exercised through the Enterprise Europe Network (EEN). EEN Norway is hosted by Innovation Norway. Thus, Innovation Norway's advisors can follow the applicants throughout the process from mobilisation to application advisory, with the potential of serving as the applicants' key account manager (KAM) if they obtain funding from the EU.[48]

The objective of this chapter is to assess whether and how Innovation Norway, through their abovementioned assignments, has contributed to Norwegian participation in Phase 2 of the SME Instrument. In addition, we provide an assessment of whether Seal of Excellence (SoE) in Phase 2 makes it easier to obtain support from national funding agencies or private investors (to carry out the project in lack of EU funding). Thus, this chapter focuses on the applicants with project proposals scoring above the threshold for funding from Phase 2.

In addition to making use of data on national funding schemes (presented in Section 3.4), we have interviewed a sample of applicants with either funding or SoE from Phase 2.

4.1 Innovation Norway's mobilisation activities

Innovation Norway regularly organises informational meetings and application writing courses for firms that want to learn more about the possibilities to obtain funding from H2020. The meetings and courses are offered in all regions and are aimed at giving the firms an understanding of what programs are right for their projects and what is required to apply. In addition to offering courses in application writing, Innovation Norway's EU advisors provide to read the firms' applications and give feedback, but they do not help the applicants with the writing itself.

Innovation Norway shares an office with the Research Council of Norway (RCN) and Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education (Diku) in Brussels. Through their presence in Brussels, Innovation Norway can influence the design of different programmes at an early stage and get access to relevant information, benefitting Norwegian applicants. However, Innovation Norway's main strategy for contributing to participation in H2020 is in-depth advisory services.

4.1.1 Regional EU advisory services

Innovation Norway offers EU advisory through contact points; seven regional, four in Oslo and one in Brussels. Available data on Innovation Norway's EU advisory services in the period 2015-2018 indicates that nearly 60 per cent of all applicants to Phase 2 has received EU advisory services from Innovation Norway's regional advisors. Due to changes in Innovation Norway's CRM system and how the EU advisory services are registered, there is some uncertainty about whether we have information on all recipients in our data. Thus, the share of firms receiving EU advisory prior to applying for EU funding might be somewhat higher.

Due to these uncertainties in the data, we refrain from drawing any conclusions as to whether appli-

[48] The role of the key account manager is described in Section 0.

cants who succeed in Phase 2 to a greater extent have received advisory services than those who do not. However, looking at available data it seems to be some discrepancies between the geographical distribution of recipients of advisory services and applicants to the SME Instrument (see Table 4.1).[49]

Table 4.1 Geographical distribution of applicants to the SME Instrument (all applicants) and recipients of EU advisory services. 2015-2018

Region[1]	SME Instrument	EU advisory
Finnmark, Troms and Nordland	4.5 %	10.1 %
Trøndelag and Møre and Romsdal	12.3 %	24.8 %
Vestland	9.6 %	15.6 %
Rogaland and Agder	18.8 %	11.3 %
Vestfold and Telemark	4.2 %	5.0 %
Oslo, Viken and Innlandet	50.7 %	33.8 %

1) Following Innovation Norway's advisory offices.
Sources: Innovation Norway, eCorda and SØA

One possible explanation for the differences may be that regions accounting for a higher share of the applicants than the share of recipients of Innovation Norway's advisory services have a more varied offer of other advisory services or help to write the application. When asked who provided the advisory services, about 40 per cent of our interviewees reported consultants or an EU advisor in their industry cluster (see below).

4.1.2 Pitch training

After the introduction of the EIC pilot in 2018 the proposals to Phase 2 are evaluated in two steps (see Section 2.3.2). To meet the new requirements, Innovation Norway adjusted their advisory services. For the applicants that are invited to present their project in front of the expert panel, Innovation Norway now offers interview training and rehearsals in Oslo and Brussels (Innovation Norway, 2018). This means that all applicants passing the initial evaluation in Phase 2 are offered the opportunity to practice with a coach, before being invited to pitch their project in front of an expert panel in Oslo and finally in Brussels (not the actual EU panel).

Eight out of eleven interviewees (that applied for funding in 2018) accepted the offer to practice their pitch, all of whom reported that it was very helpful. The only potential improvement mentioned for this offer is the opportunity to also talk to other firms that have pitched their projects in Brussels.

In 2018, we see a marked increase in applicants succeeding in Phase 2 (see Section 3.2). In 2017, 12 out of 73 (16 pct.) applicants received funding from Phase 2, while 17 of 74 (23 pct.) did in 2018.

In 2018, 10 successful applicants also applied to Phase 2 in 2017 (but did not succeed), including our interviewees. It is reasonable to assume that the increased share of funded Norwegian applicants can be largely attributed to the change in Innovation Norway's advisory services.[50]

4.2 EU advisors in clusters

When asked where they learned about the SME Instrument, nearly half of our interviewees (SMEs with funding or SoE from Phase 2) answered through the cluster they are member of, or network (projects consortia etc.). Since 2016, Innovation Norway has funded EU advisors in 17 industry clusters.[51] The

[49] The differences in the geographical distribution holds if we look at all SMEs applying for funding from Horizon 2020 (beyond the SME Instrument).

[50] If all applicants to Phase 2 in 2018 were new to the SME Instrument it would be more challenging to distinguish this from the "effect" of the offered pitch training,

[51] Including 2019.

funding includes study trips and joint workshops/meetings with EU advisors from all clusters, Innovation Norway's EU advisors, as well as representatives from the Research Council to share knowledge and experiences.

The funded clusters have on average received NOK 880,000 in yearly funding to carry out their EU advisory services in the period 2016-2018, approximately one full-time equivalent (FTE). Interviews with a couple of the funded clusters indicated that they would not be able to provide their EU advisory services, or at least not in their current scale, without funding from Innovation Norway.

When asked what could be improved in Innovation Norway's EU advisory services, several mentioned help in writing the applications. One said that "some parts of the application are pure 'bureaucracy'". Several applicants therefore choose to pay consultants to help them writing the application.

Unlike Innovation Norway's EU advisors, clusters' advisors do (at least to some extent) assist with the writing of the applications. Among those who are members of a cluster with an EU advisor, the share of funded applicants to Phase 2 indicate that the clusters' efforts increases the likelihood of success; 11 of 32 (34 pct.) "cluster applicants" to Phase 2 have succeeded, compared to nearly 24 per cent of all applicants to Phase 2 (see Section 3.2). Put another way, after Innovation Norway started funding EU advisors in clusters, one third of all SMEs succeeding in Phase 2 have been members of the funded clusters at the time of application. NCE Norway Health Tech stands out by "accounting for" half of them.

Current clusters in the Norwegian cluster programme, Norwegian Innovation Clusters (NIC), can easily reach out to more than a thousand SMEs through their network.[52] Seen together with the clusters' ability to help the SMEs succeed in the SME Instrument and the scheme's limited costs, funding EU advisors in the clusters seems to be an efficient use of the available mobilisation resources.[53]

4.3 Collaboration with incubators

The organisations facilitating (or managing) the clusters are the recipients of Innovation Norway's funding for providing EU advisory. Some of them also operate as incubators with funding from Siva[54]. Thus, these EU advisors can draw from an even greater pool of potential applicants in their mobilisation.

Since 2018, Innovation Norway has, to a greater extent, collaborated with regional incubators in mobilising to Horizon 2020 (Innovation Norway, 2018). Out of the 38 SMEs with funding from Phase 2, 14 (36.8 pct.) were in incubation at the time of application and 10 (of the 14) obtained funding from the EU in 2018.

4.4 Seal of Excellence

Unlike Phase 1 projects, SMEs with Phase 2 projects scoring above the threshold for funding, but not funded by the EU, cannot turn to Innovation Norway (or any other national funding agency) and "automatically" get funding. This means that there is no

[52] Based on number of members in 2018.
[53] For simplicity, with an hourly rate of NOK 1,000 (see Innovation Norway (2018), p. 17), the cost of Innovation Norway's 12 national contact points (EU advisors) was NOK 21 million in 2018 (assuming the advisors work full-time). In comparison, NOK 9.6 million was allocated to EU advisors in the clusters.
[54] The Industrial Development Corporation of Norway.

national scheme which funds projects with Seal of Excellence from Phase 2 (see Section 2.3.2). It is possible that the EU's assessment of the project as worthy of funding simplifies the pursuit of funding from existing national schemes or private investors. However, our interviews and available data do not indicate this.

Few national schemes can match the funding from the SME Instrument's Phase 2 (funding between €0.5 and €2.5 million, and up to 70 per cent of eligible costs). Since 2014, 64 Norwegian applicants have achieved Seal of Excellence (SoE) in Phase 2 as their best outcome in the SME Instrument. They have together applied for €118.9 million in funding. In comparison, Innovation Norway's scheme Innovation contracts (former IFU/OFU) have allocated €161.9 million to about 1,000 projects in the period 2014-2018.

In 2018, half of the applicants with SoE in Phase 2 as their best outcome had applied.[55] We are not able to map whether they have obtained alternative funding after this (in 2019).

We identify 10 (of the 64) applicants that have received funding from a national scheme with an amount that can match the EU funding the same year they last applied for funding from Phase 2 or the following year. In all but two cases are Innovation Norway responsible for the funding through their schemes "Environmental technology"[56], "Innovation contracts" or "Innovation loans". In addition, they make use of the "rights-based" R&D tax credit (SkatteFUNN).

One of our interviewees confirm that they have managed to fund the project through a combination of Innovation contracts and SkatteFUNN. Another financed the project with own means.

Two of the applicants with SoE from Phase 2 managed to fund their projects through Fast Track to Innovation (FTI) and Research and Innovation Actions (RIA) in Horizon 2020.

The examples of national funding at the EU scale are few. This, together with the two examples of firms "turning" to other kinds of EU funding, confirming that few national schemes can match funding from the SME Instrument.

Further, the feedback from our interviewees is that the Seal of Excellence is of little or no help in getting alternative funding, or that they have not used it in trying to get alternative funding.

4.5 Summary of findings

Innovation Norway mobilises Norwegian SMEs to apply for EU funding, both directly through their regional EU advisors and indirectly through funding of EU advisors in several cluster projects. Most SMEs succeeding in Phase 2 have received advisory services from Innovation Norway, and our data suggests that the clusters' efforts in assisting the SMEs with their application increases the likelihood of success in the SME Instrument. Based on our interviews, the clusters would not have been able to provide the EU advisory services without funding from Innovation Norway.

It is expected that Innovation Norway aligns it mobilisation efforts according to their clients' needs and

[55] They may have applied prior to 2018 as well.

[56] One firm received a grant of NOK 40 million, making it the largest project funded by the scheme that year.

developments in H2020 and the future Horizon Europe, as well as playing an active role in securing the impact of Norwegian interests in Horizon Europe.[57] Through their presence in Brussels, Innovation Norway can influence the work of the European Commission to secure Norwegian interest, in addition to providing Innovation Norway with relevant information.

Innovation Norway has shown great adaptability in their advisory services with the introduction of their pitch training to meet the new requirements in Phase 2, leading to a marked increase in the success rate in 2018. A possible addition to this offer is to put applicants that have been invited to pitch their project in Brussel in contact with SMEs that have already done it.

Without Innovation Norway being drawn entirely in the direction of consultants who offer to write the entire application, it may be worth to consider simplify the application process for the SMEs by developing "templates" for the more bureaucratic parts of the application (all necessary formalities).

[57] See e.g. annual letters of assignment to Innovation Norway from the Ministry of Trade and Fisheries and the Ministry of Education and Research.

5 The ninth EU Framework Programme for R&I "Horizon Europe"

The next framework programme (FP) for research and innovation, Horizon Europe, proposes a continuation of the three-pillar structure from Horizon 2020 (H2020). Pillars 2 and 3 are the ones relevant for this analysis. The main objective in this part of the analysis is to gain an understanding of how Innovation Norway can work in a more targeted manner with different groups of SMEs to support their participation in Horizon Europe.

