

# Norwegian Cluster Program Evaluation

## Case A

### Introduction

In October 2010, Olav Bardalen, the general manager of the Norwegian Centers of Expertise (NCE) cluster program, got a call from Per Erik Dalen, the manager of NCE Maritime Cluster, a prosperous and dynamic cluster in Western Norway. Bardalen had previously announced that the NCE program, according to the program's overall plan, was to be evaluated in 2011. And, Bardalen had added, evaluating the program meant that the clusters that were supported by the program must be evaluated too.

"I do understand your need for evaluations," Dalen said. "But aren't you exaggerating your efforts? We contributed to a huge analysis when we were accepted as an NCE project five years ago. Two years ago we were evaluated by an external evaluation team and each year we send you an abundance of facts in our annual reports. And that's not all. We are analyzed through the maritime industry's national surveys and through ongoing research activities that are part of the Regional Innovation Policy. Business leaders are willing to put plenty of resources into cluster collaboration activities because they are convinced that it is important, but I must work hard to convince them that all the researchers and consultants that hang around add value to the cluster..."

"I can see your point," Bardalen answered. "Our monitoring and evaluation scheme is rather bulky. But there are so many stakeholders asking for convincing proof that clusters make a difference for businesses, and that investments in clusters add value. Our answers are still quite vague. However, we have not yet made the final decision on whether to implement this evaluation, so your comments are appreciated."

"My view is also fairly representative of the other 11 cluster initiatives in the NCE family," Dalen added. "If you calculate all the hours that will be spent by the clusters' business leaders and partners taking part in surveys and interviews, the cost is considerable. But, if you believe that another evaluation is needed, I promise that I will welcome the next evaluation team too."

This case was prepared by Olav Bardalen (Innovation Norway -INO) for ECEI (European Cluster Excellence Initiative) under the supervision of Emiliano Duch (IESE) as the basis for class discussion rather than to illustrate the effective or ineffective handling of an administrative situation.

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Bardalen had been one of the architects behind the NCE program, which was launched in 2005, and he knew that the design and implementation of the evaluation system were some of the most complicated but also crucial elements of the program. But, as the cluster managers had reminded him, the evaluations, analyses and reports had costs. Could it be that the search for more convincing answers was going too far?

## Launching the NCE Program

In February 2005 the three main Norwegian innovation agencies, Innovation Norway, SIVA and the Research Council of Norway (RCN), were asked by the Norwegian government to design a new national program for regional clusters. As indicated in the working title, “Centers of Expertise,” the idea was to launch a program targeting knowledge-based clusters that were recognized not only in their respective regions but also at the national level. The concept was clearly inspired by similar national programs in other countries. The CoEprogram in Finland and the Vinnväxt program in Sweden were both regarded as interesting models for a Norwegian initiative. Two ministries stood behind the new initiative. The Ministry of Local Government and Regional Development saw cluster development as a driving force for regional development, while the Ministry of Trade and Industry regarded clusters as instruments in a national innovation strategy to enhance value creation and competitiveness for Norwegian industry.

There was already a cluster program running. The Arena Program was established in 2002 by the Research Council of Norway (RCN) and SND –the Industrial and Regional Development Fund (which, together with three other state agencies, merged to form Innovation Norway in 2004). Arena supported a number of network-based regional initiatives, testing out ways of enhancing industry-university links. By 2005 Arena had developed a more structured approach, adopting cluster theories, models and cluster supporting tools. Cluster and cluster-like initiatives received support for three to four years, through funding for the facilitation of processes and through different advisory, competence and networking services provided by the program. The program was well-known in the regions, the annual competitions to be accepted as an Arena project were tough, and the reports from the cluster initiatives were promising. An ongoing, formative program evaluation conducted in 2003 – 2005 described the program as an important new approach to enhancing regional innovation and to bridging the gap between business communities and the R&D sector.

The “Center of Expertise” initiative could therefore be based on real experiences from cluster processes supported by policy instruments, and on a positive attitude towards cluster development approaches. The government was willing to put more money into a cluster policy scheme. The agencies had experienced that a cluster program supplemented the established program portfolio and that it could be a catalyst for new, innovative ideas. And, there seemed to be a market out there, in the form of consortia between companies and knowledge

providers sharing ideas of how to work more closely together. Arena had, fairly successfully, managed to mobilize and bring quite a few of these initiatives together in more structured and managed cluster processes. But one group of actors was absent in these initiatives: the bigger and leading companies in the communities. When trying to mobilize these actors, the response was that the instrument was thought to be just another short-term public effort, involving small resources and much reporting and other bureaucratic procedures.

