

ENRI-working paper 10/2017

**Statistical analysis for the project;
"Knowledge and Innovation Strategies
involving Small and Medium-sized
Enterprises (KISS ME) in the context of
INTERREG"**

Inner Scandinavia

by

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The Eastern Norway Research Institute was established in 1984. Since 2011 the institute has been organized as a corporation with Hedmark and Oppland County Councils, Lillehammer University College, Sparebanken Hedmark, and The Eastern Norway Research Foundation. ENRI is located in Lillehammer, but also has an office in Hamar.

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Report: The working paper presents data on the regions of inner Scandinavia. This includes population and population change, the number of small and medium enterprises (SMEs) and gross domestic product. Data on policy instruments and their budgets within Interreg are presented. The project ecoINSIDE is presented as an example of best practice in the frame of the current programme.

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PREFACE

This report is financed by the project “Knowledge and Innovation Strategies involving Small and Medium-sized Enterprises (KISS ME)”. KISS ME is part of the Interreg Europe umbrella with a particular aim to strengthen the innovation capacity of SMEs by comparing the approaches of four border regions. Eastern Norway Research Institute has been entitled by Hedmark County Council to conduct such a study in the inner Scandinavia region.

SME innovation and competitiveness is prioritized in inner Scandinavia. The program has a strong interest in attracting SMEs and engage them in entrepreneurship and cross border cooperation. This report gives some evidence to how far this work has come.

We appreciate the contributions from Rannveig Finsveen, Hedmark County Council in preparing this report.

Lillehammer, October 2017


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CONTENTS

Summary	5
1. Introduction.....	6
2. General data of inner Scandinavia	7
2.1 Number of inhabitants, population density and population	7
2.2 Gross product, main sectors and employment.....	9
2.3 SMEs in inner Scandinavia	12
2.4 Innovation in NUTS 2 regions	14
2.5 Research institutions, universities and higher education institutions	14
3. Cross Border Cooperation operational Program Sweden-Norway 2014-2020	15
3.1 Background and program overview.....	15
3.2 Budget, existing projects and organisation structure	17
3.3 SME involvement and lessons learnt	19
4. Interreg Sweden-Norway good practice – The Ecoinside project.....	22
4.1 Background and project overview	22
4.2 Factors favoring successful cross-border innovation in the ecoINSIDE project	27
4.3 Conclusion.....	28
5. Availability of other national and regional instruments	30
5.1 Selected Instruments for SMEs – Norway	30
5.2 Selected Instruments for SMEs – Sweden.....	32
References	34

Figure 1 Population trends in inner Scandinavia regions.....	8
Figure 2 Interreg Sweden-Norway geography	16
Figure 3 Financial model Interreg Sweden-Norway programme, share of total budet. In million EUR.....	18
Figure 4 Organizational structure Interreg Sweden-Norway programme 2014-2020	19

Table 1 Number of inhabitants, population density and population change. Source: Statistics Norway, Statistics Sweden	7
Table 2 Gross product. Source; Statistics Norway, Statistics Sweden	10
Table 3 Main sectors and employment	11
Table 4 SMEs in inner Scandinavia	13
Table 5 European innovation scoreboard	14
Table 6 Sweden – Norway programme overview	15
Table 7 Funding details Interreg SE-NO 2014-2020, in EUR	17
Table 8 Indicators SMEs	20
Table 9 Indicators research and innovation	21
Table 10 Overview SME involvement, activities and indicators as of June 2017	23
Table 11 Overview ecoINSIDE.....	24
Table 12 ecoINSIDE as a framework for solving SME specific problems: example sustainable building	25
Table 13 ecoINSIDE as framework for solving SME specific problems: example solar energy.	25
Table 14 ecoINSIDE as framework for solving SME specific problems: example waste handling	26

SUMMARY

Many regions within inner Scandinavia experience a positive development with increases in population and the number of SMEs. This is especially so for regions in Norway benefitting from being part of the Oslo region. Some of the more peripheral municipalities in both Sweden and Norway however experience decline in both population and the number of SMEs. Policy means within Interreg and KISS ME to support SMEs in their work to access new knowledge and innovation thus seems highly relevant.

The project ecoINSIDE is presented as an example involving SMEs as part of the Interreg Norway-Sweden 2014-2020 program. The overall goal with ecoINSIDE is to contribute to inner Scandinavia as a leading cluster within environmentally driven development. The main goal is to strengthen the competitive performance of the border region by initiating climate driven development, reduce barriers and develop the territorial capital of the border region. The key to reach the goal is to develop a world-class bordercrossing innovation system and establish inner Scandinavia as a showcase in sustainable development. By concentrating on such activities, ecoINSIDE is supposed to result in cross border added value for participating SMEs, knowledge providers and ultimately inner Scandinavia.

Indicators demonstrate that ecoINSIDE has succeeded in reaching out to a relatively high number of SMEs during the project's first two years of operation. EcoINSIDE has further succeeded in establishing a number of networks for research and development that already have resulted in new products and services. Knowledge brokers financed by ecoINSIDE are instrumental in establishing and managing these networks.

1. INTRODUCTION

This working paper consists of five parts. After this introduction, part two presents general data of the analyzed area; inner Scandinavia. Data on population, GDP, number of SMEs and some reflections on the general economic situation in the region is presented. In the second part, the policy instrument addressed by the KISSME-project, the Interreg Sweden-Norway programme, is described. Then the Interreg Sweden-Norway project ecoINSIDE is presented. The project has an emphasis on spurring innovation and product development projects within the framework of the project partnership consisting of research institutions, SMEs, bigger multinational companies and public sector organisations. In addition to the product innovation emphasis, the partnership also focuses on new services and market opportunities for the SMEs involved. The presentation of the project in this report has a special emphasis on SME participation. The last part describes other national and regional instruments available for SMEs in Sweden and Norway.

2. GENERAL DATA OF INNER SCANDINAVIA

2.1 Number of inhabitants, population density and population

The inner Scandinavia region covers the NUTS 3 regions Hedmark (NO), Värmland (SE), Dalarna (SE) and parts of the NUTS 3 regions Akershus (NO) (subregions lower Romeriket and upper Romeriket) and Østfold (NO) (subregion inner Østfold).

In January 2017 there were 1,1 million inhabitants in inner Scandinavia, living on approximately 77 000 square kilometers. The number of inhabitants is relatively similar on both sides of the border, but covers a larger area on the Swedish side, which means that population density is higher on the Norwegian side. In particular, lower Romerike has a high population density, 110 person's pr. square kilometer. In comparison population density in Norway is 17,3 persons pr. square km. In Sweden, the population density is higher than in Norway, but all Swedish municipalities in inner Scandinavia have a population density far lower than the most densely populated municipalities on the Norwegian side. The most thinly populated municipalities in inner Scandinavia are located on the Norwegian side.