Based on the findings in the previous chapters and currently available information on the forthcoming FP, we make an assessment of which Norwegian firms will be relevant target groups for Pillars 2 and 3 in Horizon Europe, as well as what competences these SMEs should have in order to compete successfully for the FP funding. Thereafter we assess what kind of support Innovation Norway can provide to the identified target groups. This chapter also provides an assessment of potential consequences if Norway does not participate in Horizon Europe, and how the identified target groups could be compensated.[58]

We start this chapter with a description of the upcoming Horizon Europe, to the extent that it is possible, considering its design is in progress.

5.1 Overview of the new framework programme

As mentioned in Chapter 2, the EU FPs for research and innovation are to be set in the context of the broader EU policy priorities for the Multi-Annual Financial Frameworks (MFF), e.g. H2020 was firmly set in the context of and its objectives aimed to respond to the priorities set out in the Europe 2020 strategy.

The new EU priorities will depend on the new Commission that is to be installed in November 2019. However, building upon the outcomes of the Sibiu summit on 9 May 2019 and the Strategic Agenda for 2019-2024, adopted by the European Council on 20 June 2019, the European Commission (EC) identified the following future policy priorities for the Union (European Commission, 2019):

1. A Protective Europe, concerning security and defence policy
2. A Competitive Europe, which focuses on research and innovation, new technologies, digital capacities and industrial policy
3. A Fair Europe, which centres on social inclusion, health, rule of law and fundamental rights
4. A Sustainable Europe, regarding sustainable development, climate change, circular economy and energy
5. An Influential Europe, dealing with international cooperation, promoting European values and standards

The global Sustainable Development Goals (SDGs) are a key underlying framework to these EU policy priorities, which will set the overarching policy objectives for the new FP.

5.1.1 Progress in the design process

The decision-making process on the new FP is currently stalled by the fact that only an initial agreement has been reached on the allocation of EU funds to the various components of the MFF 2021-

[58] For a more comprehensive cost-benefit analysis of Norwegian participation in EU's framework programmes we refer the reader to the evaluation of EU FP7 and H2020 due in February 2020.

2027. Specifically, there is no final agreement on the overall budget dedicated to Horizon Europe. This hinders the process of deciding on the prioritisation of the programmes that will be funded under Horizon Europe, as well as their content and focus. The European Council expects to reach a final agreement in autumn 2019.[59]

However, in April 2019 the Parliament and the Council reached a partial political agreement on the outline of the FP, as proposed by the Commission (European Commission, 2018c). Topics for discussion were especially the missions aimed at promoting research results, the European Research Council (ERC), the European Innovation Council (EIC), and the re-organisation of the Public-Private and Public-Public Partnerships.

This partial political agreement allowed for the Commission to launch the "strategic planning process", i.e. the work to establish the first Strategic Plan for Horizon Europe, which in turn will set the basis for the first multi-annual work programmes.

The Open Public Consultation, launched in June 2019, is a key step in the strategic planning process. The European Commission document "Orientations towards the first Strategic Plan"[60], which accompanies the Open Public Consultation, lays out the current intentions for Horizon Europe based on the political agreement. It gives an initial description of the areas of interventions, priorities, and expected impacts of the various programmes under Pillar 2. A separate Open Public Consultation will be launched in early September, covering the candidate Institutionalised European Partnerships.

5.1.2 Current outline of Horizon Europe

The European Commission highlights that Horizon Europe is about an evolution, not a revolution. Horizon Europe is very much rooted in the policy priorities emerging in the latest phases of H2020, i.e. the concepts of Open Innovation, Open Science and Open to the World.

Reflecting the H2020 Strategic Plan 2016-2020, the strategy is driven by the importance of cooperating internationally to give Europe access to the best talents, knowledge and resources wherever they are located; to tackle global societal challenges in the most effective way in a partnership approach; to help establish new opportunities for European high-tech industries through participation in global value chains and access to new and emerging markets; and to have a leading voice in global debates and developments (European Commission, 2016).

A report by the independent High-Level Group chaired by Mr. Rüttgers concluded that to support inclusive growth in the future, continued investments in the Key Enabling Technologies (KETs) are needed, anticipating the cross-overs between technologies and the digitalisation of physical production (European Commission, 2018d). Today interdisciplinarity and sectoral crossovers are, even more so than in the past, essential elements of the FP.

Horizon Europe will be organised around three pillars (see Figure 5.1). While Pillar 1 "Excellent Science" will focus on reinforcing EU scientific leadership, Pillar 2 "Global Challenges and European Industrial Competitiveness" will focus on tackling global challenges in line with the SDGs, while strengthening the global competitive positioning of

[59] European Council conclusions 13-14 December 2018

[60] https://ec.europa.eu/research/pdf/horizon-europe/ec_rtd_orientations-towards-the-strategic-planning.pdf

European industry. Pillar 3 “Innovative Europe” focuses on stimulating, nurturing and deploying disruptive and market-creating innovations, and on enhancing European ecosystems conducive to innovation, including through the new EIC.

The partial political agreement on Horizon Europe in April 2019 set the financial envelope for the implementation of Horizon Europe at an indicative €94.1 billion (as was proposed by the European Commission in June 2018). Priority is set on Pillar 2 and is expected to account for 54 per cent of the budget. Pillar 1 is expected to account for 27 per cent and Pillar 3 for 14 per cent. The part aimed at widening participation and strengthening the European Research Area (ERA) is expected to account for 2.4 per cent (the cross-pillar part in Figure 5.1).

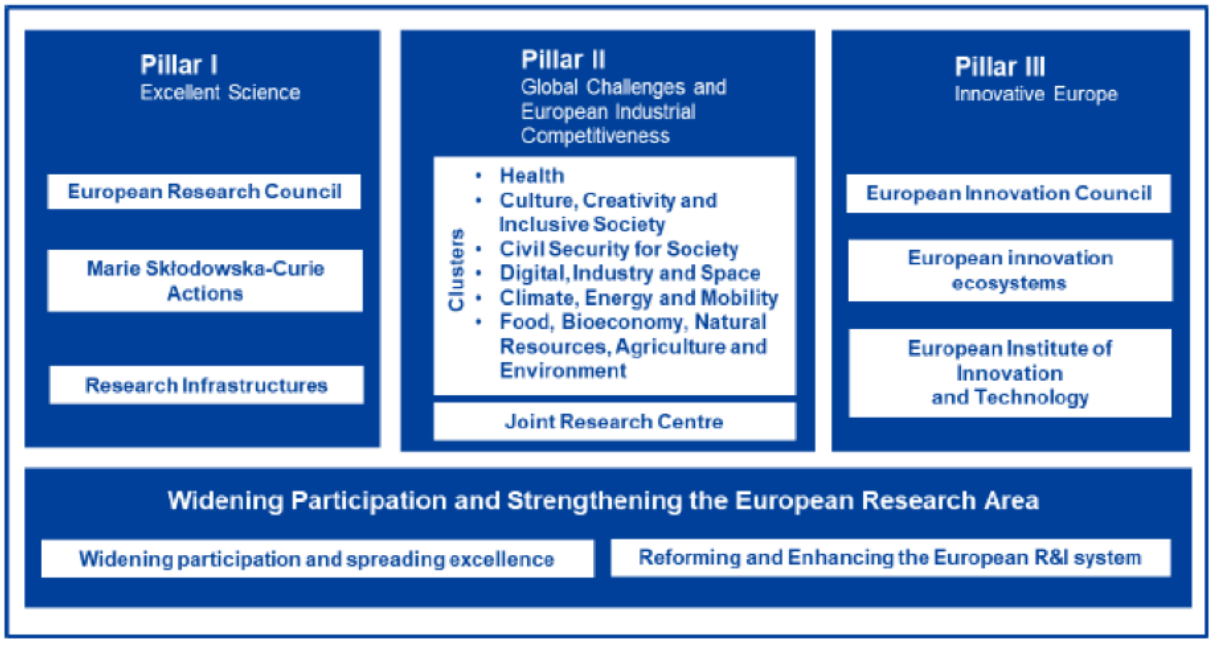
The focus of Pillar 1 is outside the scope of this analysis.

Pillar 2: Global Challenges and European Industrial Competitiveness

Pillar 2 will take forward the societal challenges and enabling and industrial technologies to better address EU and global policy priorities and accelerate industrial transformation. It includes six broad thematic “clusters” of activities. Pillar 2 is also where two new approaches and instruments for maximising impact are being funded: the “missions” and the “partnerships”. The common aim is to tackle global challenges in a coordinated way through the creating scale and critical mass, integrating demand-side policies and engaging with end-users.

One of the main novelties of Horizon Europe is the introduction of problem-driven research and innovation missions: high-ambition, high-profile initiatives which will put forward concrete solutions to challenges facing European citizens and society. Missions are intended to achieve a measurable goal within a set timeframe, with impact for science and

Figure 5.1 Preliminary structure of Horizon Europe



Source: European Commission

technology, and/or society and citizens that could not be achieved through individual actions. The missions are currently in the process of being defined and should stem from the following mission areas, which have been defined in the Horizon Europe agreement by Council and Parliament in April 2019: Adaptation to Climate Change, including Societal Transformation; Cancer; Healthy Oceans, Seas, Coastal and Inland Waters; Climate-Neutral and Smart Cities; and Soil Health and Food.

To rationalise and streamline the large number of Public-Private and Public-Public Partnerships established during the previous FPs, a new approach is being taken to the partnerships under Horizon Europe. European Partnerships (EP) will combine and coordinate a broad range of (mainly existing) research and innovation activities to address common priorities jointly with Member States, the private sector, foundations and other stakeholders. They are expected to provide mechanisms consistently to aggregate research and innovation efforts into more effective responses to the EU policy needs and turn research and innovation into socio-economic results.

Three forms of European Partnerships are foreseen: Institutionalised Partnerships (like the current Joint Undertakings), Co-Funded and Co-Programmed Partnerships. The latter two will be funded by the EU Member States, with a contribution from the EU FP. The Institutionalised Partnerships will be required to have a strong industry participation and, in most cases, expand the areas of their R&I activities.

Pillar 3: Innovative Europe

Pillar 3 is about creating an innovation friendly ecosystem to reap the benefits from Europe's strong science and research. As many policy papers conclude, it is not that Europe does not create good ideas; rather, the upscaling and diffusion of innovations is at stake (European Commission, 2018a). In addition, Europe should become better at generating disruptive and breakthrough technologies (European Commission, 2018b).

From a structural perspective, these trends led to the introduction of the EIC, aimed at supporting top-class innovators as well as start-ups with radically different ideas through the successors of the SME Instrument: The Pathfinder and the Accelerator programmes. This responds to the need for Europe to foster more disruptive and breakthrough technologies and to support the scaling up of start-ups.

Based upon the existing FET Open scheme[61], the Pathfinder will provide grants from the early-stage, high-risk innovation and aims at multi-disciplinary consortia, i.e. collaborative research involving universities, research organisations and the industry sector (SMEs, including start-ups). According to the partial political agreement, the Pathfinder will provide funding from the early technology stage (proof of concept, technology validation activities) to the early commercialisation phase (early demonstration, development of business case and strategy).

While the main component of the Pathfinder will be a bottom-up instrument, the scheme will also be used in a top-down way to target emerging technologies of a strategic nature. The Pathfinder Transi-

[61] FET Open supports early stages of science and technology research and innovation around new ideas towards radical new future technologies. It also funds coordination and support actions for such high-risk, forward-looking research to prosper in Europe, and FET Innovation Launchpad Actions aiming at turning results from FET-funded projects into genuine societal or economic innovations.

tion instrument will fund commercialisation by providing grants to researchers or innovators for activities such as demonstration, feasibility studies to assess potential business cases, and support the creation of spin offs and start-ups.

