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Project memo

Evaluation and monitoring system for the Innovation Strategy for Nordland 2014-2020

VERSION	DATE
1.0	2018-03-01

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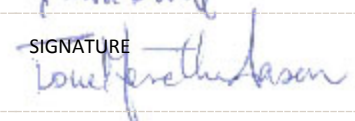| PROJECT NO.	NO. OF PAGES AND APPENDICES:
102011144	19 incl. appendices

SUMMARY

This memorandum summarises the monitoring and evaluation design for tracing results and effects of Nordland County Council's innovation strategy (2014-2020), which is cast as a smart specialisation strategy. The basis is the hierarchy of objectives set in the innovation strategy document, an agreed set of relevant indicators for immediate results (mostly with the county council and its partners) and long terms effects (mostly within trade and industry in Nordland) and a decision to prioritise existing data sources (register data, statistics, and documents) wherever available, supplemented with relevant interviews and other data as required. This design will guide a baseline study, a midway evaluation and an end evaluation, under the condition that it is also important to accommodate changes in the strategy as it evolves.

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PROJECT MEMO NO.	CLASSIFICATION
12	Unrestricted

TABLE OF CONTENTS

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

2 of 19

FIGURES AND TABLES

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 translated account and summary of the memoranda entitled (in Norwegian) "Evaluation System for the Innovation Strategy for Nordland 2014-2020" (Madsen 2017) and "Monitoring System and Baseline Measuring for the Innovation Strategy for Nordland" (Madsen et al. 2017), occasioned by the county council's participation in the Interreg Europe project MonitoRIS3. In the memorandum, discussion involves the principal design of an evaluation and monitoring system for tracing the effects of Nordland County Council's innovation strategy for the 2014-2020 period. The strategy focuses on facilitating innovation within business areas where the county has both resource and competitive advantages combined with export-based links to global businesses/industries that may provide a basis for growth in export and value creation. By conducting analyses prior to developing a strategy, these prerequisites were identified within the areas power processing industry (processing/chemical), the marine sector, and experience-based tourism.

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 Erlend Nikolaisen and Terje Stabæk for their 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, 2018-02-28
Håkon Finne
Project Manager

1 BACKGROUND

The "Innovative Nordland – Innovation Strategy for Nordland 2014-2020" (Nordland County Council 2014) was adopted in October 2014. Nordland County Council has developed the innovation strategy as the first Norwegian region within the EU's smart specialisation platform, in line with the European Commission's smart specialisation strategy – S3. The main elements of S3, such as entrepreneurial discoveries and innovation through related variety, have a high profile in the implementation of the EU's structural funds policy, Interreg and the EU's research programme Horizon 2020 (H2020). The European Commission is ambitious in its aim to find new innovative policy mix solutions that promote innovation. The professional platform for the S3 policy is founded on a combination of several relevant theories on regional innovation, concentrated and further developed through the initiative's mirror group (Foray et al. 2012).

Nordland's strategy is based on extensive preliminary work by the administration, analyses of the region's advantages and prerequisites (Mariussen et al. 2013), peer learning with other European regions, supplementary feasibility studies (Mariussen 2014), and comprehensive stakeholder consultations. The county council has adopted the strategy for the period leading up to 2020. The strategy work has attracted considerable attention, and several Norwegian regions are following suit.

The implementation presupposes further development of the strategy's knowledge basis at strategy and policy levels, adapted for the region's prerequisites, as well as activation of such a knowledge base among participants in the innovation system.

The innovation strategy must follow the vision defined in the County Plan for Nordland, as well as objectives defined in the R&D strategy for Nordland and several sector strategies adopted by the county council. In particular, this includes a strategy for tourism, county council issues relating to seafood, the industrial strategy for Nordland, and the R&D strategy for Nordland. Furthermore, the strategy is said to be directed at companies, but in several areas the county council must work in cooperation with other actors in order to reach the companies.