Table 1 Number of inhabitants, population density and population change. Source: Statistics Norway, Statistics Sweden

	Population 01.01. 2017	Area in square km	Population change 2012-2017	Population pr. square km
Värmland	279 334	17 519	2,4 %	15,9
Dalarna	284 531	28 029	2,9 %	10,2
Total Swedish side	563 865	45 548	2,7 %	12,4
Inner Østfold	53 278	1 657	4,7 %	32,2
Lower Romerike	177 007	1 609	8,8 %	110,0
Upper Romerike	102 871	1 912	11,5 %	53,8
Hedmark	196 190	26 086	1,8 %	7,5
Total Norwegian side	529 346	31 264	7,4 %	16,9
Total inner Scandinavia	1 093 211	76 812	5,4 %	14,2
Sweden	9 995 153	407 311	5,4 %	24,5
Norway	5 258 317	304 148	5,5 %	17,3

Distinct regional differences in population trends have emerged in inner Scandinavia since the year 2000. On the Norwegian side population has grown in especially the regions upper and lower Romerike, but also in inner Østfold. Increasing population in these areas is mainly driven by proximity to the capital region Oslo, where growth in population and employment have stimulated growth in nearby areas. Rising housing prices in Oslo has contributed to regional enlargement where Romerike and Østfold have been integrated in the greater-Oslo region. Establishing the major airport at Gardermoen in upper Romerike in 1998 contributed significantly to population growth. In Hedmark, Värmland and Dalarna counties population increase have been weak since 2000. Looking at the last five years, upper and lower Romerike, and partly inner Østfold, have higher population increase than other regions in inner Scandinavia. Population increase in Värmland and Dalarna is somewhat higher than in Hedmark. At the national level in Sweden and Norway growth rates are almost identical from 2012 to 2017.

Figure 1 Population trends in inner Scandinavia regions



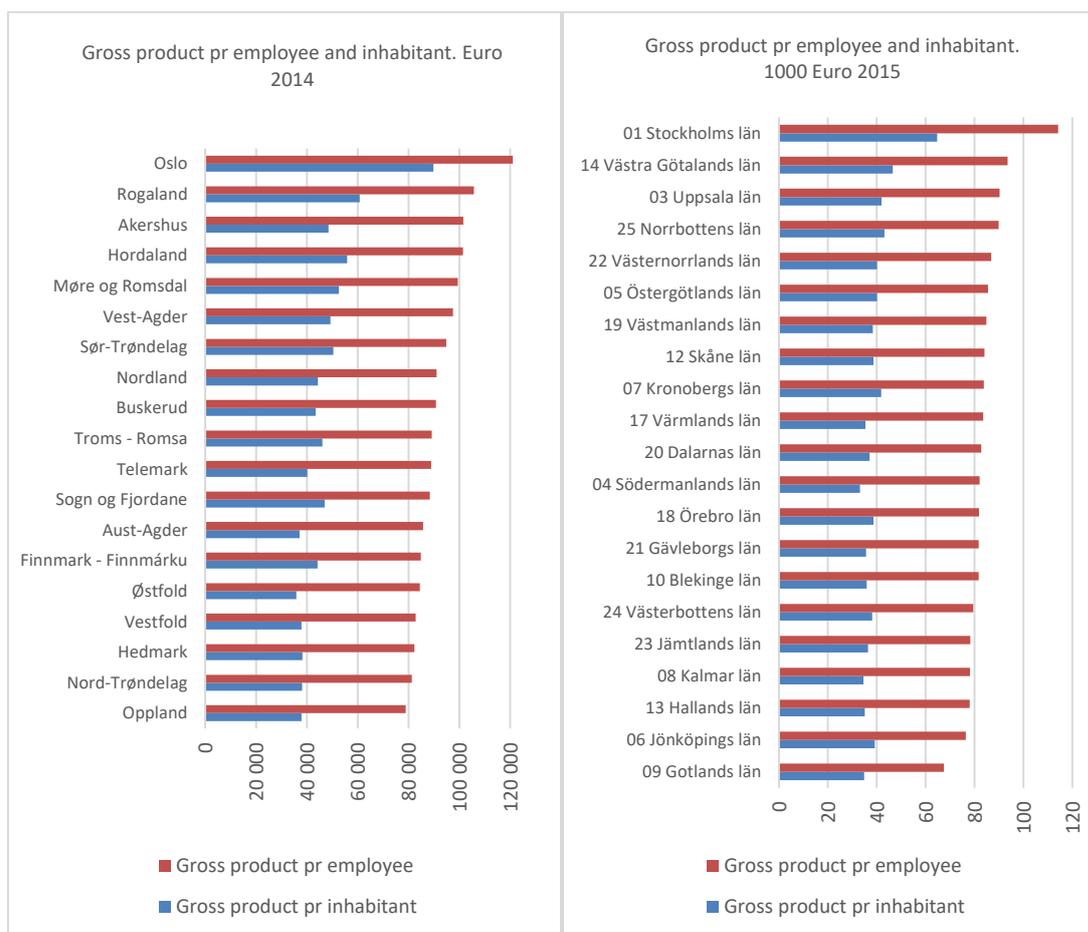
2.2 Gross product¹, main sectors and employment

The counties constituting inner Scandinavia vary a great deal when it comes to GDP. Hedmark is among the counties in Norway with the lowest gross product pr. inhabitant. Only the counties Nord-Trøndelag and Oppland have lower gross value added pr. employee. Østfold County is in the lower part when ranking gross value pr. employee and per inhabitant as well. On the other side, Akershus is among the counties with highest gross product pr. capita. On the Swedish side, Värmland and Dalarna Counties are in the middle of the national ranking. Since we have data for two different years, numbers are a little problematic to compare, but we have adjusted the numbers with the average exchange rate for 2014. Then we find that the gross product per employee in Hedmark is a little below Värmland and Dalarna and on level with the Swedish counties in gross product pr. inhabitant.

¹ The common way of measuring value creation is by the size of the gross product, measuring the value of all production of goods and services in a country or region in a period less the value of consumed goods. The gross product is used to compensating labor and capital. In public statistics, gross product is not available below county level. The last available figures for gross product at the county level are from 2014 in Norway and 2015 in and Sweden.

Gross product will depend in the number of inhabitants, employment and industry structure. It is thus of little relevance to compare the absolute numbers of GDP of counties. Counties that are more populous will have the highest gross products, Oslo in Norway and Stockholm in Sweden. Below we have figures presenting gross products in Norway and Sweden per capita and per employee. Even if we control for number of inhabitants and number of employees, value added is the highest in Oslo and Stockholm.

Table 2 Gross product. Source; Statistics Norway, Statistics Sweden



About 1/3 of employees are working within the public sector in inner Scandinavia, this share is about the same on both sides of the border. Within the private sector, retail is the largest employer on the Norwegian side, while industry is the largest employer on the Swedish side. Tourism has about the same share of employment on both sides of the border. This is also the case for the information and communication services, finance, and insurance, while other business services do have a higher share on the Swedish side of the border. Transportation and storage services have a high share in upper Romerike, due to the Gardermoen airport and being close to Oslo.