The Pathfinder awardees will continue to benefit from the Business Acceleration Services that have been offered under the SME Instrument and EIC pilot, which supports the assessment of business opportunities and development of business plans. As under the MFF 2014-2020, the Enterprise Europe Network (EEN) will provide tailored support to the SMEs involved and provide key account management services.

The Accelerator aims to bridge the "valley of death" and support entrepreneurs in launching breakthrough innovation, by encouraging co-investment between public and private investors and attracting scalable firms. It will support individual SMEs, including start-ups and, in exceptional cases, small midcaps, in carrying out breakthrough and disruptive "non-bankable" innovation.

According to the partial political agreement, it will mainly provide "blended finance". It may also provide grant-only support to SMEs, including start-ups, carrying out any type of innovation ranging from incremental to breakthrough and disruptive innovation and aiming to subsequently scale up. The agreement states that grant-only support "should correspond to that under the SME Instrument budget of the previous Framework Programme Horizon 2020."

Equity-only support to "non-bankable" SMEs, which have already received a grant-only support, may also be provided.[62]

The Commission also foresees additional support services as part of the EIC, which will be further defined and operationalised in the next stages of the process preparing the EIC. The preliminary information obtained indicates such services to innovators would include[63]:

- Business Acceleration services through the EEN and other coaches for those who do not have experience in establishing a firm.
- EIC fellowships for the leading innovators in EU, who will be called to set example and demonstrate leadership.
- EIC challenges, which will be defined as top-down problem-solving challenges, most likely similar to the EIC pilot prizes.
- Broaden the awareness on EU innovators and communicate success through monitoring of EIC awardees, success stories and intelligence on emerging technologies from national and EU programmes.
- Help EIC awardees access partnerships and networks across the EU through sparking corporate-start-up/scale-up cooperation, based on ongoing experience of SME Instrument and the EIC pilot.
- Help EIC awardees overcome regulatory barriers and improve the means of identifying needs for changes in regulations to support emerging technologies.

[62] Non-bankable SMEs are defined as SMEs that are either not yet able to generate revenues, or not yet profitable, or not yet able to attract sufficient investments to fully implement their projects' business plan.

[63] Based on the presentation of Stephane Ouaki, Head of Unit Financial Instruments in the DG RTD of European Commission at the InnoEnterprise Conference in Vienna, 21 November 2018.

5.2 Potential target groups

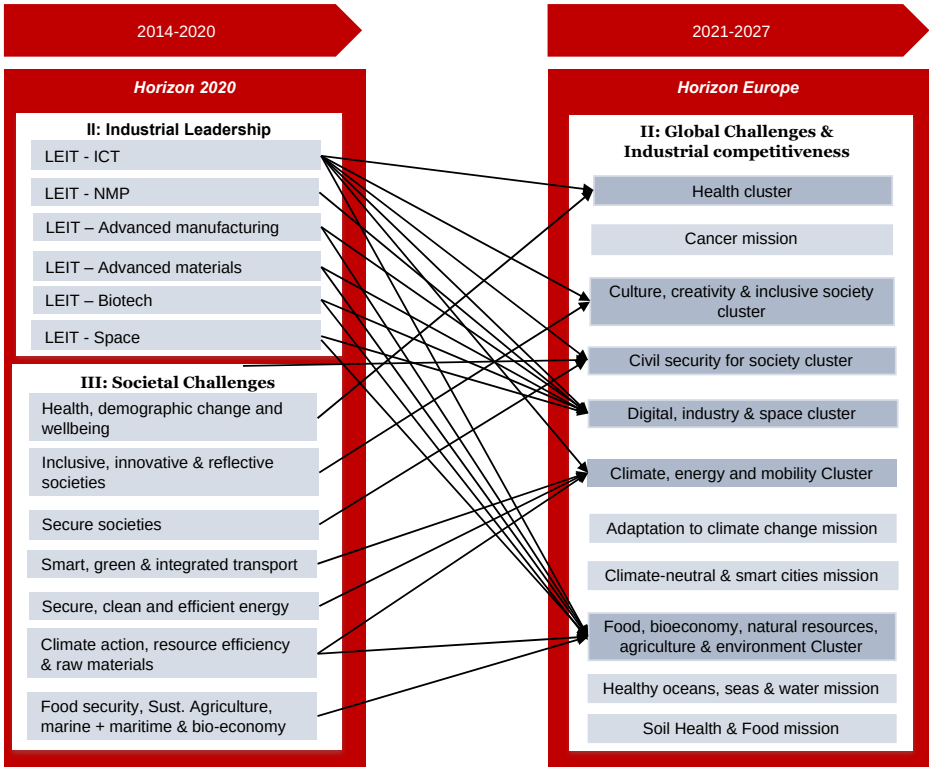
Even though the current stage of the Horizon Europe design process does not allow for an in-depth analysis of the specific focus of the upcoming FP, some observations can be made, giving an indication on which industry sectors can be expected to have a major involvement, as well as which competences that will likely lead to success in receiving funding.

A comparison of which R&I activities that will be funded under Horizon Europe (to the extent it is known at this stage) and the type of activities funded under H2020, allows us to map the industry profile of potential target groups (SMEs) based on the profile on applicants to H2020. That is, we will in the following assess the alignment and/or differences between the current description of Horizon Europe and related programmes in H2020, beyond the SME Instrument.

5.2.1 Pillar 2: Global Challenges and European Industrial Competitiveness

Reflecting the focus in Horizon Europe on creating a platform that would allow for "transformation" in the EU innovation system, the partial political agreement suggests a strong systemic approach for Pillar 2 (as shown in Figure 5.2). Through the creation of six "clusters" (dark grey in the figure below) the new FP firmly counts on the creation of extended collaboration platforms intended to "maximise impact, flexibility and synergies" and "incentivise interdisciplinary, cross-sectoral, cross-policy, cross-border and international cooperation". As a consequence, the capacity to conduct interdisciplinary and intersectoral R&D will be a major competence required

Figure 5.2 Concordance between Horizon 2020 and Horizon Europe's Pillar 2



Source: Technopolis Group

of participants under Horizon Europe, applying knowledge on technological developments for the creation of new or improved products and services that address current key failures for Europe to reach its socio-economic and sustainability objectives.

Based on currently available information, we can presume that the action lines funded under Pillar 2 in Horizon Europe will target SMEs active in the same industry sectors as under H2020.

From a thematic perspective, Horizon Europe carries on and strengthens the approach taken under H2020, setting global challenges and the SDGs at the core of the fundamental and applied research funded. There will be a strengthened emphasis on R&I in the field of climate change and energy, as well as environmental sustainability in general.

With regards to the budget, the initial political agreement indicates only a preliminary distribution of the overall budget over the pillars and programmes. Nevertheless, the data provided shows an overall distribution on the six proposed "clusters" to that under H2020. The only exception is a slight increase in the share of the budget indicatively allocated to the Horizon Europe clusters in the "green" and environment-related global challenge areas (jointly 27 pct. of the overall budget, compared to 25 pct. under H2020). The increase benefits especially the "Food and natural resources" cluster.

Comparing the industrial distribution of applications to the SME Instrument, and applications submitted by SMEs to other actions under Pillar 2 and 3 in H2020, it is apparent that there is little difference between the two "groups". SMEs within the sectors computer programming and engineering activities account for 21 and 16 per cent respectively of the applications to Pillar 2 and 3 (combined) when excluding the SME Instrument and INNOSUP (see Table 5.1).

Table 5.1 No. of applications by Norwegian SMEs to H2020, by pillar and indstry.[1]

	Industry sector[2]	Pillar 2	Pillar 3	Pct. of total[3]
C	Chemicals, chemical products	30	20	4.2 %
	Electronic and optical products	26	31	4.8 %
	Machinery and equipment	9	24	2.8 %
D	Electricity, gas and steam	8	35	3.6 %
G	Wholesale trade	12	26	3.2 %
J	Publishing activities	25	10	3.0 %
	Computer prog., consult.	114	135	21.1 %
M	Head offices, mngmt. consult.	34	76	9.3 %
	Architecture, engineering act.	73	111	15.6 %
	Scientific R&D	41	92	11.3 %
	Other prof., scientific, techn. act.	43	58	8.6 %
Q	Human health activities	4	31	3.0 %
	Total	441	740	100 %

1) Excluding the SME Instrument and INNOSUP.
2) Industry sectors with more than 30 applications.
3) Share of applications to Pillar 2 and 3 combined.
Source: Technopolis Group

Table 5.2 Share of applications by Norwegian SMEs to H2020, by programme and action.[1]

Pillar	Programme	SME Instrument	Other actions
Pillar 2	BIOTECH	4.0 %	1.0 %
	ICT	26.2 %	21.5 %
	NMP	6.9 %	14.4 %
	SPACE	0.4 %	2.8 %
Pillar 3	ENERGY	11.7 %	15.6 %
	ENV	6.0 %	8.2 %
	FOOD	13.7 %	10.4 %
	HEALTH	11.6 %	8.6 %
	SECURITY	6.0 %	5.4 %
	SOCIETY	2.7 %	3.1 %
	TPT	10.9 %	8.9 %
	Total	100 %	100 %

1) Excluding INNOSUP.
Source: Technopolis Group

As for applicants to the SME Instrument, the industrial distribution of SMEs applying from funding from other actions under Pillar 2 and 3 of H2020 corresponds with the industrial distribution of Norwegian

R&I intensive firms (see Section **Error! Reference source not found.**).

Further, there is little difference in the programme distribution of applications to the SME Instrument and other actions (see Table 5.2). Overall, one third of Norwegian applications to H2020 submitted by SMEs are applications for funding of R&I activities under the "green" societal challenge areas (Energy, Env and Food under Pillar 3). These programmes further account for nearly 40 per cent of all funded projects (all actions, incl. the SME Instrument).

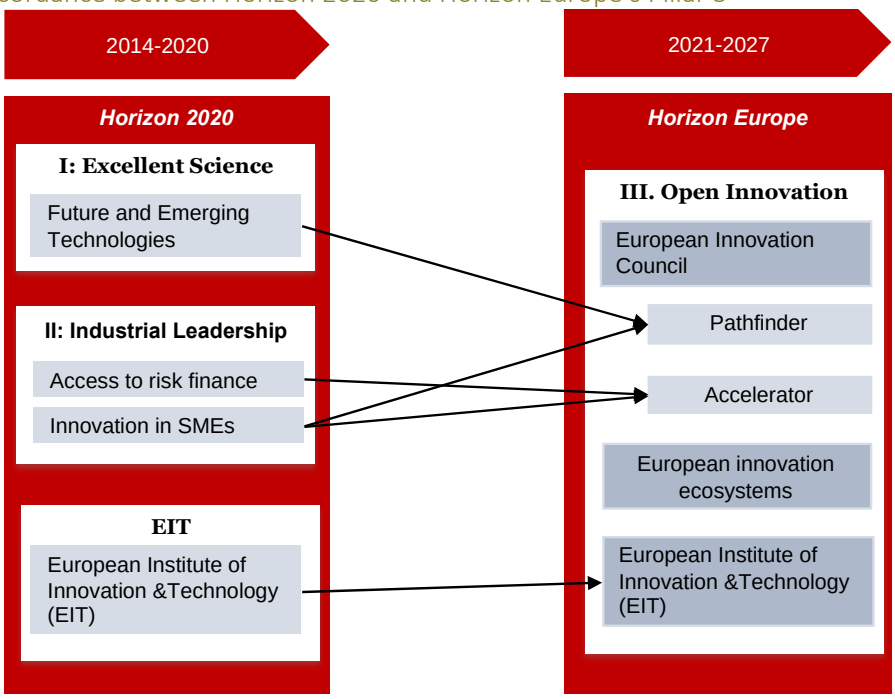
Given the above and the (preliminary) concordance between H2020 and Horizon Europe's Pillar 2 (shown in Figure 5.2), the enhanced focus on R&I for environmental sustainability under Horizon Europe thus seem to be a promising development for Norwegian SMEs.