2 EVALUATION AND MONITORING SYSTEM – ASPIRATIONS AND OPPORTUNITIES

2.1 Opportunities for measuring results and effects

The outcomes chain, the interconnection between input, activities, results, and effects, is illustrated in Figure 1 below. In the short term, we expect this will generate some results, but effects can only be achieved in the longer term. However, opportunities for measuring results and effects of the innovation strategy are challenging, and the further out in the measuring chain one gets, the more difficult it is to measure the interconnection in a credible way. The reason for this is that over time many other conditions inside or outside individual companies will influence this interconnection and reduce the possibility of tracing the result back to the initial input. At the same time, one must assume that the input made as part of the innovation strategy is relatively minor compared to other activities and impact from the surroundings.
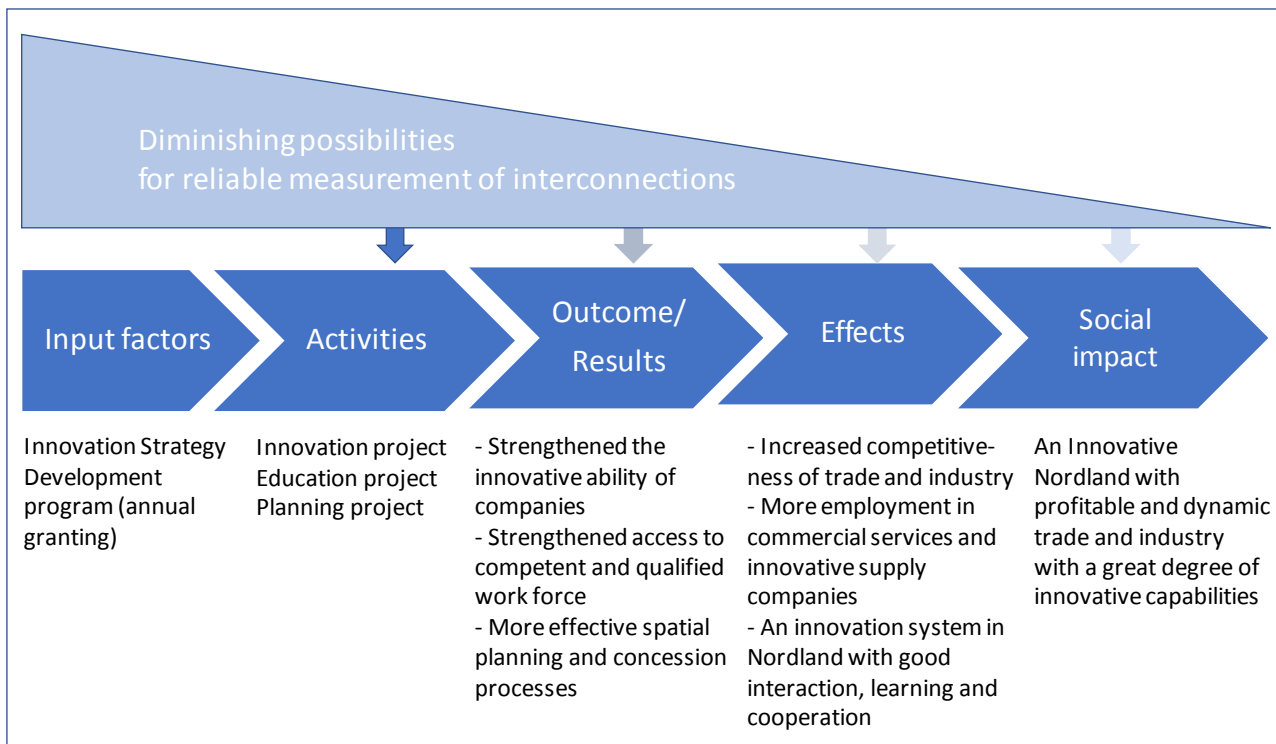
Figure 1: Opportunities for measuring results and effects of the innovation strategy

In other words, the implemented measures will not give any measurable results or effects until after some time. This means that at the time of measuring at the start of the programme, it will in principle only be possible to say something about the *activities/ implemented projects*, whereas for results and effects the outcome will be based on actions in previous years. This problem can be avoided by examining the same group/population and activities over time. Register data spanning several years can also be applied when they indicate developments in the selected population or others not affiliated with the input.

2.2 Evaluation design

Following a discussion in the trailing research project management meeting on 28 June 2016, it was decided that the evaluation will focus on:
  1. Processes, learning and change in practice.

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

6 of 19

2. Portfolio evaluation, with emphasis on a selected number of projects. E.g. "ground-breaking projects".
3. Developing a system for monitoring. Compiling various data sources.

This means that an evaluation design that captures the processes must be developed, that the project portfolio must be reviewed and followed up, and that any relevant indicators for these must be found, whilst also assessing what national/regional statistics/indicators may be of interest to assess the more long-term results/effects of the innovation strategy. In other words, whether/what impact the innovation strategy has.

In the innovation strategy, it is mainly the county council that initiates these measures. The measures will have some impact either at an administrative level or with other actors in the form of applications or changes in conduct/practice. These activities may in turn lead to changes in e.g. the project portfolio or the administrative practice. This change and what can be learned from it will then provide opportunities for implementing new and/or adjusted measures, etc. In the longer term, the innovation strategy can lead to a variety of effects, where some of this could be reflected in regional indicators for developing Nordland. Another effect will be if the innovation strategy results in new and improved practices and results in line with smart specialisation (S3). In this connection it must be emphasised that the work to adapt the innovation system to smart specialisation will require significant institutional learning, and the success achieved in this respect can be reflected in expectation gap analyses performed by trade and industry leaders in the region. Finally, in the evaluation, it must be assessed how well the innovation strategy meets the main objectives that have been set (competitiveness/innovation ability, KIBS (Knowledge Intensive Business Services) employment/innovation in supplier companies, innovation system interaction).