Table 3 Main sectors and employment

Industry	Employment 2016				Employment 2015	
	Inner Østfold	Lower Romerike	Upper Romerike	Hedmark	Värmland	Dalarna
00 Unspecified	1 %	1 %	1 %	1 %	2 %	1 %
01-03 Agriculture, forestry and fishing	4 %	1 %	2 %	5 %	4 %	4 %
05-09 Mining, quarrying and manufacture	11 %	7 %	4 %	9 %	14 %	16 %
35-39 Electricity, water supply, sewerage, waste management	1 %	1 %	1 %	1 %	1 %	1 %
41-43 Construction	12 %	8 %	8 %	8 %	7 %	8 %
45-47 Wholesale and retail trade: repair of motor vehicles and motorcycles	16 %	21 %	17 %	13 %	12 %	11 %
49-53 Transportation and storage	5 %	7 %	18 %	4 %	4 %	4 %
55-56 Accommodation and food service activities	2 %	3 %	6 %	3 %	3 %	3 %
58-63 Information and communication	1 %	1 %	1 %	1 %	2 %	1 %
64-66 Financial and insurance activities	1 %	1 %	0 %	1 %	1 %	1 %
68-75 Real estate, professional, scientific and technical activities	7 %	10 %	9 %	8 %	11 %	10 %
84 Public adm., defence, soc. security	5 %	5 %	8 %	8 %	6 %	6 %
85 Education	9 %	8 %	7 %	8 %	10 %	10 %
86-88 Human health and social work activities	22 %	24 %	17 %	25 %	19 %	20 %
Other service activities	3 %	3 %	3 %	4 %	4 %	5 %
Total	100 %	100 %	100 %	100 %	100 %	100 %
Total numbers	17 737	73 090	43 331	85 970	122 731	130 393

Forest based industries are important for economic development in both the Swedish and Norwegian part of inner Scandinavia. Forests are of high quality and well suited for processing in the mechanical wood industry into construction materials, or into pulp and paper products. There are however some major differences between the forest industries in Sweden and Norway. In the city of Grums in Värmland, Billerud Korsnes invests SEK 5.7 billion in a new board machine and in upgrading of the pulp mill. This will make Billerud Korsnes a leading supplier of liquid packaging. Just a few miles to the north at Skoghall, Stora Enso has for a long time operated a pulp mill and a board machine producing board for liquid packaging. This one mill supplies in the range of 1/6 of global demand for liquid packaging. While major investments take place in the forest industry in Värmland, no major investments are undertaken on the Norwegian side of the border. Reduction in demand for pulpwood in Norway during the last 10 years has led to export of pulpwood from Norway to Sweden. The long distance from Norwegian forests to Grums and Skoghall have increased costs for Norwegian forest owners and saw mills, while access to Norwegian pulpwood has been beneficial for the pulp industry located around Lake Väneren in Värmland.

In total, there has been a positive development in employment on both sides of the border the last year. There has been a growth in employment in upper and lower Romerike, and in Värmland and Dalarna. Parts of Hedmark experience decline. There is a mixed picture at the Swedish side of the border as well. There is a decline in employment in municipalities with few employees such as in Storfors, but a positive trend in municipalities with high employment like Karlstad, Falun and Borlänge.

2.3 SMEs in inner Scandinavia²

In 2016 there were 37 313 SMEs registered in inner Scandinavia, 11 726 on the Norwegian side and 15 587 on the Swedish side. In both countries SME represent close to 100 percent of all firms and microenterprises dominate on both sides of the border. On the Swedish side, microenterprises represent 87 percent of the total number of SMEs, on the Norwegian side 79 percent.

At the municipal level, Karlstad one of the main cities in Värmland (SE), has the highest number of SMEs with 2 873 SMEs in 2016, then comes Falun (SE) and Skedsmo (NO) with about 1 500 SMEs. Folldal, Os and Hurdal on the Norwegian side and Munkfors and Storfors on the Swedish side have the lowest numbers of SMEs.

² According to the European Commission, SMEs have less than 250 employees and turnover below 50 mill. Euro annually. Only employees are reported here. There is a distinction between microenterprises, (<10 employees), small enterprises (11-49 employees) and medium sized enterprises (50-249 employees). SMEs with their headquarter outside inner Scandinavia are not part of the figures. SMEs with 0 employees are not included, the same occurs to SMEs in the primary and public sector.

Table 4 SMEs in inner Scandinavia

		Micro enterprises (1-9 employees)	Small enterprises (10-49 employees)	Medium sized enterprises (50-249 employees)	Total number of SMEs
Hedmark	Number of SMEs	3 562	904	84	4 550
	Share of total number of enterprises with employees	78,2 %	19,8 %	1,8 %	99,8 %
Inner Østfold	Number of SMEs	1 025	224	14	1 263
	Share of total number of enterprises with employees	81,0 %	17,7 %	1,1 %	99,8 %
Lower Romerike	Number of SMEs	3 051	685	102	3 838
	Share of total number of enterprises with employees	79,0 %	17,7 %	2,6 %	99,4 %
Upper Romerike	Number of SMEs	1 651	377	47	2 075
	Share of total number of enterprises with employees	79,1 %	18,1 %	2,3 %	99,4 %
Värmland	Number of SMEs	6 644	873	131	7 648
	Share of total number of enterprises with employees	86,8 %	11,4 %	1,7 %	99,9 %
Dalarna	Number of SMEs	6 863	949	127	7 939
	Share of total number of enterprises with employees	86,3 %	11,9 %	1,6 %	99,8 %
Norwegian side	Number of SMEs	9 289	2 190	247	11 726
	Share of total number of enterprises with employees	78,9 %	18,6 %	2,1 %	99,6 %
Swedish side	Number of SMEs	13 507	1 822	258	15 587
	Share of total number of enterprises with employees	86,5 %	11,7 %	1,7 %	99,8 %
Inner Scandinavia	Number of SMEs	22 796	4 012	505	27 313
	Share of total number of enterprises with employees	83,2 %	14,6 %	1,8 %	99,7 %

2.4 Innovation in NUTS 2 regions

The EU innovation scoreboard covers the regions; East Central Sweden, Oslo-Akershus, Hedmark-Oppland. Key findings from the scoreboard are listed below. According to the scoreboard all the regions in inner Scandinavia are relatively innovative in a European context.

Table 5 European innovation scoreboard

	Overall performance	Strength	Weakness
East Central Sweden	Innovation leader+, performance increased over time	Non-R&D innovation expenditures	Sales to new markets
Oslo/Akershus	Innovation leader, performance increased over time	International scientific co-publications	Exports of medical high technology manufacturing
Hedmark-Oppland	Strong innovator with performance increasing over time	Innovative SMEs collaborating	Exports of medical high technology manufacturing

2.5 Research institutions, universities and higher education institutions

Within inner Scandinavia the following research and higher education institutions are located:

In Värmland and Dalarna:

- Karlstad University, main campus Karlstad, minor campus Arvika
- Dalarna University with campuses in Borlänge and Falun
- Stora Enso Skoghall AB Karlstad Research center

In Hedmark, Romerike and inner Østfold:

- Inland Norway University of the Applied Sciences with campuses at Rena, Elverum, Hamar, Stor-Elvdal and Blæstad
- Oslo and Akershus University of the Applied Sciences, campus Kjeller
- Institute for Energy Technology, Kjeller
- Eastern Norway Research Institute, Hamar
- Norwegian Defence Research Facility, Kjeller