5.2.2 Pillar 3: Innovative Europe

Disruptive, breakthrough innovation is the key word for this pillar. The partial political agreement states that the EIC should, through its instruments aim to identify, develop and deploy high risk innovations of all kinds, including incremental, with a focus on breakthrough, disruptive and deep-tech innovations that have the potential to become market-creating innovations.

This pronounced focus on "deep-tech[64]" innovation is a change from the H2020 Innovation in SMEs programme, and the SME Instrument in particular. Funding for other types of SMEs and innovation will

Figure 5.3 Concordance between Horizon 2020 and Horizon Europe's Pillar 3



Source: Technopolis Group

[64] Deep tech refers to cutting edge technologies that are developed based on tangible scientific discoveries or meaningful engineering innovations focusing on addressing complex problems that influences the real world. Deep technologies include such technologies as AI, autonomous systems, robotics, clean tech, etc.

be available in other programmes under the MFF 2021-2027, such as COSME (see Chapter 6).

The description of the two programmes funded under the EIC (the Pathfinder and the Accelerator) implies a target group of highly innovative high-tech start-ups. The focus on collaborative research in the Pathfinder programme, however, implies the need for these SMEs to be sufficiently integrated in or at least have access to the European research networks.

Indicatively, Pillar 3 will account for 14 per cent of the Horizon Europe budget, which is more than a doubling of the share allocated to the relevant programmes under H2020.

Based on the current description of the EIC, the profile of SMEs involved in the two EIC sub-programmes can be expected to be quite different from the ones involved in the H2020 SME Instrument.

The H2020 SME Instrument can shed some light on industry sectors possibly relevant for the Accelerator programme. We have shown that Norwegian participants in the SME Instruments are predominantly active within the fields of computer programming, engineering and scientific R&D (see Section 3.2.2). We have further shown that half of all participants in the SME Instrument are start-ups and that the share of start-ups has increased over time (both among Norwegian participant and in total).

In 2019, the European Commission launched the pilot of the EIC Pathfinder programme targeting technologies in the areas of micro- and nanotechnologies, artificial intelligence and advanced robotics, technologies for life sciences, health and treatment, energy technologies and interaction technologies (including virtual, augmented and mixed reality).

Currently available data does not allow us to draw conclusions on the extent to which Norwegian start-ups are active in this field (and would be interested in participating in such a programme at European level). However, it is notable that few Norwegian SMEs applied for the preceding H2020 FET Open programme. Firms in the industry sector professional, scientific and technical activities account for nearly 60 per cent of the applications to FET Open submitted by Norwegian SMEs.

5.3 Required competence

The merger of the H2020 Leadership in Enabling and Industrial Technologies (LEIT) and Societal Challenges pillars in the Horizon Europe Pillar 2 has the intention to create stronger linkages between basic and applied research. Indeed, the Horizon Europe "Common Understanding" highlights that activities from a broad range of TRLs will be covered in this pillar, including lower TRLs.

Horizon Europe intends to use the same type of research funding instruments as under H2020, i.e. Research and Innovation Actions (RIA), which typically focus on research at the 4/5 TRL level, and Innovation Actions (IA), focused on the 6/7 TRL.[65] Currently available data shows that, in both the H2020 LEIT and Societal Challenges programmes, a slightly higher share of the budget was dedicated to RIA projects. IA projects typically have a smaller

[65] Under H2020, Research and Innovation Actions primarily consist of activities aiming to establish new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service or solution. Innovation Actions primarily consist of activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services.

budget which implies that, in terms of number of projects, more IA than RIA projects were funded.

It should be noted that the ratio of RIA/IA projects has its implications for the proposal evaluation criteria, and therefore specific competences required. Under H2020, the impact criterion weighs 1.5 for the appraisal of IA applications while the two other criteria (excellence and quality and efficiency of implementation) weigh 1 (European Commission, 2016). There is no weighting of the criteria for RIA projects.

For Horizon Europe, the current political agreement states that the same evaluation criteria as under H2020 will apply, i.e. excellence, impact and quality and efficiency of implementation. The weighting of the evaluation criteria will be decided upon at a later stage in the strategic process.

Norwegian SME applications to Pillar 2 and 3 in H2020 reflect the overall (all countries) distribution between RIA and IA in terms of number of projects. IA accounts for a slightly higher share of funded Norwegian projects than RIA.

5.4 Potential support by Innovation Norway

The type of support Norwegian SMEs would benefit from depends in a first instance on their area of weakness in competing for FP funding. Previous evaluations have shown that critical factors for a successful application for funding under the EU FP are: 1) competitive strength, i.e. excellence in science and technology, of relevance to the programme of application; 2) understanding of the calls and competences required; and 3) capacity of proposal writing. Seeing that the overall majority of FP funding is allocated to collaborative research, we should also include 4) integration in – or at least access to – networks of organisations with a high level of R&I capacity. This is especially important in the case of SMEs which only rarely act as coordinators of multi-partner projects.

In Section 5.4.1, we first consider the focus and type of support Norwegian SMEs might need; in Section 5.4.2 we suggest some potentially relevant support measures, based upon international practice.

5.4.1 Need for support

To assess potential divergences in strengths and weaknesses related to the critical factors mentioned above, we study the share of applications scored above the threshold for funding. This is done dependant on the industry sector the SMEs belong to, and/or the H2020 programme they applied for funding from. By including all applications scoring above the threshold as “successful”, funded or not, we eliminate the dimension of over-subscription and budget limitations in H2020 itself from our analysis.

The following summarises the picture emerging in this analysis from an industry perspective. We complete this analysis with some relevant findings from previous studies.

The share of applications scoring above the threshold for funding (when excluding the SME Instrument) indicate a high level of competitiveness among Norwegian SMEs in the H2020 Food and ICT programmes. Applications for funding from the Energy programme were overall the least successful (see Table 5.3).

Data on the share of applications that scored above the threshold for SMEs in manufacturing of chemicals, electronics and machinery suggests a high capacity for selectivity in the applications. Even though they have been less active in applying for H2020 funding, they have reached an above-average share of applications, above the threshold in the relevant societal challenge areas. The SMEs active in manufacturing of machinery, and equipment sector

for their applications to the Transport programme (TPT), are the exceptions.

The above-average share for applicants active in manufacturing of electronics and optical products both for the Transport and ICT programme is to be noted, suggesting a high level of strong innovative capacity.

Intersectoral/disciplinary applied research in thematic areas of application seems to be a general weakness for SMEs active in the ICT (computer programming) sector and in engineering activities and scientific R&D. In general, they performed well in their applications for the more fundamental research-oriented LEIT pillar (Pillar 2), but less for the application-oriented Societal Challenges areas (Pillar 3), and the Energy and Transport programmes in particular.

SMEs in the Electricity, gas and steam sector may have underestimated the level of expertise required. While their applications concentrated on the thematic area where they would be expected to perform best, i.e. energy, they have a lower share of applications that scored above the threshold for funding than they have reached in H2020 overall.

The share of applications above the threshold within RIA is strikingly low for the SMEs active in scientific R&D activities. The breakdown of the rejected proposals scores shows a particularly low average score of 1.9 against the “implementation” criterion.

Innovation Actions (IA) involving head offices/management consultancies have a particularly low average score on the excellence criterion (2.6) and especially, impact criterion (2.5).

Table 5.3 Share of applications scored above the threshold for funding.[1] Selected industry sectors, programmes and actions.[2] Applications to H2020 submitted by Norwegian SMEs[3]

Industry sector	Pillar 2	Pillar 3			Instrument		Total no. of applications	Total share above threshold
	LEIT-ICT	ENERGY	FOOD	TPT	RIA	IA		
C Chemicals, chemical products		91 %			56 %		50	54 %
C Electronic and optical products	68 %			73 %	54 %		57	61 %
C Machinery and equipment		73 %		40 %		60 %	33	61 %
D Electricity, gas and steam		50 %				61 %	43	57 %
G Wholesale trade				50 %	46 %		38	50 %
J Publishing activities	57 %				43 %		35	47 %
J Computer prog., consult.	60 %	45 %		37 %	51 %	50 %	249	50 %
M Architecture, engineering act.	73 %	40 %		45 %	51 %	37 %	184	45 %
M Head offices, mngmt. consult.	39 %	45 %			49 %	35 %	110	46 %
M Other prof., scientific, tech. act.	77 %			47 %	48 %	53 %	101	47 %
M Scientific R&D	71 %		62 %	40 %	40 %	58 %	133	45 %
Total applications	231	188	146	113	709	403	1,166	
Overall success rate	61 %	41 %	60 %	50 %	47 %	49 %		47 %

1) Areas of strengths/weaknesses are highlighted as shares per programme and action above/below the overall share of applications above the threshold in the given sector (cells marked in blue and pink respectively).
2) Only industry sectors with minimum 20 applications for a specific programme/action and 30 applications for H2020 Pillars 2 and 3 are included (excl. the SME Instrument and INNOSUP). Cells with less than 10 applications are not coloured.
3) The SME Instrument and INNOSUP are excluded.
Source: Technopolis Group

As mentioned above, success in receiving funding from EU's FP does not depend exclusively on the capacity of the individual applicant. The competitiveness of the consortium is also a key factor in this regard. Previous studies showed that the Public-Private Partnerships that have been set up under H2020, and previous FPs in the form of Joint Undertakings or PPPs, have proven to be valuable platforms for the integration of industry agents in European R&I networks, including SMEs.

In this context, the low level of applications by Norwegian SMEs for calls launched in the context of existing Joint Undertakings and other Public-Private Partnerships is surprising. Overall, a relatively low number of SME applications were submitted through the PPPs, i.e. about 320 applications representing about one-fifth of the total SME applications. Close to half of these applications were submitted in the field of ICT, and SMEs active in computer programming and engineering activities jointly accounted for about 40 per cent of the applications.

Focusing on Horizon 2020 PPPs that are expected to continue, also under Horizon Europe[66], Norwegian SMEs submitted about 80 proposals for projects funded in the ECSEL PPP, 40 applications in the FCH2 PPP, about 30 in the BBI, about 20 applications in the context of the HPC PPP, and less than 10 applications in the SESAR and the Clean Sky2 PPP. These proposals were all highly in reaching scores above the threshold for funding; the lowest share above threshold was 60 per cent for the BBI proposals.

In relation to the Horizon Europe Pillar 3, as mentioned above, only 50 Norwegian SMEs submitted proposals for the FET Open programme. As expected, these consisted predominantly of SMEs active in the Scientific R&D sector (13 proposals), followed by Engineering activities and Other professional/S&T activities (10 proposals, each). Other industry sectors accounted for 4 to 5 proposals each and were manufacturers of chemical products, electronics, as well as computer programming activities.

About 60 per cent of SMEs in scientific R&D activities and manufacturing of chemical products reached scores above the threshold for their proposals. For SMEs in the other sectors, the share was relatively low; around 25 and 30 per cent.

A 2017 study funded by the Research Council of Norway (RCN), analysing Norwegian participation in health, ICT and industry[67], came to several conclusions that are of particular relevance for this study.

