

SINTEF Digital
Postal address:
P.O.Box 4760 Torgarden
N-7465 Trondheim
Norway
Switchboard: +47 40005100

info@sintef.no

Enterprise/VAT No.:
NO 919 303 808 MVA

Project memo

Monitoring MoFI

Mobilization for research-based innovation in the industry in Helgeland (MoFI)

VERSION

1.0

DATE

2019-02-25

AUTHOR(S)

Einar Lier Madsen

CLIENT(S)

Nordland County Council

CLIENT'S REF.

Terje Stabæk

PROJECT NO.

102011144

NO. OF PAGES AND APPENDICES:

17 incl. appendices

ABSTRACT

This memo outlines a monitoring scheme for the MoFI project for mobilization for research based innovation in the industry in Helgeland (Norway). It builds on the monitoring scheme already put in place by the project's funding agent (the Research Council of Norway) and extends it by proposing an innovation survey to be administered to the firms in the project's target group at the project's start (a baseline) and after some time. The MoFI project is part of the implementation of Nordland County Council's smart specialization strategy.

PROJECT MANAGER

Håkon Finne

SIGNATURE

(sign)

CHECKED BY

Lisbeth Øyum

SIGNATURE

(sign)

PROJECT MEMO NO.

15

CLASSIFICATION

Unrestricted

TABLE OF CONTENTS, FIGURES AND TABLES

Table of contents, figures and tables	2
Preface	3
1 Introduction	4
2 The MoFI Project	5
2.1 About the project.....	5
2.2 Goals and strategies.....	5
2.3 Activities and instruments	6
2.4 The program logic	6
3 Monitoring system proposal	8
3.1 Existing reporting system.....	8
3.2 Monitoring project activities.....	8
3.3 Monitoring firm-level activities and changes	10
Appendix 1: FORREGION	11
About FORREGION	11
Activities under the mobilisation projects	12
Appendix 2: Research and innovation indicators	13
References	Feil! Bokmerke er ikke definert.
Figure 1: Framework illustrating the goals and priorities in the MoFI project	6
Figure 2: The program logic.....	7
Table 1: Report system FORREGION	8
Table 2: Proposal for action principles.....	9
Table 3: Monitoring framework form.....	9

PREFACE

This memorandum is part of a series of memoranda and analyses of innovation systems in Nordland, for the project “Trailing Research of Nordland's Smart Specialisation Strategy”. The project runs from 2015 to 2019. It was commissioned by Nordland County Council and is a collaboration between the research institute SINTEF and Nordland Research Institute.

The present memorandum is a proposal to how the project “Mobilization for research-based innovation in the industry in Helgeland” (MoFI) can be monitored., occasioned by the county council's participation in the Interreg Europe project MonitorIS3. The memorandum includes a short presentation of the project and the research program in the Research Council of Norway of which it is a part (FORREGION), and suggestions for how activities at project- and firm-level can be monitored.

Senior researcher Einar Lier Madsen of the Nordland Research Institute is the author of the memorandum. We would like to thank our contracting authority represented by Terje Stabæk and Krister Salamonsen from the MoFI project management team for their helpful comments and input. The author is naturally responsible for its contents.

In the project, we also present other memoranda and reports. An updated overview, including downloading options, is available on the contracting authority's project website: <https://www.nfk.no/tjenester/naring/innovasjon/folgeforskning/> and on SINTEF's project website <http://www.sintef.no/smart-spesialisering>.

Trondheim, 2019-02-25

Håkon Finne
Project Manager

1 INTRODUCTION

Nordland County Council, Department of Trade and Regional Development, has asked for suggestions to how the project Mobilization for research-based innovation in the industry in Helgeland (MoFI) can be monitored. MoFI is a part of The Research Council of Norway's program for *Research-based innovation in the regions* ([FORREGION](#))¹ and a report system about project-activities are already established. Monitoring is systematic and regular collection and assessment of data. The monitoring system must be designed to provide a basis for identifying activities, results and effects. Thus, in this memo we will investigate how these data from the report system can be used and what other data or information the County Council might need to monitor the MoFI project.

In the following we will first describe what the MoFI project consists of; its goals, strategies and activities. Then, we present the existing reporting system and use this information to discuss how a monitoring system can be developed and used.