3. CROSS BORDER COOPERATION OPERATIONAL PROGRAM SWEDEN-NORWAY 2014-2020

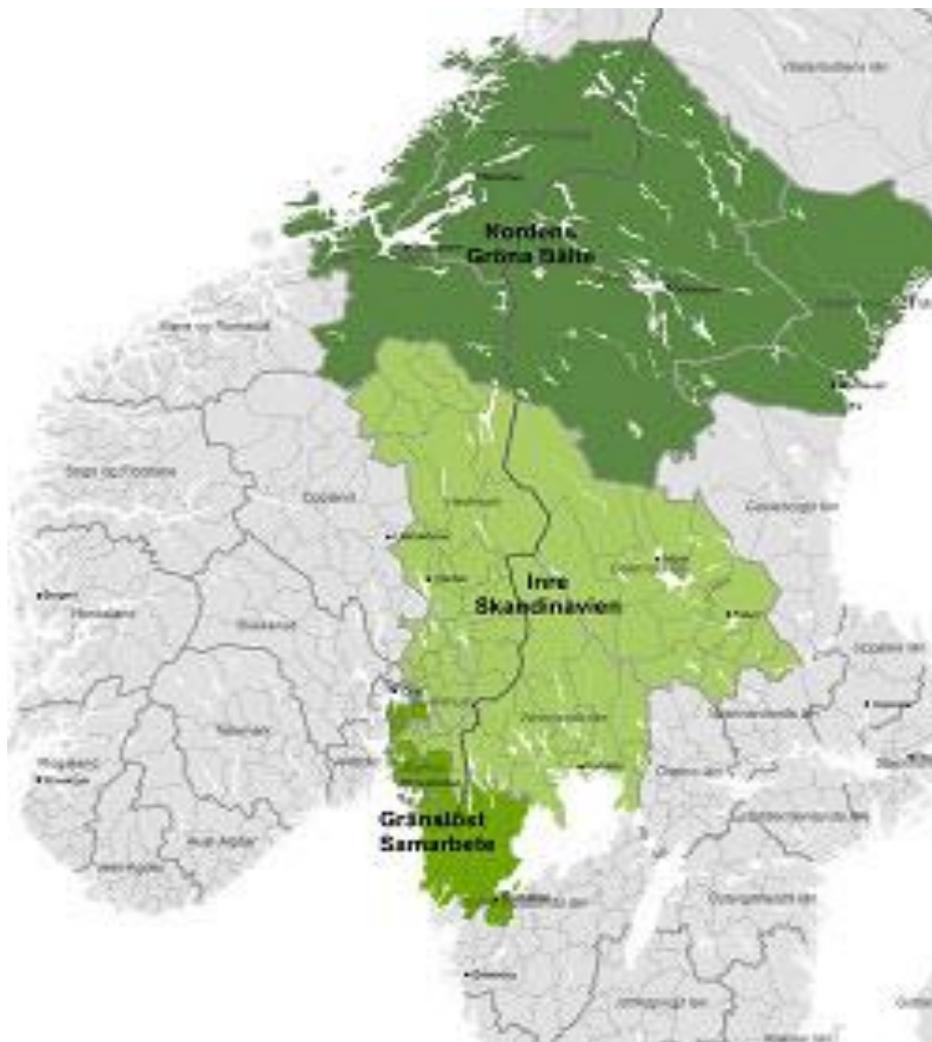
3.1 Background and program overview

The Cross border cooperation (CBC) programme Interreg Sweden-Norway is a programme under the regulation of European Territorial Cooperation EU no 1299/2013 co-funded by the European Regional Development Fund (ERDF). The programme was approved by the European Commission in 2014.

Table 6 Sweden – Norway programme overview

Regions covered by the programme area	Jämtland County (SE), Värmland County (SE), Dalarna County (SE), parts of Västra Götaland County (SE), Nord-Trøndelag County (NO), Sør-Trøndelag County (NO), Hedmark County (NO), Østfold County (NO) and Akershus County (NO)
Number of inhabitants	2,24 million
Land area	175 673 km ²
Managing Authority	County Administrative Board of Jämtland County (SE)
Norwegian Secretariats	Hedmark County Council (NO) – Central region inner Scandinavia Trøndelag County Council (NO) – North Region Østfold County Council (NO) – South Region
Total budget 2014-2020 Community Support and Norwegian National funding	EUR 73 million
Total budget, including regional and private co-financing	EUR 146 million
Programme areas	3 Sub-programmes: North Region - The Green belt of the Nordics Central Region - Inner-Scandinavia South Region – Borderless Cooperation
Aims and objectives	Objective: Through cross-border cooperation, create the best conditions for an economically strong region with an attractive living environment. Aim. Through cross-border cooperation tackle common challenges identified in the border region and to utilize the unused potential. By the removal of border barriers and by making use of the border region's collective resources the programme aims to connect regions across the border.
Priorities	<ul style="list-style-type: none"> • Research and innovation • SMEs competitiveness • Environment and natural resources • Green Infrastructure • Cross border labor market and employment

Figure 2 Interreg Sweden-Norway geography



Cross-border cooperation between Norway and Sweden has a long history. Starting in the 1960s, The Nordic Council supported Nordic cooperation and Nordic Council of Ministers contributed to formalizing the cooperation through establishing border committees. At the regional level Hedmark County Council and Landstinget in Värmland, took a political initiative to support cross-border cooperation in the field of culture, infrastructure, innovation and skills and competence. At that time, neither Sweden nor Norway was a member of the European Economic Community (EEC).

Sweden became an EU-member in 1994, while Norway chose to stay outside the Union, and instead became affiliated with the EU through EFTA (European Free Trade Association) and then European Economic Area- agreement (EEA-agreement). Swedish EU-membership marked the introduction of new mechanisms in the Swedish-Norwegian cooperation. Sweden became part of EU Cohesion Policy, including European territorial cooperation. EU Cohesion policy is not directly part of the EEA-agreement, but the Norwegian government and Norwegian border-regions have since 1996 been invited to take part in CBC-programmes by the Swedish Government. The contribution from the

Norwegian Government is through the National Budget, and co-finance from partnerships at the regional level.

The area constituting the CBC Interreg Sweden-Norway programme is by no means homogenous, neither in terms of physical geography, nor by urban functional measures. Rather, it is characterized by a vast diversity ranging from sparsely populated mountain areas to the Oslo metropolitan area. In line with this reality, the program area is divided into three sub-areas, starting with the North region - The Green belt of the Nordics, Central region - Inner-Scandinavia and the South Region – Borderless Cooperation. The program structure is made up of three partly autonomous regional steering committees. The objectives, aims and priorities are the same for the whole area.

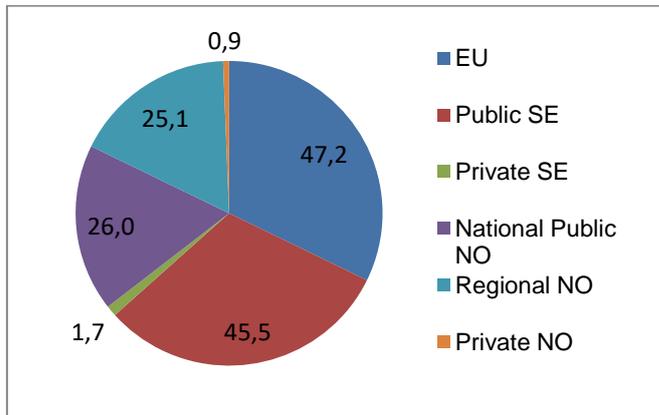
3.2 Budget, existing projects and organisation structure

The total programme budget for the period 2014-2020 is 146 392 250 EUR. Around 60 percent of the budget has already been allocated to around 62 projects; of which 27 is within the inner Scandinavia programme geography.