From a thematic perspective, it concluded that Bioeconomy and Ocean were the two H2020 research areas targeting industry where Norwegian competitiveness was highest, featuring a strong critical mass for competitive R&I. It was noted, though, that SMEs appeared to be a weak link, showing below-average levels of competitiveness. The study recommended a stronger integration of the SMEs in the Norwegian research communities. Manufacturing and ICT were considered areas of potential competitive strength. A major conclusion regarding all stakeholders active in this field, including SMEs,

[66] H2020 partnerships that currently form the basis for candidate Institutionalised European Partnerships under HEU are: ECSEL (in the field of electronics), FCH2 (clean hydrogen), BBI (circular bio-based Europe), 5G (Smart networks and services), HPC (Euro-HPC), SESAR (integrated air traffic management), Clean Sky2 (clean aviation), and Shift to Rail (transforming Europe's rail system). See also https://ec.europa.eu/info/law/better-regulation/initiatives_en?topics=All&stage_type=PLANNING_WORKFLOW&feedback_status=OPEN&type_of_act=All

[67] Astrom, T., Brown, N., Mahieu, B., Hakansson, A., Varnai, P., Arnold, E., (2017) Norwegian participation in H2020 in health, ICT and industry - A study on the potential for increased participation, Technopolis Group.

was that while there is no doubt in that the competitiveness is there, a key flaw is in the integration of quality international networks. Finally, the study saw growing capacity issues for all stakeholders in the areas of Energy and Transport. The consideration was that there might be an issue in the alignment of Norwegian R&I competence in the field with the interdisciplinary focus and/or nature of R&I in H2020.

In terms of need for support, a survey conducted in the context of the study showed that SMEs especially indicated investment of time and resources as a major barrier for applying for funding from H2020. SMEs struggle more than large companies with the perceived complexity of H2020 rules and are discouraged by the management burden. They also lack foreign networks to a higher degree. By far the most frequently requested improvement to the current mix of national support measures is increased opportunities for actors to find partners with whom they can build competitive consortia.

5.4.2 Potentially relevant support measures

A taxonomy of support measures for participation in the EU FPs that are currently available internationally is laid out in the table below (see Table 5.4). The taxonomy is based upon a categorisation of these measures in a 2018 study for the Finish Prime Minister's Office, to which Technopolis contributed[68], building on the practice in, amongst others, Austria, Finland, Ireland, the Netherlands and Spain.

In an international context, the overall assessment of Norway's range of supports for prospective Horizon 2020 participants is that it constitutes one of the most comprehensive systems. The country's support for participation in the FPs has been developed over successive programming periods, and the present support measures are, to a notable degree, an extension to those developed under FP7.

A conclusion from the 2017 study for the RCN was that current support measures in Norway are highly effective, especially in relation to information trans-

Table 5.4 A typology of FP participation support instruments

Support category	Actions included
Support to find calls	▪ Information days ▪ Events ▪ General awareness creation nationally or in specific groups
Support to find partners	▪ Platforms for national and international networking
Funding to produce proposals	▪ Payment of salary costs for authors ▪ Travel costs for partnership meetings / conferences / events ▪ Payment of consultancy costs ▪ Training / capacity-building
Co-funding for FP participants	▪ Top-up or match funding ▪ 'Buy out' or replacement funding for academics ▪ 'Second chance' funding, to conduct or further develop non-funded projects
Proactive actions to influence calls	▪ Influencing EU groups or research agendas / calls via membership of specific groups or committees ▪ Support to, or coordination of, JPI/co-fund engagement ▪ Alignment of national research funding programmes to EU / FP priorities

Source: Technopolis Group, based on Piirainen, Kalle A. et al (2018)

[68] Piirainen, Kalle A. et al (2018), How can the EU Framework Programme for Research and Innovation increase the economic and societal impact of RDI funding in Finland? PTT, Ramboll, Technopolis Group, 4Front.

fer and the delivery of concrete and financial support for proposal writing. The survey showed that PES (see Section 3.4.4) is an important measure for SMEs: 74 per cent of SMEs stated that the PES grant was critical for the firm's participation in the application. Many respondents received support from Norwegian NCPs and/or Innovation Norway's regional/local EU advisors with application writing, pre-submission assessment of applications and one-to-one consultations (some also asked for administrative assistance for on-going projects). The study also found that SMEs had good access to relevant information and found it particularly easy to find out who to contact.

Our recent studies looking into the international practice, however, revealed a trend among high-performing Member States that could be of inspiration to Norwegian policy makers, i.e. the trend away from generic towards more targeted support. These areas of need include addressing perceived underperformance in H2020 sub-programmes, increasing the internationalisation of the research base, or increasing the participation of existing clusters or certain types of organisations (such as SMEs or Universities of Applied Sciences).

With as the needs of SMEs a starting point, we highlighted in the previous sections the probability of a stronger requirement for competence in interdisciplinary research under Horizon Europe, combined with the capacity to contribute to both fundamental and applied research. Our analysis found, as the 2017 study for RCN, that especially stakeholders applying for the fields of Energy and Transport encountered difficulties in keeping up with the changes in FP priorities and requirements for more interdisciplinary research. In our study, this showed to be particularly true for the SMEs engaging in computer programming and engineering activities and scientific R&D.

In the 2017 study for the RCN, we suggested that measures addressing such shortcomings could include specific action lines in the RCN programmes to foster applied or multidisciplinary R&I, the creation of learning opportunities such as subsidies for international conferences on specific themes, discussion arenas, working groups etc.

The approach taken in Ireland is worth noting because of its pronounced structural dimension. Through 2016, the Irish Research Council invested approximately €90,000 in workshops to support the embedding of interdisciplinary thinking in the Irish research system. In addition, the last couple of years has seen the development of a special team comprising relevant National Contact Points (NCPs), National Delegates and agency development advisors to support bringing expertise and businesses into multi-sectoral and multi-disciplinary projects such as ICT. This development of a multi-disciplinary industry team exemplifies the role of NCPs as proactively building relationships with and between industry and research partners, with the team particularly working to mobilise expertise from across the system to support such projects. It should be noted that the network of NCPs is overseen by Enterprise Ireland and comprises 36 representatives from 10 research and industry agencies. The NCPs are available for each type of potential participant, from government, academia, research organisations and businesses, with two dedicated NCPs for SMEs.

Another area of weakness among Norwegian SMEs that emerged from our analysis is the quality of the project consortia Norwegian SMEs teamed up with. The SMEs need to gain access to and, if possible, be integrated in highly competitive research networks.

These findings reflected the conclusions in previous studies. The 2017 study for the RCN formulated proposals for measures addressing these weaknesses and future needs. One suggestion was to develop specific action lines in the RCN pro-

grammes to foster H2020-relevant collaboration among actors in a specific area taking a value-chain approach. Another suggestion was to open specific action lines to multinational R&I teams, thus fostering stronger international relationships and international knowledge transfer beyond the FP structure.

In France, the programme 'Setting up European or International Scientific Networks' (Montage de réseaux scientifiques européens ou internationaux, MRSEI) has been established for Horizon 2020 as part of a suite of measures to address declining participation observed in prior FPs. The programme aims to facilitate access to European research funding through the formation and coordination of transnational networks. Up to €30,000 is available over 18 months across all disciplines for research networks that specifically in-tend to prepare and submit a collaborative project in response to a large-scale European or international call for proposals with major technological and scientific impact.

Germany's national funding for support to Horizon 2020 applicants is focused entirely around the internationalisation of its research and business base, offering support to applicants to develop collaborative projects with partners in key strategic geographies (Central and South-Eastern Europe, North and South America, and the Asia-Pacific). Funding ranges between €60,000 for 12 months, to €150,000 for 36 months, and variously supports proposals to the three pillars of Societal Challenges, Excellent Science and Industrial Leadership. The amount of funding is calculated based on the type of beneficiary (where commercial entities may be funded for up to 50 per cent of their eligible costs).

Another potential measure would be to encourage more joint FP proposals, i.e. national partnering in FP proposals, in order to exploit the strong positions in international networks of large companies, research institutes or universities, depending on the field. An option would be to increase the existing weighting in STIM-EU for the research institutes' participation together with SMEs; one could also consider expanding the STIM-EU bonus system to universities.

Most Member States offer some form of grant to support international networking. Several examples exist of support for joint project preparation and the formation of international research consortia. Particularly large support measures with the objective of stimulating networking are funded in France and Germany.

5.5 Consequences of non-participation

The final question for this part of the study is "What would the consequences be if Norway would not participate in Horizon Europe, and how could this be compensated?" Thus, in this section, we give an overview of the typical effects of participation in the FPs, followed by a reflection of what non-participation in Horizon Europe would mean for Norwegian SMEs, and what the potential compensation measures could be.

5.5.1 Effects of participation in EU's FPs

There have been waves of evaluative impact assessments at the national level associated with each of the FPs from FP4 onwards. Countries that have done evaluative studies (as opposed to merely mapping) of their participation in the FPs are concentrated in Northern Europe and include: Austria, Switzerland, Germany, Denmark, Ireland, Finland, Norway, Sweden and the UK, while collective studies have been done for the new Member States and the Nordic countries.

Broadly, the national and EU-level evaluations alike find that the FP provides a broad and permissive context for RTD programming in line with changes in EU strategy and ambitions. Its high-level goals are to strengthen the research capabilities under-

pinning European industry and to improve citizens' quality of life, while its low-level goals are largely to do R&D in its constituent specific programmes. This breadth can easily accommodate a changing balance among the programme's need to involve the research and industrial communities, as well as to tackle the societal challenges that form an increasingly important part of the FP effort.

The evidence shows that the FPs broadly fund high quality work, in which universities and research institutes play a large and increasing role. Framework participation is led by a "core" of major beneficiaries who sit at the heart of multiple European RTD networks. In FP5 and FP6 there was concern about the level of industrial participation, which has since been addressed by increasing focus on the Key Enabling Technologies (KETs) and other innovation activities addressing higher TRL numbers than much of the FP traditionally has done.

More broadly, there is evidence that the FPs have positive effects on the behaviour of the research community, competitiveness, jobs, regulation and the environment. The Commission's overall long-term impact study – which in truth was a pilot, intended to explore how to understand long-term impacts rather than to give a comprehensive account of the FP – gives a comprehensive account, not only of some scientific achievements, but especially of the important "soft" roles the FPs play in agenda setting in science and industry, community building and policy coordination that is visible at the national level or the level of single FPs.[69]

Finally, FP projects primarily produce knowledge and networks, strengthening European-level human capital and R&D capabilities across borders. These dimensions are important for the research sector as well as for industry. National evaluations tend to not explore what networking means for industry in any great depth. However, it is clear that the FPs serve not only as a place to strengthen its research capabilities and obtain knowledge, but also as an arena for defining and strengthening business relationships, partnerships and influencing R&D trajectories and standards. One would therefore expect one of the drivers for FP participation to be the relevance of such opportunities to national industry.

5.5.2 Compensating measures

Based on the well-known effects of participation in the FPs laid out above, it can be envisaged that non-participation in Horizon Europe would have a significant impact on the global competitiveness of the national innovation system in Norway, including the SMEs. Inevitably, this would have its repercussions on the R&I organisations' capacity in responding to Norway's policy priorities, such as sustainable energy.

It is widely acknowledged that addressing the challenges in climate change and sustainable development requires action at a global level. Non-participation in the FP would exclude the actors in the Norwegian R&I system from the pool of knowledge that the FP represents, limiting their potential of contributing to the solution of the challenges.

For the SMEs specifically, non-participation of Norway would deprive them of an opportunity to enhance their positioning in global value chains. For highly innovative SMEs, it would also imply a more

69 E. Arnold, et al, "Long-term Impacts of the Framework Programme", Technopolis Group, a study for the European Commission, 2011.

limited access to financial support for their risky research and upscaling.

While solutions might be found to provide financial support to high-tech innovative SMEs, compensation measures should nevertheless go beyond the delivery of financial support. A more strategic approach would consist in creating platforms and opportunities compensating for the loss of the international dimension in R&I. This would entail transnational research programmes thanks to ad-hoc agreements with other industrialised countries.

5.6 Summary of findings

While the current stage of the Horizon Europe design process does not allow for a very detailed analysis of the specific focus of the upcoming framework programme, some observations can be made according to the available information.