¹ https://www.forskningsradet.no/prognett-regionsatsing/Home_page/1254019513281

2 THE MOFI PROJECT

2.1 About the project

The background for research-based initiative in Nordland comes from too limited use of R&D in the companies and too little cooperation between the industry and the R&D institutions. Thus, there is a need to increase the effort if more companies shall use research in their innovation work.

The Research Council's FORREGION program consists of three parts (Mobilizing, Capacity building, Dialogue development), where the MoFI project concentrates on the *Mobilizing* part, i.e. to stimulate more companies to use research in their innovation work. In Nordland, the new regional initiative of the Research Council is used to reinforce industrial competitiveness and value creation through research-based innovation. Helgeland is one of the leading industrial areas in Norway, and the industry has a great potential for increasing the use of research-based expertise. The project is therefore directed towards industry in the Helgeland region.

MoFI was kicked off in the second half of 2017, it will last for three years, and it shall generate results in terms of increased research activity in the industry through a proactive use of competence brokerage, networking venues, mobility means and feasibility studies. From January 1st, 2018 the formal ARENA² project for the Arctic Cluster Team was initiated. Within the cluster the companies have agreed on common goals to increase innovation activities, to do more radical innovations, and to suggest project initiatives to R&D&I-programs such as the User-driven Research based Innovation (BIA) program and Horizon 2020 programs.

2.2 Goals³ and strategies

Main Goal: Increased innovation and technology development through research-based innovation in the industry at Helgeland.

Goal Achievement Strategy: A focused and systematic effort to contribute to the development of the companies' absorption capacity, so that research-based innovation becomes a greater part of the strategic priorities of enterprises. To succeed in this, companies must develop close relationships with research and education institutions at Campus Helgeland, to national and international research communities and relevant businesses and business clusters. The County Council's priorities through the innovation strategy, Innovation Norway's focus on clusters and corporate networks and the Research Council's instruments will be tools to achieve this.

Part Goal 1: Enhancing the interaction between industry, R & D and Public sector

Part Goal 2: Reducing the barriers to research-based innovation in industry

Part Goal 3: Developing research-based innovation projects in enterprises

The framework below illustrates the goals and priorities in the MoFI project.

² ARENA is a scheme for cluster initiative projects operated by Innovation Norway in cooperation with the Research Council and SIVA (the Industrial Development Corporation of Norway; a government agency for facilitating innovation by building, owning and developing infrastructure for industry, start-ups and research environments).