Table 7 Funding details Interreg SE-NO 2014-2020, in EUR

Funding [in EUR]	Total	ERDF	Norway
Interreg SE-NO programme funds	73 196 125	47 199 875	25 996 250
Expected co-financing/own contribution	73 196 125	47 199 875	25 966 250
Total Programme budget	146 392 250	94 399 750	51 992 500
thereof Research and Innovation (Priority 1)	41 597 715 (29%)		
thereof SMEs competitiveness (Priority 2)	48 097 501 (33%)		
therof Environment and natural resources (Priority 3)	13 519 317 (9%)		
therof Green Infrastructure (Priority 4)	13 519 317 (9%)		
therof Cross border labor market and employment (Priority 5)	20 538 940 (14%)		
therof Technical assistance	9 119 550 (6%)		

Figure 3 Financial model Interreg Sweden-Norway programme, share of total budet. In million EUR



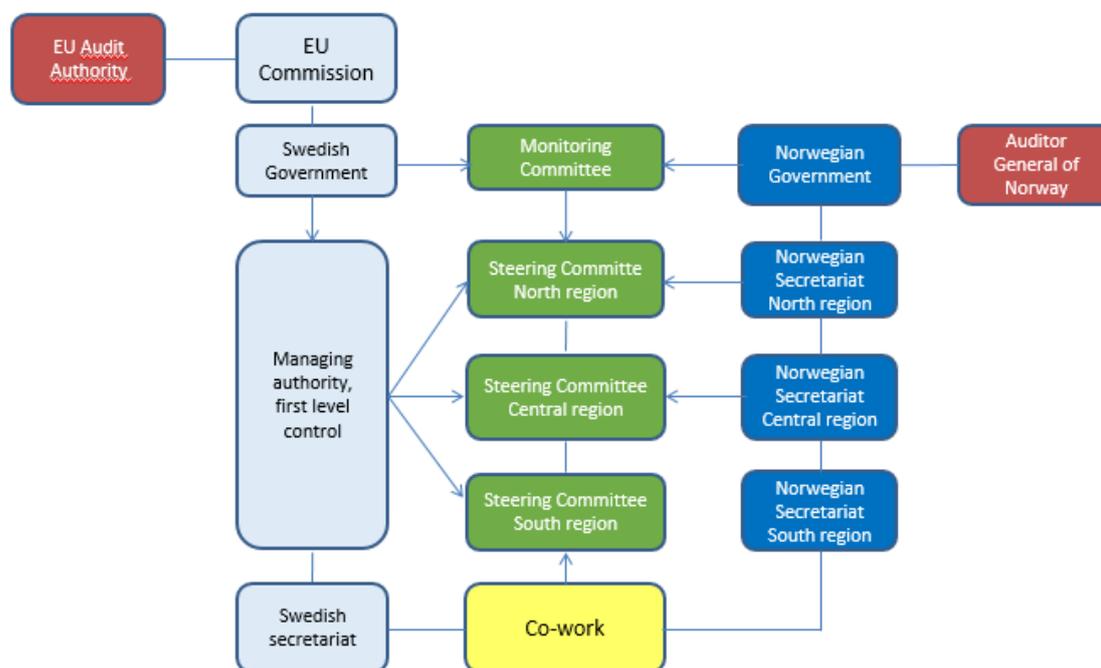
Normal funding-model at project-level:

- Norwegian side: 1/3 national, 1/3 regional 1/3 by the project partnership.
Swedish side: 1/2 EU and 1/2 by the region/project partners.

The organizational structure of the Interreg Sweden-Norway programmer consists of:

- 1 Monitoring committee
- 3 Steering committees (1 for each sub-programme)
- Managing Authority Swedish side
- 1 Norwegian Secretariat for each sub-programme

Figure 4 Organizational structure Interreg Sweden-Norway programme 2014-2020



3.3 SME involvement and lessons learnt

In the programme period 2007-2014 altogether 6300 SMEs and businesses were involved in the programme. The programme evaluation emphasized the program’s contribution to growth and employment, in particular in the areas of green economy and tourism in Hedmark. There has not been a tradition of SMEs as direct partners. Private co-funding has not been a possibility in the previous programme periods, but is a new opportunity in the current 2014-2020 period.

As the program does not support one-by-one cooperation between companies, the main form of SME involvement is through the establishment of wider network partnerships. Triple helix partnerships between SMEs, cluster organisations, innovation centres, science parks, universities / universities of applied sciences and public sector organisations is the common model.

In the current program period around 33 percent of resources available are used for the investment priority SMEs competitiveness. Examples of relevant initiatives under this investment priority is “cooperation to promote development in SMEs and businesses with growth potential”, “actions supporting SMEs capacity to grow, in particular in international markets” and “actions increasing SMEs capacity to transform new technology and competences to business opportunities”. The indicators below demonstrate the

program level targets for this priority and the progress and status in reaching those as of 31.12 2016.

Table 8 Indicators SMEs

Indicator	Result (2023 – Inner Scandinavia)	Anticipated number pr. 31.12 2016 ³ - Inner Scandinavia)
Number of SMEs involved in project activities	385	1007
Number of SMEs receiving guidance / consulting	350	860
Number of SMEs that through cross-border activities have been established in new markets	35	70
Number of SME cross border cooperation agreements	65	60

The indicators show that a much larger number of SMEs take part in and are actively involved in the program than anticipated, and that the program already has met its target on these quantitative indicators.

A great emphasis in the current program period is to increase the research, development and innovation capacity of organizations and businesses. There is a priority of investment in research and innovation, where around 29 percent of the total resources available in the programme are used. This priority also attracts SMEs and examples of relevant initiatives are “projects that increase cooperation and contribute to knowledge transfer between research institutions, businesses/ SMEs, public sector and civil society”, “projects that from a smart specialization approach develop the strengths of the cross-border region” and “projects that develop practical models for market introduction of new ideas, inclusive test and demonstration”.

The indicators below demonstrate the program level targets for this priority and the progress and status in reaching those as of 31.12 2016.

³ Source: Project progress reports

Table 9 Indicators research and innovation

Indicator priority research and innovation	Result (2023 – Inner Scandinavia)	Anticipated number pr. 31.12 2016 ⁴ - Inner Scandinavia)
Number of SMEs participating in cross-border Research, development and innovation activities	50	233
Number of research institutes participating in cross-border research projects	5	27
Demonstration- and test projects	2	17
Number of long-term formalized cooperation agreements between research institutes	2	9

The indicators demonstrate that a much larger number of SMEs than anticipated take part and that the program level targets are met.

⁴ Source: Project progress reports

4. INTERREG SWEDEN-NORWAY GOOD PRACTICE – THE ECOINSIDE PROJECT

4.1 Background and project overview

The project ecoINSIDE is chosen as an example involving small and medium-sized enterprises (SMEs) within the inner Scandinavia Interreg context. EcoINSIDE is part of the Interreg Norway-Sweden 2014-2020 program as described above. The overall goal of the project according to the application is to:

“...contribute to Inner Scandinavia as a leading cluster within environmentally driven development. The main goal is to strengthen the border regions’ competitive performance by initiating climate driven development, reduce barriers and develop the territorial capital of the border region” (authors translation).