It can be assumed that the action lines funded under Pillar 2 in Horizon Europe will target SMEs active in similar industry sectors as under the current H2020. The current policy priorities as well as budget indications suggest an increase in the share of budget allocated to the Horizon Europe clusters covering global challenge areas in “green” and “environmental” domains. The mentioned increase is evident for the “food and natural resources” cluster. Overall, the increased focus on R&I for environmental sustainability under Horizon Europe appears as a promising development for Norwegian SMEs.

The currently available description of the EIC suggests that the profile of SMEs involved in the two EIC sub-programmes can be expected to be quite different to that of the SMEs participating in the H2020 SME Instrument.

The EIC Pathfinder programme builds upon the FET Open Programme and will fund collaborative research oriented towards disruptive innovation. While the main component of the Pathfinder will be a bottom-up instrument, the Pathfinder scheme will also be used in a top-down approach to target emerging technologies of a strategic nature. Current data does not allow us to draft conclusions on the extent to which Norwegian start-ups would have the competences or would be interested in participating in the EIC Pathfinder programme. Under H2020, few Norwegian SMEs applied for funding under the FET Open programme. The pilot of this programme under H2020 targeted areas such as micro- and nanotechnologies, artificial intelligence and advanced robotics, which are not the areas of expertise for most of the SMEs funded under the SME Instrument.

SMEs has indicated investment of time and resources as a major barrier to apply for funding in H2020; SMEs not only struggle more than larger companies with the perceived complexity of procedures and ruling in H2020, but they are also discouraged by the management burden. The most requested improvement to the current mix of national support measures is the need for increased support to participants in finding collaboration partners and in building consortium.

Non-participation in Horizon Europe would restrict access to the pool of international knowledge that the framework programme offers to the stakeholders operating in the Norwegian R&I system. This would limit their capacity to respond to the Norwegian national priorities and challenges. Specifically, for SMEs, it would imply that they cannot take advantage of the opportunity to enhance their positioning in global value chains. For the highly innovative SMEs, it would equally imply a more limited access to financial support for their risky research or upscaling efforts.

6 The EU Competitiveness of SMEs programme (COSME)

Norway only participates in part in the current COSME programme through the Enterprise Europe Network (EEN). The Single Market Beyond 2020 and Competitiveness of SMEs will be COSME's "executors". As a part of this analysis, Innovation Norway has asked for an assessment of the advantages and disadvantages for potential target groups if Norway (i) participates in full in the new Competitiveness of SMEs, (ii) does not participate or (iii) partially participates, such as today's affiliation through EEN.

Answering this implies the need for three strands of analysis. First, we map the benefits of the current COSME programme and its sub-programmes for the participating SMEs. Second, we map the characteristics and objectives of the COSME programme and its sub-programmes. Third, we align the objectives of the COSME programme with the needs of the Norwegian SME ecosystem.

6.1 Progress in the negotiations

The European Commission published the Commission Staff Working Document[70], containing the Impact Assessment for the Programme for single market, competitiveness of enterprises, including the COSME programme on 7 June 2018. The proposal for the future COSME programme and its proposed budget was subsequently discussed in the European Council and the European Parliament.

A significant discrepancy in the positions of these two EU institutions, in relation to the level of ambition for the COSME programme, emerged from this negotiation process. The scenario favoured by the European Council is more aligned with a status-quo situation with no significant increase in funding for the COSME programme compared to the MFF 2014-2020. The scenario proposed by the European Parliament is more ambitious, especially regarding the investment level for the Scaling-up initiative and the EEN. All negotiations are currently stalled awaiting for the new European Commission to be established and the European Parliament to launch its activities following the elections. Our interviewees declared that the European Commission is not taking any further steps for the moment and is waiting for the outcomes of the future negotiations in relation to the level of investment in COSME.

As a result, the descriptions of the future COSME programme in the sections below needs to be considered with caution, as they are based only on the proposal outlined in the above-mentioned staff working document and are not final. Nevertheless, our interviewees did not expect major changes to the current focus and planning of the programmes it entails.

6.2 The proposed COSME programme

COSME is part of the Single Market Programme in the MFF 2021-2027 (see Figure 2.1). It is proposed that the Single Market programme would have a budget of approximately €6.1 billion, of which around €1 billion is allocated to the COSME programme (excluding the financial instruments).[71]

The European Commission Staff Working Document providing the impact assessment for the new COSME programme[72] defines the general objec-

[70] SWD(2018) 320 final

[71] A Modern budget for a Union that Protects, Empowers and Defends - The Multiannual Financial Framework for 2021-2027, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, May 2018

[72] European Commission, Commission Staff Working Document, Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council establishing the Programme for

tives for the COSME 2021-2027 programme as: (i) to promote the creation and sustainable growth of enterprises, in particular SMEs, and (ii) to strengthen the competitiveness of enterprises, boosting industrial modernisation and fostering entrepreneurship.

The programme is structured in two pillars with the following specific objectives[73]:

Pillar	Objectives
Access to Markets, including the EEN and the mentoring scheme	▪ To ensure access to public and/or public markets for SMEs as well as supporting them in addressing global and societal challenges ▪ To promote internationalisation of businesses, such as SMEs, and reinforcing EU industrial leadership throughout global value chains
Business Environment, Industrial Modernisation, Competitiveness and Entrepreneurship	▪ To reduce the administrative burden and market barriers as well as fostering a favourable business environment conducive to SMEs benefitting from the Single Market ▪ To promote the growth of businesses, skills development and industrial transformation throughout manufacturing and services sectors ▪ To enable SMEs to take up innovation and value chain collaboration based on strategically connecting ecosystems and clusters ▪ To exploit market and entrepreneurial opportunities through the enhancement of an entrepreneurial business environment and culture supportive sustainable enterprises, and supporting start-ups, business sustainability and scale-ups

The proposed budget for the pillars and specific sub-programmes in COSME, considers two scenarios for the definition of the final COSME budget. Table 6.1 shows a "normal" and an "ambitious" scenario.

Table 6.1 Proposed budget for the COSME programme (in million €)

Pillars and programmes	Nominal	Ambitious
Access to Markets, including the EEN and the mentoring scheme	468	668
EEN and the Erasmus for Young Entrepreneurs programme	*400*	*600*
EU-Japan Centre	17	17
IPR SMEs helpdesk	18	18
Other actions and measures	33	33
Business Environment, Industrial Modernisation, Competitiveness and Entrepreneurship	260	1,410
Joint Cluster Initiative and Modernisation of Industry	*150*	*300*
Scaling-up instrument		*1,000*
Sectors' competitiveness	40	40
SME Policy	32	32
Better Regulation	5	5
Other actions and measures	33	33

Source: European Commission, Commission Staff Working Document, Impact assessment accompanying the document Proposal for a Regulation establishing the Programme for single market, competitiveness of enterprises, including small and medium-sized enterprises, and European statistics, SWD(2018) 320 final, 7 June 2018

The proposed budget illustrates the focus in COSME on three major sub-programmes: The EEN (which also might take responsibility of the Erasmus

single market, competitiveness of enterprises, including small and medium-sized enterprises, and European statistics and repealing Regulations (EU) No 99/2013, (EU) No 1287/2013, (EU) No 254/2014, (EU) No 258/2014, (EU) No 652/2014 and (EU) No 2017/826, 7 June 2018, SWD(2018) 320 final.

[73] The "access to finance" instruments of the 2014-20 COSME programme will be part of the InvestEU programme under the MFF 2021-27.

for Young Entrepreneurs scheme), the Joint Clusters Initiative, and the Scaling-up instrument. We describe these main programmes further below.

6.2.1 The EEN and services offered

The EEN services provided through the COSME programme (i.e. beyond the Key Account Management and counselling services for the beneficiaries of EU funding) generally seek to facilitate cross-border collaboration and to help SMEs to innovate and internationalise. A broad range of high-quality services are provided by the EU Network to the benefit of SMEs:

- Facilitating business cooperation in cross-border context
- Support in accessing EU projects and funding, including participation in the Framework Programme
- Advice on EU legislation, IPR and standards
- Assistance for SMEs in improving their innovative capacities
- Support to SMEs in going international, and
- Gathering feedback from SMEs to legislative initiatives

Table 1 in Appendix 1 maps the services provided by the EEN against the framework of market and system failures, set out in Section 0 above.

6.2.2 The Joint Cluster Initiatives

This pillar in the COSME 2021-2027 programme will combine the existing cluster measures currently funded through different initiatives under Horizon 2020 and COSME, and group them into one single initiative with an aim to induce coherence and critical mass.

The European Commission considers the cluster partnerships to be a strategic tool for supporting the competitiveness and scale-up of SMEs. By connecting specialised eco-systems, clusters create new business opportunities for SMEs and integrate them better in European and global strategic value chains. The proposal for the 2021-2027 COSME programme is therefore to ensure that the Joint Cluster Initiatives achieves critical mass to accelerate the growth of SMEs.

The overall purpose of the Joint Cluster Initiatives is firstly to boost the growth and development of strategic EU industrial value chains and secondly to support Europe's business and SMEs in assuming global leadership in industrial specialisation of strategic importance. The aims are further to launch industry-led missions across 10-20 industrial specialisations to stimulate collaboration and SMEs uptake of new business models, advanced technologies and resource-efficient solutions in EU value chains. Activities to promote skill improvement, talent attraction, acceleration of entrepreneurship and internationalisation, and access to procurement markets and global value chains, are expected to complement these missions. Direct support to SMEs will be channelled through the cluster organisations for the following: uptake of advanced technologies, new business models, low-carbon and resource-efficient solutions, creativity and design, skills upgrading, talent attraction, entrepreneurship acceleration, and internationalisation.

The Joint Cluster Initiatives extends the scope of the current initiative (linked to COSME and Horizon 2020) as it does not only cover cluster organisations, but also specialised technology centres, co-working incubators, accelerators and specialised SME support actors.

The consolidated Joint Cluster Initiatives for boosting industrial modernisation are foreseen to have a minimum budget of €150 million, which comprises the total budget set for the existing COSME's cluster initiatives (approx. €40 million) and those funded

under Horizon 2020 (approx. €130 million). The increased budget of €300 million under the ambitious scenario would allow for an increase in the reach-out to SMEs, from the current 254,600 to 467,400. This assumption is based on the current reach of 3,800 SMEs per €1 million invested as outlined in the COSME interim evaluation. It would also help in channelling most of the funding, i.e. approx. €177 million, directly to over 2,500 SMEs.[74]

6.2.3 The Scaling-up instrument

The new Scaling-up instrument is not a financial instrument but a SME growth support instrument. Most important, it should not be viewed as a standalone instrument but as an integral part of the programme, implemented by the Joint Cluster Initiatives with support from the EEN.

The Scaling-up instrument is designed to offer growth acceleration support for groups of SMEs with an eye to induce (1) joint internationalisation activities; (2) access to procurement markets, business and new skill development; and (3) take-up of advanced technologies (such as advanced manufacturing, digital and big data), new business models and low-carbon and resource efficient solutions to reduce production costs or to integrate them into new or emerging industrial value chains.[75]

Even though the action would follow a simplified process inspired by the H2020 SME Instrument, there are substantial differences between the two instruments. On one hand, the Scaling-up instrument would follow a different and focused implementation, grounded in a wider growth support logic not restricted to the scope of breakthrough innovation. It will be restricted to the testing of solutions and smaller support amounts (i.e. Phase 1 only) and thereby not only focusing on innovative SMEs. The Scaling-up instrument is framed as a tool to support, across technological, sectoral and regional boundaries, scale-up activities for SMEs, in order to respectively push forward (1) industrial transformation; (2) access to global industrial value chains and global markets; and (3) engagement in strategic interregional collaboration.