An evaluation system must be able to capture these activities and changes in an optimal way and in the project description for the trailing research project (Finne et al. 2016) the following evaluation activities are mentioned to ensure that this is followed up:
- Baseline analysis: The empirical and analytical basis for a baseline analysis will be existing analyses of the structure of business and priority areas described in the strategy, supplemented by analyses and knowledge from preliminary analyses, documentation from sector studies and methodological contributions from the RISKC[1] project. For indicators where data is collected regularly and independently of the project, the baseline can be reconstructed at any time (afterwards).
- Target and result indicators: We start immediately by developing a set of qualitative (and if possible quantitative) indicators of prioritised conditions and processes in the system, in order to prepare a baseline analysis in 2016. To the extent the level of ambition of the objectives will be quantified, we can provide qualified indications of what would be a realistic framework. It will be important to gain insight into the measuring and assessment of the companies' innovation capacity and developments over time. Throughout the project, we will further develop the indicators to ensure that they will be relevant, valid, reliable and cost-efficient – as well as more quantitative.

[1] Research project Regional Innovation through Situated Knowledge Conversion conducted in conjunction with the present trailing research project (lead investigator: Åge Mariussen of Nordland Research Institute).

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

7 of 19

Trailing research
Smart specialisation
in Nordland

SINTEF

NORDLANDSFORSKNING
NORDLAND RESEARCH INSTITUTE

- Evaluations: In 2017, we will take stock of the progress so far, partly to test the quality of the indicators and in 2019, we will carry out a thorough effect evaluation and summarise this in a separate evaluation report.

This evaluation and monitoring process is illustrated in Figure 2 below.
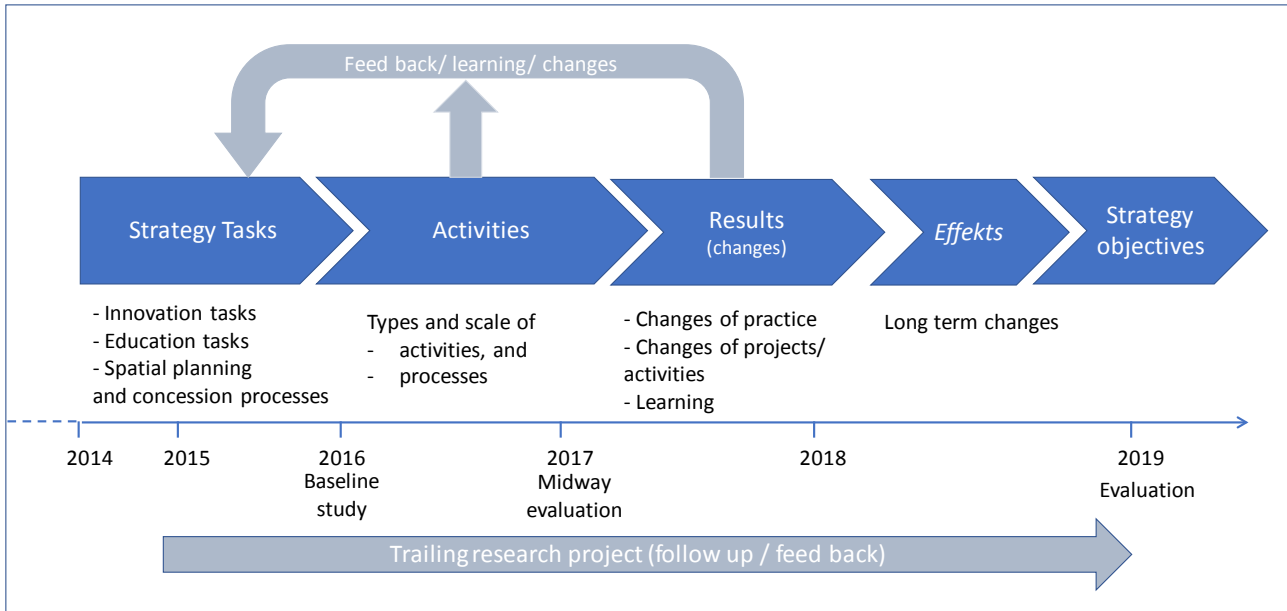
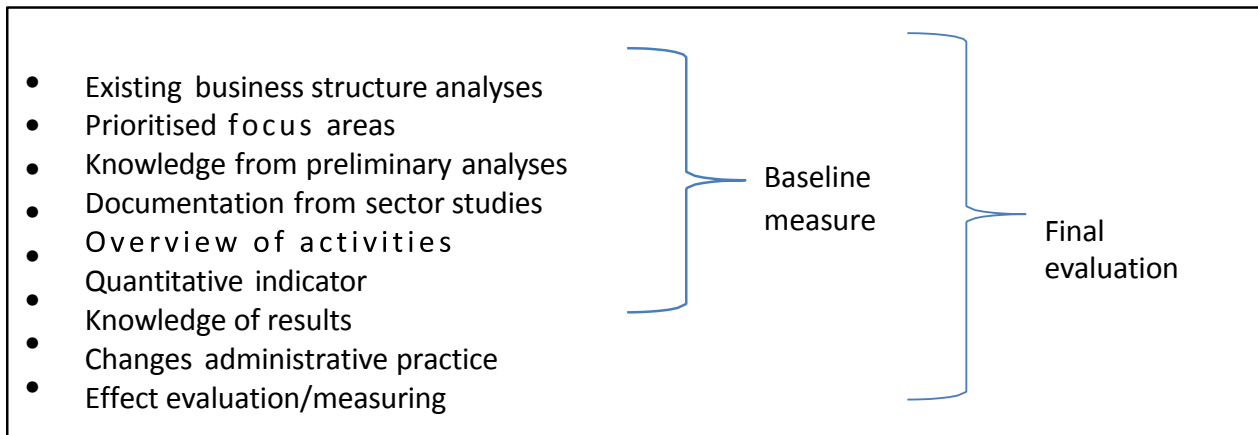**Figure 2: The evaluation and monitoring process**