³ Source: Annual report 2018

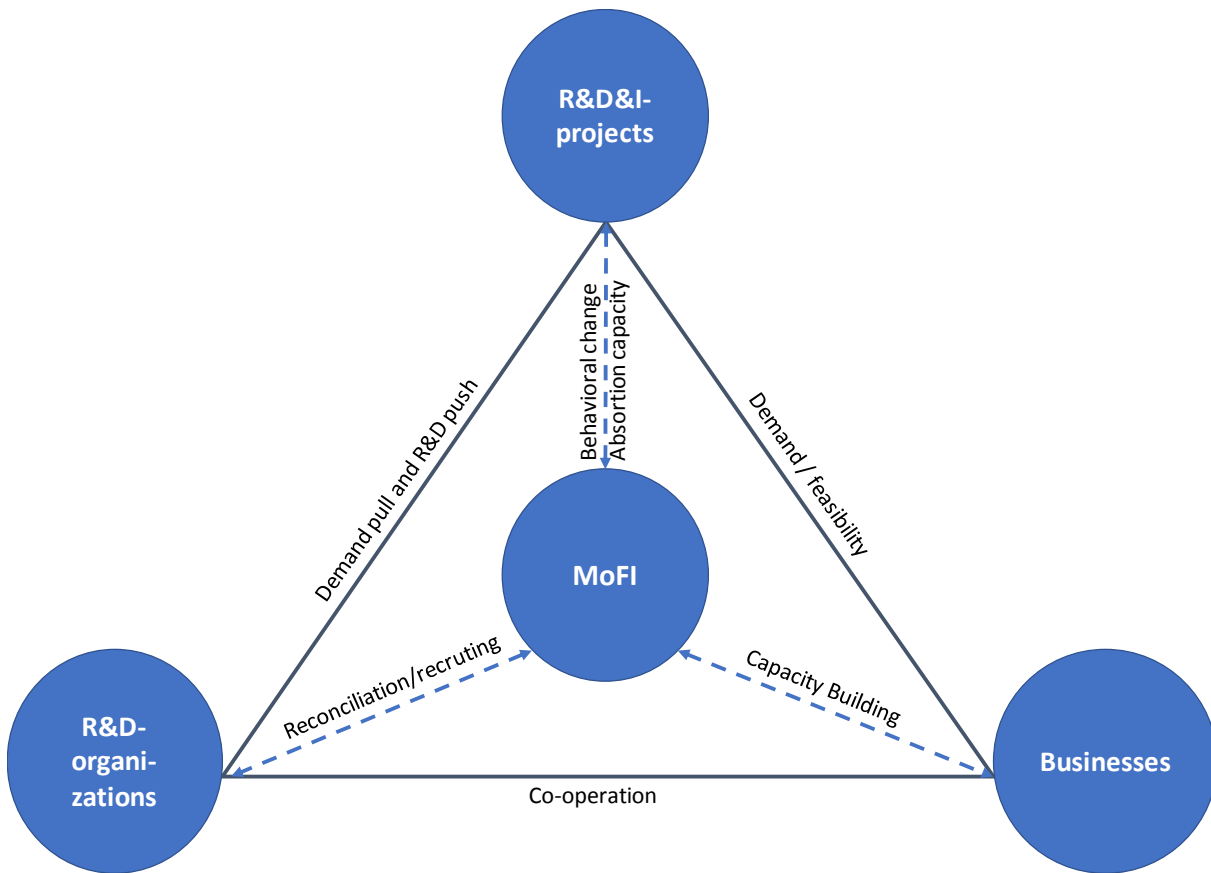


Figure 1: Framework illustrating the goals and priorities in the MoFI project

2.3 Activities and instruments

Activities and instruments to achieve the goals are:

- Mobilising for R&D means⁴
 - Competence brokerage
 - Feasibility studies
- Mobility - Researcher, industry or student for loan
- Networking meetings/venues

2.4 The program logic

As we can see from the figure above, the MoFI project intends to influence the businesses through the activities, so they can build capacity, change behavior/develop their absorptive capacity, while at the same time bringing in researchers/R&D organizations for cooperation and project development and execution. Thus, the MoFI project is meant to function as an input for firm-level changes in behavior/activities and results (as most of/all industry R&D&I-projects). This means to develop and strengthen the firms' competitive advantages. This program logic can be illustrated as shown below.

⁴ R&D means of current interest: The SkatteFUNN R&D tax incentive scheme, Feasibility studies FORREGION, Feasibility studies and research projects The Research Council of Norway (different R&D&I programs) and the Regional Research Fund, User-driven Research based Innovation (BIA) program, Industrial Ph.D. scheme, Innovation Norway, the Arena program/Norwegian Centre of Expertise (NCE) (cluster programs), EU/Horizon 2020 programs.