In addition, rather than supporting SMEs individually and targeting solely the most innovative SMEs, the Scaling-up instrument will act as a multiplier by connecting and supporting groups of SMEs from a wide range of industrial specialisations and sectors and in combination with other actions. This type of implementation approach has already been tested successfully by the cluster projects for new industrial value chains under H2020 (INNOSUP-1). A standardised implementation tool (like the SME Instrument Phase 1) would be used by the SME intermediaries of cluster partnerships to channel lump sums to third party SMEs instead of each partnership designing their own innovation voucher scheme or similar.

It is envisaged that the new Scaling-up instrument will be implemented through yearly calls for proposals offering lump-sum grants – for a maximum of €60,000 – and coaching services covering feasibility plans for joint innovation take-up, internationalisa-

[74] European Commission, Commission Staff Working Document, Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and of the Council establishing the Programme for single market, competitiveness of enterprises, including small and medium-sized enterprises, and European statistics and repealing Regulations (EU) No 99/2013, (EU) No 1287/2013, (EU) No 254/2014, (EU) No 258/2014, (EU) No 652/2014 and (EU) No 2017/826, 7 June 2018, SWD(2018) 320 final.

[75] European Commission, Commission Staff Working Document, Impact assessment accompanying the document Proposal for a Regulation establishing the Programme for single market, competitiveness of enterprises, including small and medium-sized enterprises, and European statistics, SWD(2018) 320 final, 7 June 2018

tion activities, resource-efficiency, etc. The ambitious scenario, shown in Table 6.1, should allow for a direct support to 20,512 SMEs as part of the reach-out of cluster initiatives and reach 1.1 million SMEs that are engaged in the clusters through the joint collaboration projects.

6.3 Value of COSME for Norwegian SMEs

The services provided by the EEN and the initiatives supporting cluster partnerships (across borders) will be two of the key focus areas in the 2021-2027 COSME programme. A third area will be the direct support to innovation in SMEs, like the SME Instrument Phase 1, but implemented by using the cluster partnerships as intermediaries as was the case in the H2020 INNOSUP-1 programme.

In the sections below we first cover the EEN services and then the clusters programme, including the H2020 INNOSUP programme. We also consider that Innovation Norway currently funds programmes to the benefit of the Norwegian clusters and offers services to SMEs connected to its role in the EEN. In each section we therefore first describe the programmes funded by Innovation Norway and map out the industry sectors they involve and failures they intend to address. We further lay out the benefits that SMEs involved in the 2014-2020 COSME programme drew from their participation.

6.3.1 EEN services

Innovation Norway has hosted the EEN in Norway since FP7 and has continued being involved in the EEN network as a Business Cooperation Centre, which is the status for EEN members located in countries that are not COSME members. Innovation Norway has offered EEN services to SMEs in Norway on a self-funded basis, advisory services etc., since 2015.[76]

As shown in Section 4.1.1, a significant share of the SMEs applying for funding from the SME Instrument have received EU advisory from Innovation Norway. In addition, several of the same SMEs have also received international market advisory (see Section 3.4). After international market advisory, Innovation Norway's IPR advisory services is the second most popular advisory service in available data (see Table 6.2).

It is apparent from the industrial distribution of SMEs receiving advisory services from Innovation Norway, beyond EU advisory, that it resembles the industrial distribution of the SMEs applying for EU funding (and receiving EU advisory); SMEs engaging in computer programming and engineering activities account for the largest shares. Compared to applicants for EU funding and EU advisory services, SMEs active in scientific R&D are less represented among recipients of the other advisory services (see Table 6.3).

Table 6.2 No. of SMEs receiving advisory services from Innovation Norway. 2015-2018[1]

Advisory service	2015	2016	2017	2018
EU advisory	191	287	96	135
International trade rules	236	321	264	407
IPR advisory	353	312	229	330
International Market Advisory	503	700	390	140
Total	1,156	1,430	720	917

1) Changes in Innovation Norway's CRM system in the data period may affect changes from year to year.
Sources: Innovation Norway and SØA

[76] Prior to 2015 this was funded by the EU (through CIP).

Table 6.3 No. of SMEs receiving advisory services from Innovation Norway (excl. EU advisory) by selected industry sectors

	Industry sector	No. of SMEs	Pct. of total
C	Food products	107	3.5 %
	Fabricated metal prod.	54	1.7 %
	Electronic and optical products	55	1.8 %
	Machinery and equipment	98	3.2 %
G	Retail trade	78	2.5 %
	Wholesale trade	368	11.9 %
J	Publishing activities	76	2.5 %
	Computer programming, consultancy	379	12.2 %
M	Head offices, management consult.	130	4.2 %
	Architecture, engineering act.	361	11.6 %
	Scientific research and development	127	4.1 %
	Other prof., scientific, techn. act.	178	5.7 %
Total (all industries)		3,099	100 %

Sources: Innovation Norway and SØA

The EEN has a centralised system for performance assessment of the EEN members, requiring the Business Cooperation Centres to comply with a set of reporting obligations. Performance is assessed by comparing annual results with self-defined KPIs. The performance sheet for the EEN Norway shows that they reached most of its targets in 2018 and, in some cases, surpassed them (see Figure 6.1 below).

Innovation Norway organised 13 international "b2b" events and facilitated 223 meetings between EU and Norwegian SMEs, involving 63 Norwegian SMEs. The Virtual Marketplace organised by the EEN was an important tool for Norwegian SMEs: 26 EU companies showed interest in partnership proposals posted by Norwegian SMEs, while 14 Norwegian SMEs reacted positively on partnership proposals made by EU companies. In total, 13 business deals (i.e. specific commercial partnerships, technology transfer or research collaboration agreements) were reached between EU and Norwegian SMEs.

Norwegian SMEs showed a strong interest in Innovation Norway's advisory services related to internationalisation. There was also a higher-than-expected success of the EEN virtual marketplace as a tool for the creation of international partnerships. These findings are very much in line with what other EEN members under the 2014-2020 COSME programme indicated as the major benefits of the EEN services for the SMEs in their countries.

The EEN members' perception of the extent to which their services helped SMEs to overcome specific barriers to internationalisation indicated that the benefits are related to finding international customers and partners, discovering international business opportunities, being informed about markets, receiving support on how to meet expert standards and regulations and receiving guidance on how to deal with IPR (see Figure 6.2 below).

The interim COSME evaluation found a high EU added value from the EEN. Even though services aimed at improving the performance of SMEs were provided also at the national or regional level, the synergies with the other network services allowed for a more complete support package for SMEs. The survey results showed that responding SME clients had quite positive views on the importance of the EU level network services as opposed to only national support. The majority (87 per cent) indicated that EU level support was "very important".

Table 2 in Appendix 1 provide an overview of the specific benefits for SMEs deriving from the EEN services in the context of the COSME programme, structured against the framework of failures addressed.

Figure 6.1 EEN Norway performance 2018

	Business partnering B2B events & company missions The Enterprise Europe Network organises face-to-face meetings between European enterprises and your local businesses. These meetings usually take place during matchmaking events at large national/regional fairs or during dedicated trade missions.							Virtual Marketplace Partnership Opportunities Database The Virtual Marketplace comprises 10.000+ technology offers and business partnership proposals. The number of 'expressions of interest received' indicates the interest of EU companies in partnership proposals from your local businesses. The 'number of expressions of interest made' indicates the number of your local businesses interested in partnership proposals from EU companies.						Market intelligence The Enterprise Europe Network shares information about national industrial regulations, standards, certification requirements or customs issues.			Business deals Achievements Commercial partnerships, technology transfer and/or research collaboration agreements established between European companies and your local businesses. This includes also contributions to Advisory Service Outcomes.		
	Number of b2b events organised	Number companies recruited for B2B meetings			Number B2B meetings facilitated			Number of proposals encoded	Number expressions of interest received			Number expressions of interest made			Number questions from EU companies answered			Number business, technological & research agreements established		
	Actual	Actual	Target	% Achieved	Actual	Target	% Achieved	Actual	Actual	Target	% Achieved	Actual	Target	% Achieved	Actual	Target	% Achieved	Actual	Target	% Achieved
Enterprise Europe Network *Norway*		**63**	100	63%	**223**	300	74%	**3**	**26**	5	520%	**14**	20	70%	**184**	180	102%	**13**	10	130%
Innovation Norway	**13**	**63**	100	63%	**223**	300	74%	**3**	**26**	5	520%	**14**	20	70%		180		**13**	10	130%

No target set	You did not set any target in the work programme.
0% of target achieved	You remained in-active in the given period.
Between 1% - 49% of target achieved	You achieved only a low level of activity compared to the initial target.
Between 50% - 100% of target achieved	You nearly or fully achieved the target set in the work programme.
Over 100% of target achieved	You overshot the target set in the work programme.

Source: Enterprise Europe Network

6.3.2 The cluster programmes

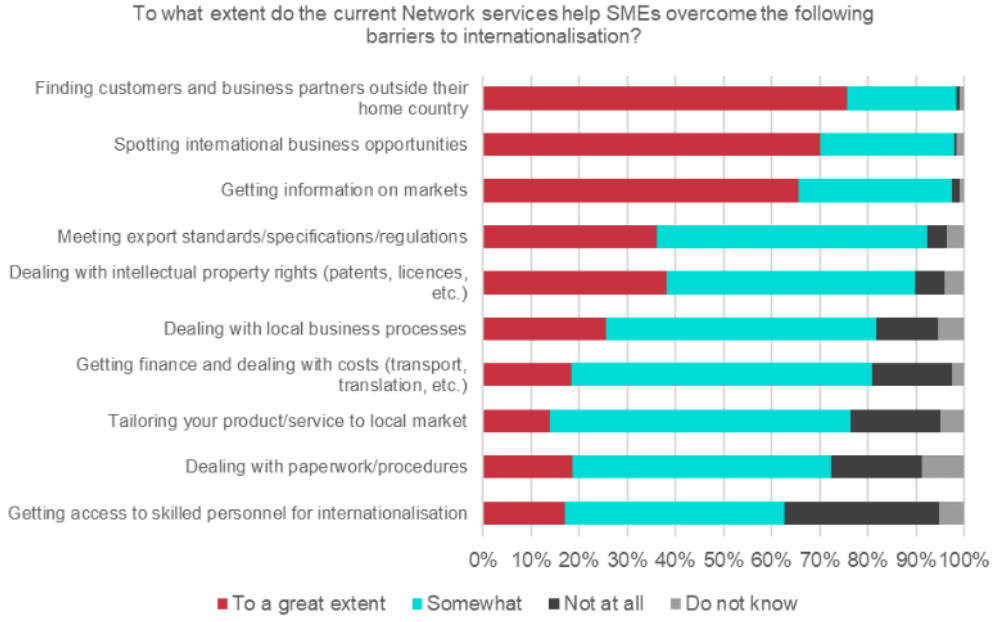
Strengthening the Norwegian clusters has been an important objective for Innovation Norway since the early 2000s. The Norwegian Innovation Clusters programme has the objective to support the development of existing and new business clusters and enhancing cross-cluster collaboration. The programme takes a similar approach as the COSME programme, considering the clusters as intermediaries and catalysts for the development of their members, most often SMEs. Through support for the clusters, the intention is to enhance value creation among their members, increase the ability for innovation of the individual firms and strengthen their competitiveness, as well as enhance the clusters' attractiveness (Samfunnsøkonomisk analyse, 2017).

Overall, the Norwegian Innovation Clusters programme mixes financial and professional services in the form of competence services, advisory services, network services and profiling services. All programmes encompass a focus on improving international relations and collaboration. Awareness of global markets and knowledge production as well as a strong orientation towards international partners are core elements of the programme.

Performance targets are defined in terms of increased collaboration, attractiveness, competence, international orientation, and innovation capacity (see Table 3 in Appendix 1).

The 2017 evaluation of the Norwegian Innovation Clusters found that the programme enhanced the relational basis among members of the cluster projects and fostered collaborative research activities, both among firm members of the clusters and between clusters and R&D institutions. The programme created growth in value added, employment and turnover. The evaluation also pointed out that the programme promoted the innovation capacity of members, even though the results are less clear in this regard.