The monitoring system must be designed to provide a basis for identifying activities, results and effects within the structure presented above. In this memorandum, we will use the following terms:
- *Activities:* Cover all initiatives that are initiated as part of the programme.
- *Results:* Specific and terminated projects or subsidiary goals that are achieved. Basically, an activity becomes a result when the activity or subsidiary activity has been concluded.
- *Effects:* Are second-order effects of the results of the management or the participating enterprises. This may for instance be measured in a new and better practice, new collaboration patterns, entrepreneurial discoveries, value creation, employment, new markets, new products, or similar effects of the activities.

2.3 The relationship between the measuring system and the evaluation system

A distinction can be made between what will form the basis of the baseline measuring and the subsequent evaluations (mid-way evaluation and final evaluation). Roughly speaking, the difference is that the baseline measurement is founded on existing analyses and data including those from the innovation strategy and quantitative statistical data. Here, results and effects will not be evaluated. Results and changes in the administrative practice and policy mix will be evaluated in the mid-way evaluation and in the final evaluation, whereas it will only be possible to discuss effects in the final evaluation. This can be illustrated as in Figure 3:

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

8 of 19

Trailing research
Smart specialisation
in Nordland

SINTEF

NORDLANDSFORSKNING
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- Existing business structure analyses
- Prioritised focus areas
- Knowledge from preliminary analyses
- Documentation from sector studies
- Overview of activities
- Quantitative indicator
- Knowledge of results
- Changes administrative practice
- Effect evaluation/measuring

Baseline measure

Final evaluation

Figure 3: The relationship between the baseline measurement and the final evaluation

Trailing research
Smart specialisation
in Nordland

SINTEF

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3   ELEMENTS OF A POTENTIAL MONITORING SYSTEM

3.1   Introduction

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. This memorandum presents a tool for measuring results and goal achievement along a number of parameters. It is important to emphasise that even though a tool is established for monitoring and measuring results, it will not reveal the full truth about the input through the innovation strategy. One main reason is that there are no identifiable data linked to all objectives in the strategy. Hence, the indicators must be regarded as just that, i.e. indicators of progression towards a goal. The indicator development must then be interpreted in relation to the implemented measures/projects. Some indicators can also be interpreted as a form of warning system. If there is a major change in the deviation from the basis of comparison, there may be grounds for reporting a need for special measures. A common tool for measuring results and effects must necessarily be based on identifiable data that can be traced over time. To be relevant the data must correlate with the programme objectives. When looking at the development in a collective indicator tool, the tool will provide insight into the results and effects of the resource input.

It is important to emphasise that there are no "final" result indicators or one "ideal" way of making this system. Trial and error, accumulated experience and peer learning in national and transnational arenas are useful ways of gaining experience and the correct skills for this task, according to "Monitoring Mechanisms for Smart Specialisation Strategies" (Gianelle and Kleibrink 2015). Smart specialisation strategy (S3) is thus an opportunity for experimenting with innovative solutions for the monitoring system, and the policy mix, management structure, and methods used to select priorities. Furthermore, the same document points out that this provides an opportunity to understand alternative methods of measuring results, provided that there is an explicit reason and that the indicators' ability to capture results is assessed throughout the process. Regardless of what indicators are chosen, it is important to be transparent and clear on assumed causal connections. Naturally, one should also bear in mind the inherent limitations of using indicators and what they can measure. Consequently, the proposed indicators in this sub-chapter should be regarded as a foundation for discussion, as it is important to ensure that the measuring and evaluation system actually manages to capture any cause and effect connections and that the measuring system is closely connected to the users and stakeholders.