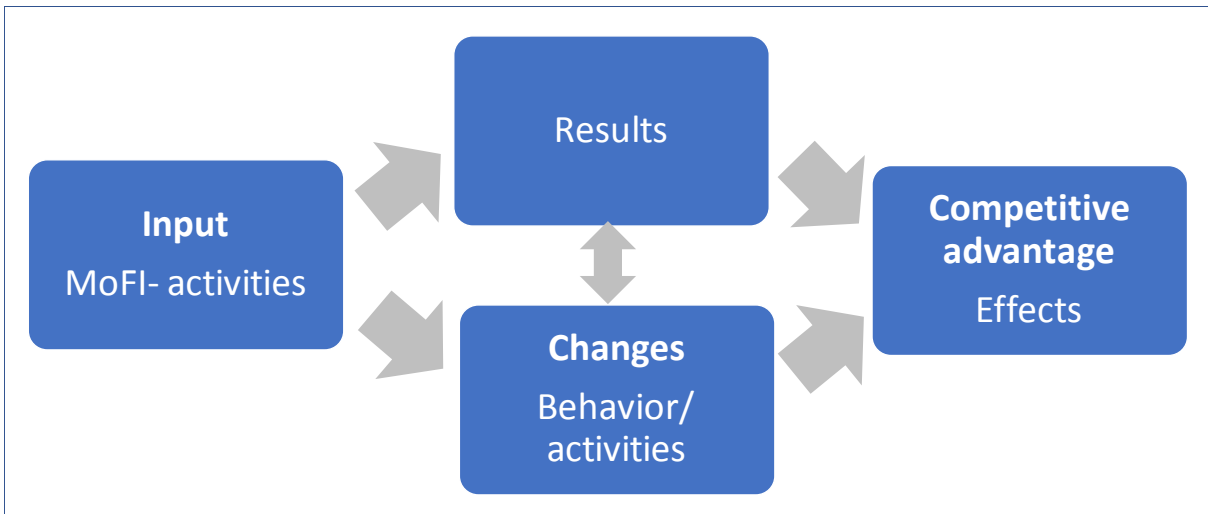


Figure 2: The program logic

A monitoring system should consider all these elements illustrated in the figure above. However, while the input activities are relatively easy to monitor, changes within the firms and their influence on competitive advantages are more challenging, as such developments/changes and results take time. When developing a monitoring system these challenges must be considered.

3 MONITORING SYSTEM PROPOSAL

3.1 Existing reporting system

The Research Council's yearly report system for FORREGION consists of three parts: Activity report (every 6 months), progress reports (every 6 months) and an annual report. The report system is illustrated below.

Table 1: Report system FORREGION

Type of report	Type of measures
Activity report	Mobilizing for R&D means
	Mobility - Researcher, industry or student for loan
	Networking meetings/venues
Progress report	Popular science presentation
	Result indicators (general (public) dissemination, user-oriented dissemination)
	Publishing (scientific publications, other publications, speech/lecture)
	Stipend (financed by the project)
	International cooperation (financed by the project)
Annual report	Qualitative overview describing the last year and plan: activities implemented, assessment and plan of action for next year

As we can see from the table above, the main element in a monitoring system at the project level is in place. However, the focus of the report system is on activities for mobilizing companies to use more research in their innovation work but provides no information about what's going on in the companies which participate/are influenced by the project. For example, are they doing more innovations now than before the project started? Have they developed a new production process, a new or improved product or service based on the cooperation with R&D-institutions/researchers? Have their turnover or profit increased because of the cooperation, and has it led to sales in new markets? All such measures which could say something about behavioral changes/changes in the way the companies work and the results at firm-level seem to be absent from this scheme. Thus, if we want to understand what happens inside the businesses, we also have to suggest a way to monitor such changes and results beyond the FORREGION report system. In the next section a monitoring system based on the existing report system is described. Then, a suggestion for monitoring changes in firm-level activities are discussed.

3.2 Monitoring project activities

The question for Nordland County Council's administration is to make a system which in an easy way can give an overview of how the MoFI project functions. Thus, we suggest an internal monitoring system for the project follow-up, building on a three-colored warning system (green, yellow, red), where the colors indicate different actions according to the MoFI project. This examination can be done twice a year and should be enough to have the possibility to have an informative discussion with the project management about prospective adjustments. The color-system can for example propose the following actions as illustrated in the table below.

Table 2: Proposal for action principles

MoFI progress	Action
Green zone= Satisfactory	No action starts. Discussion if most of the project's measures are green. Could the ambitions be elevated? Is it possible to expand the project?
Yellow zone= Acceptable with reservations	Discussion with the project management concerning why the activities are in this zone. Consideration about the risk for not achieving the outcome or weaken the project. If these outcomes are risk relevant, assess if adjustments are necessary.
Red zone= Unacceptable	Meeting with the project management (including central business managers) If central measures or many measures are red. Concrete assessments of the best possible actions to solve the problems. Implement different/combined actions to bring the project on track so it can be completed satisfactorily.

The color-system can then be used to assess the results of the project activities according to the project's goals. This is illustrated in the table below.