The application states this as an ambitious, but anyway realistic goal. The key to reach the goal is according to the application to develop:

- “A world class bordercrossing innovation system
- Inner Scandinavia as a showcase in sustainable development
- Binding co-operation between institutions across the border through ownership and more shared institutions” (authors translation)

By concentrating on such activities, ecoINSIDE is supposed to result in cross border value added for SMEs, universities and other knowledge providers.

The resources in the project are allocated to three areas; solar energy and energy systems, waste and resources, and sustainable building.⁵ The methods used in the project are living lab, service innovation, R&D and inovative public procurement.

The Living lab concept is based on user participation in innovation. Users are SMEs, organizations or consumers. Innovation is then focused on users instead of technology.

⁵ These three areas are named both clusters, networks and value chains in the application. In this working paper we prefer to use areas of activity as a more neutral term, although both clusters, networks and value chains might be relevant descriptions.

R&D within a Living lab context involves co-operation and multi contextual empirical development environments.

Service innovation is about SMEs learning about their customers and then use this knowledge in commercial product development. SMEs are encouraged to look upon themselves not only as suppliers of products, but as suppliers helping customers to create values to solving customers problems.

The third working method in ecoINSIDE is *R&D*. Users are encouraged to managing R&D that leads to new products and services generating a need for new employees in new or established SMEs. Within ecoINSIDE there is ongoing work to develop the *public sectors role as customers and actively use procurement to stimulate development of regional SMEs*. An overall goal is to link activities to other projects. Another overall goal is to demonstrate progress towards a more sustainable society due to innovation and R&D within the framework of ecoINSIDE.

The project management works with a set of indicators to track the numbers of SMEs participating in ecoINSIDE. These indicators are important for tracking progress towards the ambitious goals set out in the project.

Table 10 Overview SME involvement, activities and indicators as of June 2017

Sector	SMEs being supported		SMEs getting support to introduce new products on the market		Support for introducing products to new SMEs		SMEs participating in cross-border, transnational or interregional R&D projects	
	Target	Status as of june 2017	Target	Status as of june 2017	Target	Status as of june 2017	Target	Status as of june 2017
Waste resources	15	35	1	8	1	6	15	14
Solar energy and energy systems	20	79	2	22	1	19	30	24
Sustainable construction	15	24	1	2	2	4	15	8
Total	50	138	4	32	4	29	60	46

The indicators demonstrate that the level of reported activity is significantly higher than what was proposed in the application in 2015. They further demonstrate that the project supports SMEs in product development, general advisory services, initiating spin-offs and new R&D projects.

Table 11 Overview ecoINSIDE

Budget	EU funding: 1 202 667 € Total budget: 4 452 772 €
Project Period	1 July 2015 – 30 June 2018
Lead Partners	Arvika municipality (SE) & Lillestrøm Innovation Centre (NO)
Partnership and network	Research Institutes and universities / Universities of applied sciences Cluster organisations and science parks SMEs and larger companies Municipalities Regional authorities
Sectors	Solar energy and energy systems, sustainable building technology, waste resources
Activities	Business support infrastructure - Create / facilitate shared working or collaborative space and accessibility to equipment: Spaces to meet consumers or peers and demonstration "plants" (living labs) - Advisory services - Key stakeholder matching (partners, investors, market entrance, competence, internationalization) - Testing minor financial support for innovation-projects in the solar business / guide to other financial sources

Of the 138 SMEs involved in the ecoINSIDE project, we have interviewed 10 SMEs. This is a small selection, but it gives nonetheless an overview of the working methods in ecoINSIDE and makes us able to demonstrate some example on how involved SMEs benefit from the ecoINSIDE project and the partnership. Based on the interviews, we have identified two main types of SME involvement:

- The project ecoINSIDE as a framework for solving SME specific problems, such as testing and certification of new products and creating new services that solves identified challenges for the SME
- The project ecoINSIDE as a way to strengthen inter and intra industry network relations. This includes new business partnerships and access to new market opportunities through collaborative working methods

Based on the interviews, examples of these two types of involvement are demonstrated below.

Table 12 ecoINSIDE as a framework for solving SME specific problems: example sustainable building

SME	3Vision AS
Description SME	Small housing construction firm. Develops innovative ways of building houses without the use of plastics.
Problem / Barrier for growth	Certification to commercially offering the product Custom regulations to enter Swedish / Nordic markets
ecoINSIDE contribution	Advisory services, key stakeholder matching Process-work towards certification through Swedish contacts and institutions Process-work and dialogue towards customs-authorities
Results	Necessary certifications obtained Simplified set of cross border custom clearance rules implemented
Effects	Market access and business opportunities, further development of the products 15-20 new employees Plans for setting up a new production facility underway

The key to success in the case of 3Vision seems to be the long term relations between the manager of 3Vision and Tretorget advisors (partner in ecoINSIDE). Trust has developed over a number of years and the manager of 3Vision tells he has developed his professional network considerable over the last 7-8 years. Before he believed he could tackle most problems on his own, but has come to realize that actually he need help from others. The match between the type of competence 3Vision needed and what Tretorget can offer through the ecoINSIDE project seems to have been very good. Tretorget has been working with competence for wood constructions since the start up in the early 2000s. Tretorget has been involved in Interreg projects since about the same time and has gradually been able to extend their network among both SMEs and knowledge providers.

Table 13 ecoINSIDE as framework for solving SME specific problems: example solar energy

SME	Tarpon Solar AS
Description SME	Innovation firm established in 2016.
Problem / Barrier for growth	Product development, testing and commercialisation
ecoINSIDE contribution	Key stakeholder matching, Networks, cross border product development and testing, access to test facilities
Results	New demo models ready for commercialisation
Effects	Realisation of the product through ecoINSIDE partners and competences

Table 14 ecoINSIDE as framework for solving SME specific problems: example waste handling

Company	Inter-municipal waste company ROAF
Description	ROAF is an intermunicipal company collecting household waste from 200.000 citizens in the suburbs of Oslo. ROAF has developed one of the most advanced sorting facilities in the world utilizing near infrared (NIR) technology to sort out resources from household residual waste.
Problem / challenge	Handling national and international requests for partnerships and visits. Commerically exploit interest in the companies' technology and woking methods
ecoINSIDE contribution	Knowledge and model transfer – establishment of a new service benefitting the whole partnership and green businesses in the region after model of the Swedish partner, Dalarna Science park.
Results and effects	Green visits Oslo. Systematised approach to handling international requests, matching with the right business in the ecoINSIDE partnership, Oslo region and inner Scandinavia with international companies

Example: The project ecoINSIDE as a way to strengthen inter and intra industry network relations

So far SMEs seeking solutions to specific problems within ecoINSIDE have been described. There are however companies participating in ecoINSIDE with another role. The two that will be mentioned here, Fortum and Multiconsult are both active within the solar energy area and definitely not SMEs. Fortum is one of the leading providers of energy in Sweden and beyond with 8000 employees and annual turnover of 3,6 billion Euro. Multiconsult is a major Oslo-based consulting firm with 2500 employees and annual turnover in the range of 200 million Euro. The company operates within both the housing and energy sectors. Both these large firms see ecoINSIDE as an interesting arena to participate. A representative from Fortum told us he uses ecoINSIDE to learn about new ideas, meet talented people and possibly develop commercially interesting ideas into products. At the same time Fortum has business interests in solar energy and intends to increase its business in this growing sector. The competences within Fortum are thus valuable for ecoINSIDE and the SMEs involved in the partnership. Multiconsult has a long term strategy to contribute to the growth of solar energy and other sustainable solutions. EcoINSIDE is a platform for strengthening networks and get some fresh ideas. Multiconsult has established contact with another ecoINSIDEpartner, the Gaia eco village and wants to use the village as a testbed for new solutions for solar energy. Our contact person in Muticonsult argues that; «ecoINSIDE gives us a possibility to do what we are unable to find time to do». He sees ecoINSIDE as successful, but he would have liked to see more students taking part in project work. This is something he will propose for future project work.