### 3.2   Understanding the objectives and types of indicators

At a general level, the Innovation Strategy for Nordland aims to contribute to "Innovative Nordland". Beyond this, the strategy has three objectives:

- To increase the competitiveness of trade and industry by strengthening the innovative ability of companies.
- To increase employment in commercial services and innovative supply companies.
- To achieve an innovation system in Nordland with good interaction, learning and cooperation between central actors in trade and industry, the labour market, education, research, and various public-sector fields.

Through various programme activities, measures and instruments, the innovation strategy aims to create a foundation for realising these objectives. It is important to emphasise that the innovation strategy does not initiate activities and measures that have a direct impact on the strategy's overall

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

10 of 19

objective to create an innovative Nordland. Typically, the activities and projects will be minor and limited and at the same time influenced by factors in social and business developments. Consequently, it is difficult to establish a connection between specific activities that are initiated, the results of these activities and the future anticipated effects. The role of the innovation strategy is to contribute to facilitating development of good framework conditions for competitive and innovative business activities and relates mainly to instruments and arenas where the county council has a direct or indirect responsibility and/or an intended role. Even though the strategy is directed at businesses, the county council must work in collaboration with other actors to reach the businesses. The innovation strategy also bears signs of being a mobilisation. Among other factors, this entails pointing other development strategies under the direction of Nordland County Council in the same direction as the innovation strategy. It is the long-term effect of the total input that will impact the various selected indicators.

This hierarchy of objectives is illustrated in Figure 4 below.
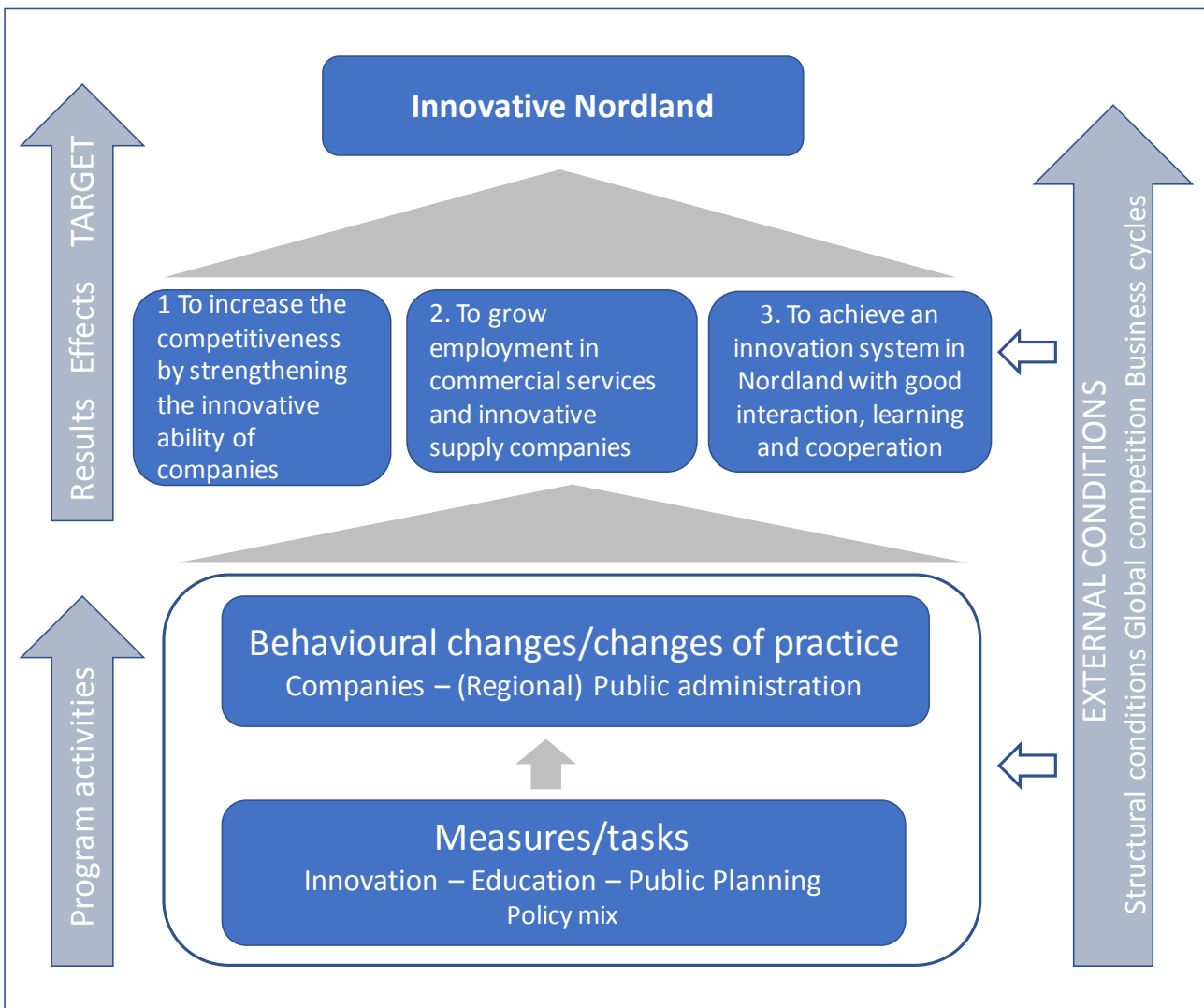
Figure 4: Hierarchy of objectives for Nordland's innovation strategy