Table 3: Monitoring framework form

Type of report	Type of measures	Secondary goals			Main goal (Conclusion)
		Enhancing the inter-action?	Reducing the barriers?	Developing research-based innovation projects?	Increased innovation and technology development?
Activity report	Mobilizing for R&D means				
	Mobility				
	Researcher				
	Industry				
	Student				
	Networking meetings/ venues				
Progress report	Popular science presentation				
	General (public) dissemination				
	User-oriented dissemination				
	Publishing				
	Stipend				
	International cooperation				
Annual report	Activities implemented				
	Assessment				
	Plan of action next year				

These judgments can be supplemented by qualitative data from the project management. For example, in the MoFI project the project management keeps track of how firms have been ‘

exposed' to the MoFI activities and instruments. Thus, descriptions of selected firms that have gone through rapid development since 2017 could provide rich qualitative illustrations of MoFI's impact. Furthermore, the project management holds an overview of all firms involved since 2017, including the outcome from competence brokering (no identified initiatives, need for follow-up, engaging in feasibility studies, developing SkatteFUNN projects, etc.), and MoFI has allocated funds for a number of feasibility studies by the end of 2018, and most of these studies represent firms' initial collaboration with R&D providers. However, the ability of firms to advance to more comprehensive R&D&I projects could indicate potential positive (long-term) effects from MoFI activities and instruments.

Through different MoFI networking arenas on Helgeland, firms have established relationships with nationally leading R&D institutions in the fields of advanced manufacturing, digitalization, commercialization, business modeling, etc. Because of these initial meetings, some firms have established formalized collaborations with the R&D actors to develop new comprehensive internal strategies to increase their competitive advantage. All these aspects can be taken into account as a part of monitoring results and short time effects of the MoFI initiative.

3.3 Monitoring firm-level activities and changes

While the input activities are relatively easy to monitor, changes within the firms and their influence on competitive advantages are more challenging as mentioned before. We must acknowledge that such developments can take time to accomplish and thus might be difficult to track down in the short run. However, a *baseline survey* for such issues could be established through a combination of a basic survey to the companies connected to the project with questions about innovation, new markets etc. For the innovation issues, questions from the OECD's Oslo manual and variables from other international innovation and entrepreneurship studies should be used. Furthermore, register data can be used to monitor turnover, profit and other numbers recorded on the companies. If accessible, such data can be supplemented with the project management's knowledge about the firms involved as exemplified in the previous section. Such surveys/investigation should be repeated in a follow-up study after one to two years, which will give insights about the firms changes in innovation activities, R&D collaboration, R&D activities and changes of practice etc. The questions in a survey should according to the MoFI project's goals and the FORREGION program's objectives be about:

- Innovation attitudes
- Innovation inputs
- Outputs of innovation activities (types of outputs)
- Outputs of innovation activities (timing and novelty of outputs)
- Resources and capabilities
 - o External observation and evaluation
 - o Resource renewal
 - o Knowledge creation
- Growth orientation

The questions of current interest are shown in the appendix.

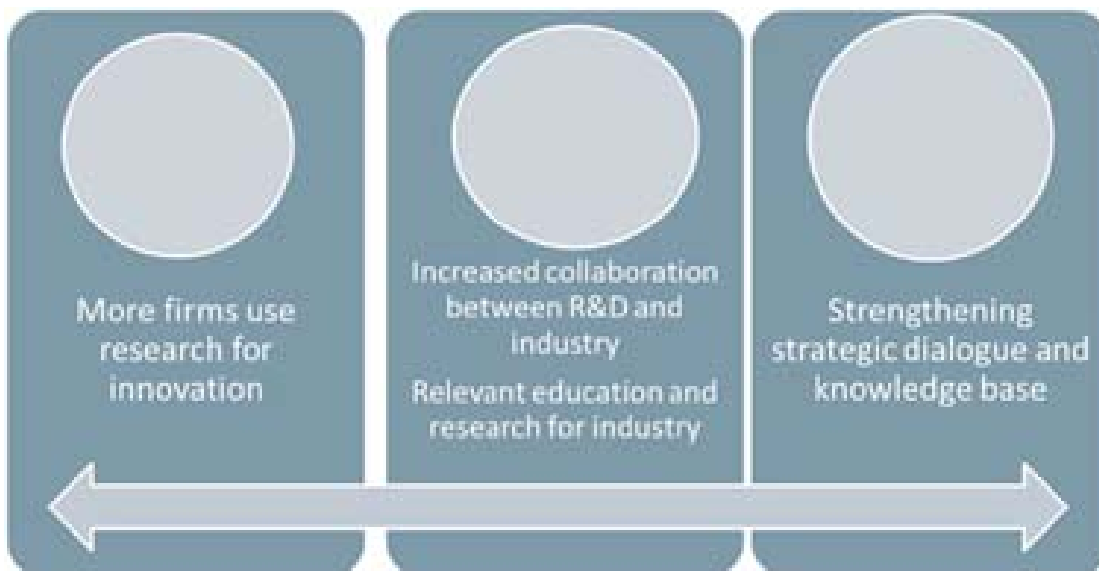
Data from the survey will give relevant and good knowledge and insights about the firms' innovation efforts, R&D activities and collaboration, work practice, and utilization of resources and capabilities. Such data should, if possible, be supplemented by qualitative data. The results could also for these behaviors be judged by using the "color system" as described above.