4.2 Factors favoring successful cross-border innovation in the ecoINSIDE project

Based on the interviews we are able to identify factors favoring successful cross border innovation in the ecoINSIDE project:

- Trust and long term networks among key partners
- Experienced project managers as knowledge brokers

To understand the, as far as these authors are able to tell, largely successful operation of ecoINSIDE, it is necessary to take a closer look at how the project is operated on a day to day bases. Project managers in ecoINSIDE are professionals within the three areas of expertise represented in the project, solar energy and energy systems, sustainable building and waste resources. These project managers operate as knowledge brokers. A knowledge broker can be defined as an intermediary (an organisation or person), that aims to develop relationships and networks with, among, and between producers and users of knowledge by providing linkages, knowledge sources, and in some cases knowledge itself, (e.g technical know-how, market insights) to organisations in its network.

There is a group of 8-10 brokers active within ecoINSIDE using in between $\frac{1}{4}$ and $\frac{1}{2}$ of their work-year on the project. Brokers are located with the key partners in ecoINSIDE; Dalarna Science Park (SE), Tretorget (NO), Glava Energy Center (SE) and Kunnskapsbyen Innovation Centre (NO). The latter also acts as the overall project leader.

These organizations and their key employees have known each other and learned to trust each other over a long period of time and have been working together in Interreg projects and other projects for 5-10 years. Through these years, they have learned to share knowledge and information about two topics; Which SME needs what sort of knowledge and which knowledge providers can offer that particular knowledge? The key partners have several competences themselves, but their networks include other knowledge providers such as universities and clusters outside the partnership. Being able to visit SMEs and knowledge providers over a sustained period of time has enabled key personnel to become competent brokers of knowledge between SMEs and knowledge providers in inner Scandinavia. Sometimes knowledge has to be sought in places such as Stockholm or Trondheim. The brokers financed by ecoINSIDE have been able to compensate for some of the disadvantages the inner Scandinavia region do have when it comes to establishing an innovation system that works for both SMEs and knowledge providers. Such disadvantages has been documented and includes long distances, lack of public transport, a national border that still represents some problems and a business environment that sometimes is not very innovative (Ørbeck and Braunerhielm 2013).

An innovation system consists of knowledge users (SMEs) and providers of knowledge (universities etc.). The existence of SMEs seeking knowledge and universities providing knowledge in a region is in itself not enough to guarantee that a contact to solve the problem will be established. Some sort of arena where the two parties can meet and start discussing has to be available. If such an arena is not available it has to be constructed and ecoINSIDE gives possibilities to construct such arenas. Flexibility in project design and organisational structure together with the wide public-private partnership are other important factors contributing positively to the operation of ecoINSIDE.

Lastly, we experience that the living lab methodology used in the project offers new opportunities for businesses. One example is within sustainable housing construction, where a living lab is under construction in the Gaia village in Alvdal Hedmark County. Entrepreneurs that want to build and live in a village with 50 houses in Alvdal municipality 300 kilometer north of Oslo develop the Gaia village. Working with ecoINSIDE, they invite suppliers of a whole range of solutions and equipment needed to build sustainable homes to join their resources and turn the whole project into a Living lab.

Through the interviews, we experience that the acceptance of the project among the SMEs is high. All the informants want some sort of continuation of the project after the end of the current project period. It was however emphasised that different reporting practices on the Norwegian and Swedish side regarding SME participating and documentation could contribute to hamper SME participation on the Swedish side. Reporting routines makes it easier for the Norwegian SMEs to participate than the Swedish SMEs.

4.3 Conclusion

Based on the available experience based material consisting of an indicator report and interviews with a limited number of SMEs and project managers in the ecoINSIDE project, it is necessary to be cautious about conclusions. What seems to be the case is that ecoINSIDE has reached a large number of SMEs within the three areas of operation within inner Scandinavia. However, we believe that the number of Swedish firms participating in ecoINSIDE would have been higher if the routines for SME reporting had been less demanding.

Based on the presentation in this report some reflections can be made. First it seems that ecoINSIDE is organized in a way that attract innovative firms to participate. A will to explore new possibilities that hopefully can become future commercial realities is necessary for successful participation in ecoINSIDE. Experienced brokers are able to recruit innovative SMEs and knowledge providers into networks that sometimes are formalized into projects to solve specific problems. These networks are cross- border and thus contribute to fulfilling overall goals of both ecoINSIDE and the Interreg Sweden-Norway

program. Within the working areas of ecoINSIDE – sustainable building, solar energy and energy systems and waste as resource, ecoINSIDE stimulates to a cross-border innovation system. To some SMEs there is a value added thanks to the cross-border innovation system. Within the framework of this study, we have identified some such examples.

This overview of the ecoINSIDE project demonstrates an ability to initiate and implement R&D and advisory activities of substantial importance to the involved SMEs. Due to limitations within this evaluation project, we are not able to tell how many more success stories can be reported from ecoINSIDE. On the other side, we have not talked to anyone critical to the way ecoINSIDE is operated. Everyone we have talked to would like some sort of continuation of ecoINSIDE after the summer of 2018. This is a sign that good work is being done within the framework of ecoINSIDE.

5. AVAILABILITY OF OTHER NATIONAL AND REGIONAL INSTRUMENTS

5.1 Selected Instruments for SMEs – Norway

Name	Research and Development Contracts
Geographical reach	National
Fund operator	Innovation Norway http://www.innovasjon Norge.no/en/start-page/
Description	<p>The financing service of R&D Contracts address companies that have an innovative project with international potential and want to develop their potential in close cooperation with a customer within the public or the private sector. Innovation Norway annually provides nearly 300 million in grants to research and development contracts in the industrial and public sectors to alleviate risks and encourage start-ups of demanding development projects.</p> <p>R&D Contracts trigger an innovative partnership between two or more parties. Through close cooperation a supplier gets unique insight into the customers need. The result is a product that is much better adapted to the market. The selection criteria are the project's level of innovation, international marketing potential, as well as the economic feasibility and ability to carry it through.</p> <p><u>The two main features of the program:</u></p> <ul style="list-style-type: none"> •Industrial R&D contracts (IRD) – A binding development contract between two or more innovative suppliers and customers in the private sector. Cooperation with demanding foreign customers produces the best results. •Public sector R&D contracts (PRD) – A binding, targeted cooperation between innovative Norwegian supply companies and the Norwegian public sector such as, organizations, e.g. municipalities, county councils, government bodies, hospitals and Defense.
Budget	NOK 300 million in 2017

Name	Innovation Project for the Industrial Sector
Geographical reach	National
Fund Operator	Norwegian Research Council https://www.forskningsradet.no/en/Home+page/1177315753906
Description	Objective: To stimulate R&D activity in trade and industry, particularly activities that promote innovation and sustainable value creation An Innovation Project for the Industrial Sector is an R&D project designed to lead to innovation (value-creating renewal) for the companies participating in the project. The Project Owner and any partners will generally fund at least 50 per cent of the project costs. Companies in many different branches of industry may submit a grant application for an innovation project to compete for funding from the Research Council. A number of programmes with different thematic areas and sectoral focus issue funding announcements for innovation projects as well.