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

11 of 19

As we can see from Figure 4, we have three levels of measuring indicators. (1) At programme activity level, (2) innovation strategy level (the three strategy objectives) and (3) at general plan level, they are objectives that can describe an innovative Nordland. Re (1): At programme activity level, indicators measure activities or output. This entails following and documenting that the planned activities are followed up and implemented, that funds are spent as planned and that the result development is heading in the right direction. Re (2)/(3): These indicators are directed at short-term results and the medium and long term (effects). In this memorandum, we have divided the result indicators into two types: One relates to results of what is expected from the change (change in behaviour/ practice) due to the innovation strategy (the intervention), whereas (3) shows results related to developments in the region and county, often compared to other regions or counties. The latter indicator must be selected in order to assess whether the county is moving towards (or away from) the three objectives in the innovation strategy and the vision of an innovative Nordland.

The identifiable data might not necessarily correlate perfectly with the objectives of the innovation strategy. The correlation must be strong enough for it to be possible to interpret changes in the selected indicators as movement towards (or away from) the objectives in the innovation strategy. However, the interpretation must also take into account detailed knowledge that can explain the measurable development. It is therefore important to emphasize that the measuring tool only provides an indication of target achievement. A result and effect measuring tool will both supplement and be supplemented by continuous activity-based reporting of the measures implemented under the strategy and used by the regional development instruments, including Innovation Norway's use of instruments and the DA Bodø fund[2].

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[2] Innovation Norway is the main government funding body for business development, answering to national and regional government. DA Bodø is a diversified employers' contribution fund; a notified compensation arrangement for organizations in the city of Bodø (Nordland's regional government seat) having higher payroll tax than in the rest of the municipalities in the county.
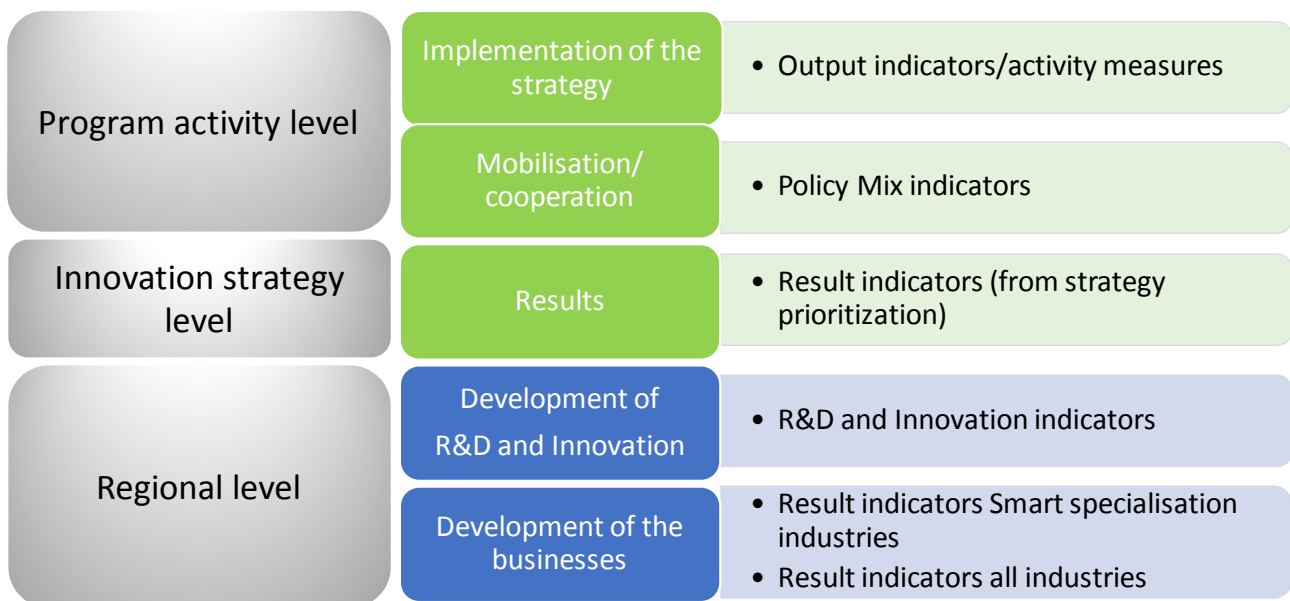
PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

12 of 19

4 CHOICE OF INDICATORS

4.1 The monitoring system – main elements

The primary purpose of the innovation strategy is to provide a foundation for and contribute to an innovative Nordland. This provides directions for what types of indicators to look for.