APPENDIX 1: FORREGION⁵

About FORREGION

The FORREGION programme builds on and further expands the framework developed by the Research Initiative for Northern Norway (NORDSATSING) and the Programme for Regional R&D and Innovation (VRI). The FORREGION programme aims to strengthen the connection between regional, national and international efforts to promote research-based innovation. The programme will continue the effort to make use of the country's full knowledge infrastructure and resource base, as a means of enhancing value creation, competitiveness and restructuring capacity. The specific activities under the FORREGION programme will be based on the unique opportunities and challenges found in each region.

The FORREGION programme rests on three pillars:



Mobilizing: We aim to stimulate more companies to use research in their innovation work. We are funding a number of activities, of which competence brokering (kompetansemegling) is one.

Capacity: This part is about building research capacity relevant for industry in the regions.

Dialogue: This part is about facilitating dialogue between the research community in innovation research and practitioners.

The county councils have strategic and political responsibility for regional economic development and are therefore an important partner for the Research Council. Cooperation between the Research Council, the county councils, Innovation Norway and the Industrial Development Corporation of Norway (SIVA) will create a basis for coordination and efforts to establish common objectives for regional growth. The counties use the Regional Research Funds as their strategic tool for promoting research and innovation, and the county councils must clarify the parameters for cooperation and the distribution of tasks with the regional research fund in each region.

⁵ Source: FORREGION programme plan and website.

The FORREGION programme will support the Research Council's other activities by promoting the use of instruments such as the SkatteFUNN tax incentive scheme, the Industrial Ph.D. scheme, the Programme for User-driven Research-based Innovation (BIA) and other innovation programmes, as well as the EU Framework for Research and Innovation, Horizon 2020.

Activities under the mobilisation projects

Competence brokering – in individual companies, through workshops and in networks. Competence brokers discuss project ideas and opportunities with companies and can link the company with relevant researchers. Competence brokers can also organise meetings in which companies and researchers discuss opportunities and ideas. Competence brokering encourages the use of regional, national and international schemes, as well as feasibility studies.

Feasibility studies are smaller R&D projects in companies with little or no R&D experience. The company must cooperate with an R&D group in the project. It must be the company's intention that the efforts will lead to further research activity or cooperation with research institutions. The feasibility study should be a precursor to participation in other funding schemes for research, such as the Regional Research Funds, the Research Council's innovation programmes or the SkatteFUNN tax incentive scheme.

Network meetings for companies bring together various types of actors to discuss a relevant issue. Competence brokers organise the meetings in which the participants aim to arrive at a common conclusion or action points that may culminate in joint projects or activities. Network meetings are well-suited for e.g. bringing together actors from various industries for a joint discussion of opportunities, such as research that will benefit multiple companies within an industry.

Researcher, industry or student for loan means that a researcher works for a period in a company or a person from a company works for a period in a research and educational institution. This may also include students who are writing their bachelor's or master's thesis at a company or have an internship for a period at a company. The mobility schemes are intended to expand networks, encourage cooperation, and facilitate an exchange of knowledge between research and industry.

Secondary objective	Activities	Results	Impacts
After three years, the mobilisation projects will at a minimum have achieved their objectives for increasing participation in regional, national and international programmes.	The Research Council and county councils work together to encourage companies to use more research in their innovation activity.	<ul style="list-style-type: none"> - More companies will apply for funding from regional, national and international programmes. - Use of the SkatteFUNN tax incentive scheme and national programmes throughout a wider geographic area. - Increased cooperation between industry and the R&D institutions. 	<ul style="list-style-type: none"> - Companies not familiar with the opportunities research entails will learn about these, and companies with more research experience will seek to conduct more research-based innovation. - Innovation results in the companies (prototypes, products, processes, services, patents, business areas, technology, etc.) - Clearly strengthened collaborative constellations between research and educational institutions and industry.