Name	Programme for User-driven Research-based Innovation (BIA)
Geographical reach	National
Fund Operator	Norwegian Research Council https://www.forskningsradet.no/en/Home_page/1177315753906
Description	The BIA programme is targeted at industry and has a budget for 2011 of approximately NOK 355 million. Companies may apply for partial funding of R&D projects which are based on their own strategies and challenges, regardless of branch of industry or thematic area. The projects must result in substantial value creation for the companies as well as for society-at-large, and must take an international perspective. The projects are organised in consortia whereby companies and R&D communities cooperate on achieving results.

Name	The SkatteFUNN R&D tax incentive scheme
Geographical Reach	National
Fund operator	The Research Council of Norway, in cooperation with Innovation Norway and the Norwegian Tax Administration https://www.forskningsradet.no/en/Home_page/1177315753906
Description	The SkatteFUNN R&D tax incentive scheme is a government program designed to stimulate research and development (R&D) in Norwegian trade and industry. Businesses and enterprises that are subject to taxation in Norway are eligible to apply for tax relief. Approved projects may receive a tax deduction of up to 20 per cent of the eligible costs related to R&D activity. All costs must be associated with the approved project. Costs associated with certain R&D project activities are tax deductible under the scheme. To qualify as R&D, any activity must meet the definitions set out by the Research Council of Norway. If the tax deduction for the R&D expenses is greater than the amount that the enterprise is liable to pay in tax, the remainder is paid in cash to the enterprise. If the enterprise is not liable for tax, the entire allowance is paid in cash. All branches of industry and all types of companies can apply to the SkatteFUNN tax incentive scheme.
Budget	Since the start of the scheme in 2002, 30.000 R&D projects have received funding

Name	Regional Research Funds https://www.forskningsradet.no/servlet/web/prognett-rff-hovedside/RFF_in_English/1253976860326
Geographical reach	National, but 7 geographical research regions each with its own independent research board. Hedmark is part of the Inland funding region.

Fund Operator	Regional Authorities (For the Inland fund region: Hedmark County Council and Oppland County Council)
Description	In 2010 Norway established a new funding mechanism for regional research in addition to the national research funding system. A fund of EUR 0.8 billion was set aside for this purpose. An annual interest of about EUR 28.1 million is divided between seven research regions, each with its own independent research board Each region has different areas of priorities, corresponding to regional strengths and in line with regional innovation strategies.

5.2 Selected Instruments for SMEs – Sweden

Name	Regional Program North Middle Sweden (Regionalfondsprogrammet för Norra Mellansverige) https://tillvaxtverket.se/eu-program/norra-mellansverige.html
Geographical reach	Regional
Fund Operator	Swedish Agency for Economic and Regional Growth
Description	<p>The program will help more companies collaborate within clusters that stimulate innovations and improve infrastructure for research and innovation. The money will also be used to increase access to and use of information and communication technologies, primarily through co-financing broadband expansion. Another area is to develop a more diversified business, reducing dependence on a few industries. Part of the money will support the transition to a low-carbon economy.</p> <p>North Middle Sweden consists of three counties: Gävleborg, Dalarna and Värmland. The area borders the Baltic Sea in the east, Norway in the west and extends in a belt across the middle parts of the country and Middle Norrland in the north. North Middle Sweden is undergoing a shift from being an industrial community to a knowledge-based community, while the issue of climate change is becoming increasingly significant. This necessitates an enhanced focus on regional growth efforts. The next Structural Funds programme for North Middle Sweden will therefore focus on renewal and sustainable growth.</p>
Budget	147 million Euro

Name	Challenge-driven Innovation http://www2.vinnova.se/en/Our-activities/Cross-border-co-operation/Challenge-driven-Innovation/Challenge-driven-Innovation/
Geographical reach	National
Fund operator	Vinnova
Description	<p><i>The key issue is how we can turn societal challenges from threats into opportunities, and achieve social and business benefit.</i></p> <p>Sweden is facing several social challenges that will have a strong impact on economic performance, such as an ageing population. At the same time, there is an increasing need to address global challenges like climate change, health, pollution, resource depletion etc. New, innovative approaches are urgently needed to meet these challenges.</p> <ul style="list-style-type: none"> •Addressing essential or critical needs in society and industry. These needs require users/ customers whose demand for solutions incentivises them to engage in developing and testing new solutions. Co-creation is a critical success factor. •Promoting new, cross-sector collaborations to find solutions to the needs; solutions to social and societal challenges are rarely found in one traditional sector or a single research field. New collaboration patterns are emerging between actors in different

	value chains; for example 'green urban transportation' is being developed at the interface between energy, automotive engineering and ICT. •Fostering systemic approaches which address different social subsystems, framework conditions, political, commercial, technological subsystems, etc.
Budget	224 million SEK/year

Name	Strategic innovation programs https://www.vinnova.se/m/strategiska-innovationsprogram/
Geographical reach	National
Fund operator	Collaboration between Vinnova, Swedish Energy Agency and Formas
Description	Vinnova, Swedish Energy Agency and Formas fund seventeen strategic innovation programs. Through collaboration in areas that are strategically important for Sweden, the conditions for sustainable solutions are created for global society challenges and increased international competitiveness. Within the programs, companies, academia and organizations together develop the sustainable products and services of the future. Anyone who can contribute to the development is welcome to apply for funding.
Budget	Ca 700 million SEK/year

Name	Innovationsbidrag http://www.lansstyrelsen.se/varmland/Sv/naringsliv-och-foreningar/foretagsstod/Pages/innovationsbidrag.aspx
Geographical reach	Regional
Fund operator	Swedish Agency for Economic and Regional Growth
Description	The support can be sought by small, new companies that want to develop a product, process or service that is brand new to the market. The company must not be older than five years, counting from the date of registration and the product / service / process may not be on the market yet, but the aid should be a part of the development before the market stage.
Budget	1 million SEK/year. Can be provided with 50% of approved costs, but a maximum of 100,000 SEK.

REFERENCES

Ørbeck, M. and Braunerhielm, L. (2013). *Grenseindeks og grenseanalyser Interreg Sverige-Norge*. Eastern Norway Research Foundation, report nr. 7.

**Statistical analysis for the Project "Knowledge and Innovation Strategies involving
Small and Medium-sized Enterprises" (KISS ME) in the context of INTERREG**

Inner Scandinavia

The working paper presents data on the regions of inner Scandinavia. This includes population and population change, the number of small and medium enterprises (SMEs) and gross domestic product. Data on policy instruments and their budgets within Interreg are presented. The project ecoINSIDE is presented as an example of best practice in the frame of the current programme.

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