According to the strategy, being innovative is all about being competitive in an increasingly global market. This means being able to offer good and unique products that are highly competitive through profitable and adaptable companies with a high degree of innovation and creation ability. Indicators that can describe this are related to innovation, research and development, export value/share, the companies' financial position, access to knowledge, a qualified workforce and competence level, to mention a few.

Based on this and the three main types of indicators, as well as on what we are going to measure, we have established five main areas that will be monitored. The first three monitoring areas are directly connected to the strategy and strategy work and relate to how the strategy work should be implemented, what results are achieved as a result of this work and how collaboration/mobilization takes place. The last two monitoring areas comprise how the innovation system and companies in Nordland are developing in regard to what one wants to achieve through the innovation strategy. The main elements of the monitoring system are shown in Figure 5 below.

Program activity level	Implementation of the strategy	• Output indicators/activity measures
	Mobilisation/ cooperation	• Policy Mix indicators
Innovation strategy level	Results	• Result indicators (from strategy prioritization)
Regional level	Development of R&D and Innovation	• R&D and Innovation indicators
	Development of the businesses	• Result indicators Smart specialisation industries • Result indicators all industries

Figure 5: The monitoring system - main elements

Below we will present and discuss the indicators that will be included in these main elements.

4.2 Monitoring at program activity level

4.2.1 Indicators following strategy implementation

This is about keeping track of which activities are implemented. The activities mentioned in the innovation strategy may for instance be grouped according to objectives, the type of objectives and activity level. Reporting on such activities involves registering the start and finishing times, use of

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

13 of 19

measures, registering activities and the number of participants. An illustrative table is available in the appendix (Table 2 on page 19).

4.2.2 Mobilisation and cooperation indicators – measuring the policy mix

This is about registration at two levels. Internally in Nordland County Council and externally how other organisations (mainly in the public policy system) change their practices such as the use of measures/ resources. The first indicator concerns changing the practice and collaboration internally. This may also relate to managing coordination on the supply side (i.e. measures and instruments). Such measurements will primarily be qualitative descriptions of the previous situation and changes. Where possible, indicators should also be found. A description of this can be based on the following:

1. Point of departure: Before S3 in Nordland
2. Description of development/change
   a. Orientation towards trade and industry
   b. Anchoring in trade and industry (integration of the strategy)
   c. Change and collaboration activities internally in the business and industry department and between departments
   d. Coordination of the supply side/interaction (with Innovation Norway, the county governor, industry parks and business gardens)
3. Other conditions that can be traced back to the innovation strategy/S3 work

4.3 Monitoring at innovation strategy level

4.3.1 Results indicators

These are indicators that describe the immediate results of the strategy. They look at the use of the regional policy instruments which the county council has at its disposal, such as the regional development funds allocated upon application, funds for Innovation Norway and the use of the DA Bodø funds. By following these indicators over several years, we will be able to determine to what extent the use corresponds with the investment in the selected smart specialisation trade clusters (industry, seafood and experience-based tourism) and the objectives in the innovation strategy.

4.4 Monitoring at regional/Nordland level

4.4.1 R&D and innovation indicators

These are indicators that describe R&D and innovation developments in Nordland. Such indicators provide an indication of existing opportunities for a desired development in trade and industry and what is actually taking place. Comparison with other counties is particularly relevant as this will say something about the relative development in Nordland and enable us to ascertain whether the strategy is on the right course.

4.4.2 Indicators that describe company developments

Here indicators are used that describe the development in trade and industry in Nordland, primarily for the selected trade clusters. Analyses of gaps between the companies' expectations and experiences with various collaboration partners will be used to trace development in the clusters. Moreo-

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

14 of 19

ver, an overview of developments will be provided with regard to the number of businesses, employees, export ratio, added value, result, start-ups and closures, R&D and innovation in the companies.

4.5 Closing remarks

We have based this memorandum on the original innovation strategy adopted in 2014. Even though the innovation strategy was based on a key smart specialisation principle relating to location-based regional development (i.e. a shift from a sector-perspective to a focus on developing new domains), the region was in an early phase of the smart specialisation thinking. For instance, the organisation of Nordland County Council's trade and industry-directed work was at the outset of the project, with one exception, based on a principle of specialisation according to sectors. Much has happened since the county council adopted the innovation strategy. This development and initiated change processes are described in detail in the county council case on "Innovative Nordland - Innovation Strategy for Nordland 2014-2020 - status after 2 years and the road ahead" which was adopted in the county council on 3 April 2017 (case 054/2017). In other words, the innovation strategy work is dynamic and constantly changing. This means that the monitoring system and baseline that is being used can be adjusted or changed as the work on the strategy implementation process progresses and it becomes evident what types of registrations/data that best show the development in a smart specialisation context.