For more information about the program look here:

https://www.forskningsradet.no/prognett-regionsatsing/Home_page/1254019513281

APPENDIX 2: RESEARCH AND INNOVATION INDICATORS

INNOVATION ATTITUDE	Reference
1) Please estimate the following statements from your firm's point of view. Response scale 1 to 7, where 1=totally disagree and 7=totally agree	
a) Managers of our firm favor a strong emphasis on R&D, technological leadership and innovations	(Covin & Slevin, 1989), (Miller, 1983)
b) Our firm has introduced very many new lines of products or services the last five years	√
c) Our firm is very often the first business to introduce new products/services, administrative techniques or operating technologies	√
d) In dealing with its competitors, our firm typically initiates actions which competitors then respond to	√
e) Top managers of our firm have a strong proclivity for high-risk projects with chances of very high returns (compared to projects with normal and certain rates of return)	√
f) Top managers of our firm believe that owing to the nature of environment; bold, wide-ranging acts are necessary to achieve the firm's objective	√
g) When confronted with uncertain decision-making situations, our firm typically adopts a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities	√
h) Normally our company takes on a very competitive-oriented "beat the competitor"-position	√

GROWTH ORIENTATION	Reference
2) Please answer the following questions from your firm's point of view. Response scale 1 to 7, where 1=totally disagree and 7=totally agree	
a) Growing the firm is our top objective	
b) Our intention is to grow considerably larger than we are currently	
c) Our intention is to grow as fast as possible	

INNOVATION INPUTS	Reference
3) Assess how much your firm has invested in the following innovation activities during the last three years. Response scale 1 to 7, in which 1=not at all and 7=abundantly	
a) Research and development (R&D) activities within the firm	(OECD, 2005)
b) Research and development (R&D) activities in cooperation with other organizations	√
c) Acquisition of new machinery, equipment and computer hardware or software to produce new or significantly improved products/services	√
d) Purchase or licensing of patents and non-patented inventions (e.g. trademarks, designs), know-how, and other types of knowledge	√
e) Recruitment of management / key personnel to produce new or significantly improved products/services and processes	√

OUTPUTS OF INNOVATION ACTIVITIES (types of outputs)	Reference
4) During the last three years, has your firm introduced following novelties or significant improvements... Response scale 1 to 7, in which 1= none, and 7= very many.	
... related to product, service and marketing innovations?	
a) New or significantly improved products	(OECD, 2005)
b) New or significantly improved services	√
c) New sales channels, such as direct selling, internet sales, or product licensing	√
... related to manufacturing and organizational development?	
d) New or significantly improved methods of manufacturing or producing goods or services	(OECD, 2005)
e) New or significantly improved logistics, delivery or distribution methods for your goods and services	√
f) New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting or computing	√
g) Significant changes to the organization of work in your enterprise that increased employee decision making and responsibility for their work	√
h) A significant change to the management structure of your enterprise, such as creating new divisions or departments, integrating different departments or activities, adoption of a networked structure etc	√
i) New or significant changes in your relations with other firms or public institutions, such as through alliances, partnerships, outsourcing or sub-contracting	√

OUTPUTS OF INNOVATION ACTIVITIES (timing and novelty of outputs)	Reference
5) Please assess the timing of your firm's innovation activities during the last three years. Has your firm introduced a new or significantly improved product or service... Response scale 1 = not at all, 2 = once, 3 = several times, 4 = dk	
a) ...first in the world i.e. it has not been available anywhere in the world before	(OECD, 2005)
b) ...onto to your market before competitors	√
c) ...which was new to your firm, but was already available from some of your competitors in your market	√
d) ...which was new to your firm, but was already available from most of your competitors in your market	√
6) Please assess your firm's innovation outputs during the last three years. Response scale 1 to 7, in which 1=totally disagree and 7=totally agree	
a) Changes in our products/services have usually been radical	(Covin & Slevin, 1989)
b) We develop and introduce radically new products or services	
c) Compared to our competitors we usually make more radical improvements to our products or services	
7) Please, estimate the share (percent) of revenue that the new products or services have generated during the last three years	
8) If possible, please name the most important innovation considering your firm's products, services, processes or ways of action during the past three years	