Figure 6.2 Network members' views on the extent to which Network services help SMEs to overcome barriers



Source: Technopolis Group

Table 6.4 No. of SMEs participating in a cluster project in the Norwegian Innovation Clusters by selected industry sectors. 2018

Industry		No. of SMEs	Pct. of total
G	Wholesale trade	174	10.3 %
J	Computer programming, consultancy	209	12.3 %
M	Head offices, management consult.	106	6.3 %
	Architecture, engineering act.	185	10.9 %
	Scientific research and development	87	5.2 %
	Other prof., scientific, techn. act.	78	4.6 %
Total (all industries)		1,696	100 %

Note: Industry sectors with more than 50 SMEs included.
Source: Innovation Norway and SØA

In 2018, SMEs engaging in computer programming and engineering activities made up two of the largest groups of SMEs participating in an ongoing cluster project with funding from the Norwegian cluster programme (see Table 6.4). Thus, the industry sectors that account for most applicants to the SME Instrument (and H2020 beyond the SME Instrument) are the same industry sectors that make up the largest shares of SME member in active cluster projects. This must be seen in connection to the EU advisory services offered in several of the active clusters (see Section 4.2).

Under the COSME 2014-2020 programme, the "Clusters Go International" was the major programme supporting clusters, involving the European Cluster Collaboration Platform (ECPP). The objective was to promote the establishment of strategic cluster partnerships across countries and the development of joint internationalisation strategies, helping their member SMEs in accessing global value chains and markets.

The interim evaluation of the COSME programme found that the Clusters Go International programme strongly facilitated the exchange of knowledge and information on internationalisation processes. Key outcomes were an expansion of the clusters' international network of partners, exchange of information at the international level, awareness of international opportunities and enhancement of cluster managers' capacities to support internationalisation in SMEs. (see Figure 6.3 below).

Figure 6.3 Overview of outcomes of the Clusters Go International action

Source: Technopolis Group

Table 4 in Appendix 1 provides an overview of the addressed market failures, and main benefits provided for SMEs by COSME's cluster actions.

The "Cluster-facilitated projects for new value chains" action under the INNOSUP programme was a valuable opportunity for the clusters in Europe to obtain H2020 funding for the creation of collaborations across the value chains of the different clusters, e.g. agro-food and packaging.

Norwegian applicants have submitted around 30 applications for funding from the abovementioned cluster action under INNOSUP in the period 2014-2018. Half of the applications are scored above the threshold for funding, whereas three projects have received funding. All three of the funded projects are related to health innovation.[77]

6.4 Three scenarios of Norwegian participation

The objective of this part of the analysis is mainly to provide an assessment of the advantages and disadvantages for potential target groups if Norway (i) continues with today's affiliation through EEN (partially participates), (ii) participates in full in the new Competitiveness of SMEs programme or (iii) does not participate.

Based on the section above, we take a more structural and systemic approach, and consider what the effects would be for Norway's SMEs in terms of loss or gain of opportunities for growth if Norway decided to (not) become a member of the COSME programme.

6.4.1 Scenario 1: Norway participates in COSME but limited to the EEN

This scenario is the current one. Norway is not a member of COSME but participates in the EEN. In the context of EEN, there is a call for proposals targeting countries that participate in COSME and a separate call for expression of interest (EoIs) targeting countries that are not members of COSME (the so-called "third countries").[78] An organisation can obtain the status of "Business Cooperation Centre" (host of EEN) and become part of the Enterprise Europe Network provided it has the expected expertise and skills. There is no fee linked to EEN membership for a Business Cooperation Centre.

The key difference between members and non-members of COSME in relation to the EEN is that members are entitled to receive a reimbursement of up to 60 per cent of their eligible costs. In exchange, they are required to develop a roadmap planning the services provided and covering a comparably broad set of EEN activities in their work programme than the ones requested from the Business Cooperation Centres.[79] Business Cooperation Centres are expected to focus predominantly on the typical partnering services and finance these services through their own means. In addition, they are required to provide sufficient resources to participate appropriately in EEN meetings, training sessions or conferences.

The countries participating in COSME are also requested to introduce measures related to open standards and the internal market, as well as the SMEs feedback function in order to collect the opin-

[77] A description of the three funded projects is available the H2020 INNOSUP datahub https://innosup.easme-web.eu/#.
[78] European Commission (2015). Call for Expressions of Interest – 'Business Cooperation Centres' in third countries for the Enterprise Europe Network, COS-Art-7-001. 2015/2020.
[79] The services to be covered by COSME members are listed in European Commission (2014). Call for proposals – COSME Enterprise Europe Network 2015/2020. COS-EEN-2014-2-04.

ion of SMEs on EU policy. A non-COSME participating country is free to introduce similar measures – or any other additional EEN service. As mentioned in Section 6.3.1, Innovation Norway offers SMEs a set of services in the context of its advisory services; these services address similar market and system failures as the "typical" EEN services.

In sum, participation in the EEN but not in COSME has its consequences purely from a financial perspective. The benefits are that Innovation Norway and the Norwegian SMEs can continue benefitting of the international network and the services it offers.

6.4.2 Scenario 2: Norway participates fully in COSME

A first consequence of Norway's full participation in the COSME programme would be a financial benefit, as it would imply a partial reimbursement of the costs of the support services to SMEs. The extent that this reimbursement would outweigh against the costs of a full participation in COSME is currently unknown.

In addition to these financial considerations, several other factors should be considered, though mainly related to the change in approach to support for SMEs under the new Framework Programme. As mentioned in Chapter 5, the EIC is intended to focus on supporting breakthrough and radical innovation, rather than incremental innovation, as was the case in the H2020 SME Instrument. Funding for a programme targeting the type of SMEs like the SME Instrument Phase 1 will no longer be under the Framework Programme but rather under the COSME programme through its Scaling-up programme.

Participation in the COSME programme also gives Norway an opportunity to strengthen its cluster ecosystems and enhance the internationalisation, as well as cross-value chain dimension of the existing and/or new clusters. The strong focus on the Cluster Partnerships in the 2021-2027 COSME programme and their important role in the Scaling-up scheme, together with the EEN, is fully in line with the function of the clusters as intermediaries for the delivery of support to their member SMEs and reflects a key concept and approach adopted also by Innovation Norway. Both the number of applications for funding of cluster projects under the INNOSUP programme (see Section 6.3.2) and information provided by clusters and Innovation Norway, confirms the interest of the clusters and their managers to fulfil this role.

6.4.3 Scenario 3: Norway does not participate in COSME

This scenario implies that Innovation Norway would cease to act as the host of the Enterprise Europe Network in Norway. It would mean that it would detach itself from a major international network offering support services to SMEs and facilitating research collaboration, business cooperation and technology transfer throughout international markets.

Norwegian SMEs typically have a strong benefit from and interest in Innovation Norway's advisory services related to internationalisation, as well as the EEN virtual market place for the creation of their international partnerships (see Section 6.3.1). Thus, such a decision seems not to be in line with their needs or interests.

In addition, Innovation Norway would no longer be an actor among the other network members supporting the SMEs participating in the EIC programmes.

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Appendix 1

Table 1 Mapping of EEN services against market and system failures

Failures addressed	Enterprise Europe Network services
Market failures	
Information asymmetry	▪ Information services on EU funding programmes & financial instruments (including H2020 programme in cooperation with NCPs and Structural Funds) ▪ Information services on EU initiatives and law for SMEs ▪ Signposting services to help SMEs finding the type of service and best suited service provider needed
Infrastructural systemic failures	▪ Information services based on cooperation with Network members in other countries and/or regions that have deep knowledge on SMEs in their country/region
System failures	
Capability systemic failures[1]	▪ Tailored advisory services to SMEs lacking human capital and knowledge base in order to help them fulfil the requirements for innovation and business growth ▪ Advisory support on management processes, customer needs and how to enter foreign markets
Network systemic failure	▪ Business cooperation services to help SMEs find international cooperation partners in R&D, technology and business (partnership database, expression of interest)

1) Addressed also through the Key Account Management services in the SME Instrument/EIC
Source: Technopolis Group

Table 2 Failures addressed and benefits for SMEs in EEN

Failure	Main characteristics of the failures	Benefits for SMEs
Market failures		
Information asymmetry	Economic agents interacting within a particular market are not well informed; or information is not equally distributed among participants	• Supportive in finding international funding opportunities and providing information about (new) markets
Externalities	Enterprises are involved in transactions where they cannot achieve the expected profits	• Effective in helping SMEs to meet export standards, specifications and regulations • Impactful in providing IPR support (i.e. on patents, licenses)
Market power	Lack of adequate competition in markets	• Improved scaling up allowing for increased market share, turnover and job creation as well as in entering new markets
System failures		
Capability	Lack of appropriate competencies and resources prevent the access to new knowledge, and lead to an inability to adapt to changing circumstances, to open up novel opportunities, and to switch from an old to a new technological trajectory	• Improved capability of participating SMEs to develop new products or services, indicated by a majority (87%) of participating SMEs • Advisory services facilitating improved innovation management skills among SMEs
Network	The flow of information and cooperation between different actors in the innovation system is sub-optimal	• Effective role of EEN in helping companies find new partners or customers outside their home country. • EEN found to enable members to build stronger networks for their organisation at the regional, national and international levels, including contribute indirectly to cooperation between companies at the regional level. • Promoting cross-border cooperation allowing SMEs to set up new partnerships and enter new markets • Advisory services found effective in strengthening local ties given proximity of the service provider, i.e. the close connection and integration of the service provider in the local environment

Source: Technopolis Group

Table 3 Objectives for cluster projects at the individual programme level

Impact targets			
	Arena	**NCE**	**GCE**
	Increased ability for innovation	Increased value creation within the cluster	Increased value creation and attractiveness and a position within global value chains
Output targets			
	Arena	**NCE**	**GCE**
Innovation skills	Increased innovation collaboration and innovation activity	Increased innovation activity through systematic collaboration between firms and R&D institutions	Increased innovation activity with a significant impact within radical innovation processes
International orientation	New or enhanced relationships with international partners	Increased collaboration with international partners	Increased strategic collaboration with leading international partners
Access to competence	Better access to relevant competence	Better access to relevant competence through strategic collaboration with educational institutions	Better access to relevant competence through strategic cooperation with leading national and international educational institutions
Attractiveness and visibility	Increased regional recognition as an innovative and sustainable environment	Increased recognition as a nationally important environment for innovation and growth	Increased recognition as a hub or node in a global innovation system
Interaction and collaboration	Increased dialogue and collaboration internally and externally	Increased targeted collaboration internally and externally	Increased strategic collaboration internally and externally

Source: Norwegian Innovation Clusters program description

Table 4 Failures addressed and benefits for SMEs deriving from the Cluster Go International programme

Failure	Main characteristics of failures	Benefits for clusters and SMEs
Market failures		
Information asymmetry	Economic agents interacting within a particular market are not well informed; or information is not equally distributed among participants	• Improved awareness of internationalisation opportunities in target markets • Effective tool to support internationalisation of companies in emerging sectors
System failures		
Capability	Lack of appropriate competencies and resources prevent the access to new knowledge, and lead to an inability to adapt to changing circumstances, to open up novel opportunities, and to switch from an old to a new technological trajectory	• Improved internationalisation capacities and knowledge • Improved understanding in clusters of the internationalisation process • Enhanced cluster managers' capacities to support internationalisation in SMEs based on exchange in information and experience • Raised profile and improved international visibility and credibility
Network	The flow of information and cooperation between different actors in the innovation system is sub-optimal	• Creation of structured opportunities for relationship building with potential international partners with 100% of surveys clusters gained access to new international collaboration partners • Facilitating long-term international trust-building and business planning • Expansion of international networks based on exchange in information and experience

Source: Technopolis Group

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