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

15 of 19

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PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

16 of 19

APPENDIX:

THE EVALUATION SYSTEM: COLLECTION METHODS, DATA SOURCES, AND AREAS OF APPLICATION

As presented and discussed in section 2.2 above, the evaluation system consists of three main parts. Below we will describe data collection methods, data sources and areas of application for these three main elements:

- Processes, learning and change in practice.
- Portfolio evaluation, with emphasis on a selected number of projects. E.g. "ground-breaking projects"
- Developing a monitoring system. Compiling various data sources.

1. The processes are about studying two factors:
   1.1. Administrative practice in the county council and how, with what, and with whom work is being performed.
   1.2. The innovation system in Nordland - interaction, collaboration and learning between central actors

Here, the evaluation activities will involve observation, interviews and participation in processes and activities with reporting back to the contracting authority. The data will mainly be qualitative, but we will also use gap analyses and project allocation data for the use of regional development funds.

2. Portfolio evaluation involves:
   2.1. Following some selected groups of projects, such as "ground-breaking" projects
   2.2. Identifying/registering the activities/measures within the strategic priorities

In this connection, the evaluation activity primarily involves observation, but interviews and participation in processes might also be relevant. Furthermore, it will be of interest to register what activities/measures are implemented and what impact/results they have. The data will mainly be qualitative, but some quantitative data may also be relevant.

3. The monitoring system involves:
   3.1. Quantification of the increased competitiveness with strengthened innovative ability in the companies, employment in commercial services and the number of innovative supply companies.
   3.2. Preparing a uniform monitoring system which includes the various data sources.

In Table 2 below, we present relevant collection methods, data sources and areas of application that can be used for the various main elements in the evaluation system.

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

17 of 19

Table 1: Relevant collection methods, data sources, and areas of application according to the main elements

Collection methods	Data sources	Areas of application (baseline, mid-way, end)
1. The process 1.1 Administrative process 1.2 The innovation system in Nordland		
- Observation and qualitative interviews in the form of personal attendance and/or by telephone. - Surveys (of gaps between expected and experienced relations in the innovation system)	- Programme management, project management, members innovation group - Representatives for relevant supporting partners (Innovation Norway, etc.) - Representatives from cluster project management and cluster companies, etc.	- Identification of status in the administration /county council, clusters and companies at the outset and during the programme - Baseline measurements, mid-way and final evaluation
- Study of available material (secondary data)	- County council documents, The innovation strategy, county government and county council cases, plans, reporting, etc.	- The baseline measurement - Reference data for subsequent evaluation activities and result development - Objectives and performance measures - Planned activities
- Self-evaluation?	- Programme/project management/ the innovation group - Collaboration/supporting partners/ cluster management	- Annual reporting and as basis for mid-way and final evaluations
2. Portfolio 2.1. Following selected measure groups 2.2. Activity identification		
- Observation and qualitative interviews in the form of personal attendance and/or by telephone.	- Involved actors in ground-breaking projects (companies, administration etc.)	- Most relevant for mid-way and final evaluations, but can also take place at the baseline measurement if data are available.
- Study of available material (secondary data)	Project descriptions and other relevant documents	- Reference data for subsequent evaluation activities and result development
- Quantitative data (primary data)	- Implemented measures Innovation strategy (topic, number) - Allocations regional management (topic, number, amount) - Allocations Innovation Norway (topic, number, amount)	- Baseline measurements, mid-way and final evaluation
3. Monitoring system 3.1. Quantifiable objective. 3.2. Uniform monitoring system		
Register data/ studies	- Statistics Norway - Innovation Norway customer data - (Company registers)	- The baseline measurement, mid-way and final evaluation. Reference indexes
Data from participating institutions/organisations/ actors	- Cf. result indicators in the Monitoring and evaluation system Table 2)	- The baseline measurement, mid-way and final evaluation. Reference indexes
Web surveys?	- Various stakeholders/actors in clusters/networks, others?	- Baseline evaluation and final evaluation

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

18 of 19

Table 2: Measures/instruments in the innovation strategy according to objectives, types of measures, target groups, analysis level, and time of implementation

Type				Measures/instruments	Implemented		
Objectives	Measures	Target group	Analysis level		Start	End	Amount
				(one line per measure or instrument as defined in the original strategy document and later added as the plan evolves)			

PROJECT NO.
102011144

PROJECT MEMO NO.
12

VERSION
1.0

19 of 19

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