RESOURCES AND CAPABILITIES	Reference
Please assess the following statements from your firm's point of view. Response scale 1 to 7, where 1=totally disagree and 7=totally agree	
9) External observation and evaluation	
a) We systematically search for new business concepts through observation of processes in the environment	(Alsos, Borch, Ljunggren, & Madsen, 2008)
b) We systematically bring together creative and knowledgeable persons within the firm to identify new business opportunities	√
c) We systematically bring together creative and knowledgeable persons from outside the firm to help identify new business opportunities	√
d) In our firm resources are systematically transferred to the development of new business activities	√
e) Relative to our competitors our firm has higher ability to identify new business opportunities	-
f) Relative to our competitors our firm has higher ability to identify customer needs and wants	-

10) Resource renewal	
a) We actively seek to increase R&D investments	(Alsos, Clausen, Ljunggren, & Madsen, 2007)
b) We have specific plans for R&D activity	√
c) Our management is engaged in R&D processes	√
d) Employees are more willing to adopt into new ways of working than those of our competitors	(Alsos et al., 2008)
e) Employees are left room to exploit new opportunities as long as it does not affect current activities	√
f) Employees and managers are strongly encouraged to promote new visions, goals and ideas	√
g) We have developed routines to enable employees' active participation in generating ideas for new products or services	(Makkonen, Pohjola, Olkkonen, & Koponen, 2014)
h) We have developed routines to enable employees' active participation in generating ideas for new production processes or organizational procedures	√
11) Knowledge creation	
a) Compared to our competitors we cooperate more closely with our customers about innovation and R&D	(Alsos et al., 2007)
b) Compared to our competitors we cooperate more closely with our suppliers about innovation and R&D	√
c) Compared to our competitors, we search more actively for new partners for competence development	√
d) Compared to our competitors we cooperate more closely with universities and research institutes	√
e) Firm networks are used as knowledge resources	(Borch, Huse, & Senneseth, 1997)
f) The personal networks of the manager are used in creating new knowledge	√
g) Employees' networks are important information sources for the firm	√
h) Firm's networks are used to influence actors in the business environment	√
i) The firm emphasizes to increase the level of competence among employees	(Alsos et al., 2008)
j) Our firm allocates resources to increase employees' competence	√
k) Employees are strongly stimulated to learn from their experiences	√
l) We have routines for systematizing employees' experiences	√

REFERENCES

- Alsos, G. A., Borch, O. J., Ljunggren, E., & Madsen, E. L. (2008). *Dynamic Capabilities – Conceptualization and Operationalization*. Paper presented at the The Academy of Management Conference, Anaheim, CA, USA.
https://www.researchgate.net/publication/254555473_THE_DYNAMIC_CAPABILITY_CONSTRUCT_AND_ITS_OPERATIONALIZATION
- Alsos, G. A., Clausen, T., Ljunggren, E., & Madsen, E. L. (2007). Evaluation of the SkatteFUNN's (tax deduction scheme) behavioural additionality. Has SkatteFUNN led to changes in the firms R&D behavior? (in Norwegian) *NF-report* (Vol. 2007/13, pp. 140). Bodø: Nordland Research Institute.
- Borch, O. J., Huse, M., & Senneseth, K. (1997). Small business growth, firm resources and government support - the role of the local development agent. *Entrepreneurship Theory and Practice*, 24(1), 49-70.
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75-87.
- Makkonen, H., Pohjola, M., Olkkonen, R., & Koponen, A. (2014). Dynamic capabilities and firm performance in a financial crisis. *Journal of Business Research*, 67(1), 2707-2719. doi: <http://dx.doi.org/10.1016/j.jbusres.2013.03.020>
- Miller, D. (1983). The correlates of entrepreneurship in three types of firm. *Management Science*, 29(7), 770-791.
- OECD. (2005). *Oslo Manual: Guidelines for collecting and interpreting innovation data*, 3rd edn. Paris: OECD.



Technology for a better society
www.sintef.com