To reach the target group, the most dynamic clusters and the real driving forces in these clusters, the new program had to provide stronger incentives. Most importantly, the government and innovation agencies had to confirm and prove that this would be a long-term, highly-profiled national effort.

The planning of the new program was based on a series of dialogues – and some supporting analyses. The two ministries were actively involved in the planning, to ensure that the strategic elements were linked to the policies. Existing and planned cluster initiatives and stakeholder groups were invited to discuss the program concept. Academic resources were brought in to present and discuss cluster theories, as well as empirical evidence of how clusters could be developed – and measured. A separate workshop discussed monitoring and evaluation procedures and criteria.

What came out of this process was a program plan confirming the ambitions and intentions involved. The Norwegian Centers of Expertise program (NCE) was to target ambitious and well-developed cluster initiatives in clusters with high potential for further growth. The objective was to strengthen innovation and internationalization processes and to contribute to the overall value creation in the cluster. The main instruments were intended to create and strengthen links between actors within the cluster, as well as with external partners and customers, and to facilitate processes that could lead to the realization of specific goals.

The program offered co-funding of the basic cluster processes on a 50/50 basis:<sup>1</sup> facilitation, strategy development, analyses, learning processes, profiling, and communication and development of new ideas. And possibly most importantly, the program could support the cluster initiatives for up to 10 years.

In September 2005 the ministries accepted the plan for the new NCE program and followed up with fresh money to fund the program for the first year. The program was officially launched through a call for proposals, announced in December 2005 (see **Exhibit 1**).

## Designing a System for Project Selection, Monitoring and Evaluation

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<sup>1</sup>Annual funding from the program: €500,000 – €600,000.

The owners of the program had clearly expressed their ambitions for NCE to make a difference. Considerable resources were allocated to its activities, followed by expectations that the program would demonstrate a clear impact. This created a need for a system and procedures to measure the outcomes and impacts that could support the management and governance of the program.

During the program-planning phase, models and experiences from other cluster and network schemes were collected, including measurement models. The main finding from this survey was that no standard, well-proven cluster evaluation model existed. This should also be expected given the wide range of different cluster policy approaches. Accordingly, indicators for performance, in terms of input, output and impact, had to be tailor-made to the objectives of the policy scheme.

The most relevant examples of cluster evaluation approaches were found in two of Innovation Norway's sister organizations, in Scotland and in Sweden:

Scottish Enterprise had, in 2005, undertaken a review of clusters and industries in Scotland, identifying six priority areas that were already strong and had potential for further growth.<sup>2</sup> The information provided in this study was to be used as a baseline for measuring the development of the priority areas, as well as identifying the role of Scottish Enterprise in promoting these areas. Three factors were evaluated:

- Impact on company base: Direct and indirect effects on companies as a result of being part of a cluster.
- Impact on research base: Clusters attractiveness for research activities.
- Impact on the business environment: Companies' access to financial capital, human capital, physical capital, intellectual capital, market capital and social capital.

The analyses were based on public statistical data, surveys and case studies. Results were discussed with the cluster stakeholders to act as a reality check.

Swedish Vinnova launched their Vinnväxt program in 2001, targeting regional innovation systems with the potential to develop international competitiveness in specific areas. Vinnväxt was based on a competition between regional triple-helix consortia, and the winners were granted support from the program for a 10-year period. Vinnova had set up an evaluation procedure consisting of:

- Evaluation of the Vinnväxt winners after one year, to check whether the planned processes were activated; after three and six years, to assess the relevance of the chosen strategies and measure the initial impacts; and after 12 years – two years after its exit from the program, to measure the impacts on the innovation system as a whole.
- Evaluation of the Vinnväxt program, as an ongoing procedure, to ensure that the program continuously improved; and after 12 years to measure its impacts.

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<sup>2</sup>ØrjanSølvell, *Clusters: Balancing Evolutionary and Constructive Forces* (2009).

Both on the cluster level and on the program level, the evaluations were intended to act as instruments in the learning process, providing input for reflection and discussion among partners and stakeholders on how to adjust and refine strategies, and improve actions.

## The Norwegian Model

Based on these models and experiences, and on the needs expressed by different stakeholders, the program committee developed a set of principles and procedures for what was called a “comprehensive system for project selection, monitoring and evaluation in the program”(see **Exhibit 2**).

This comprehensive system was intended to meet three basic needs:

1. To be able to select cluster initiatives that could fulfil the objectives of the program.
2. To be able to monitor and assess the results and impacts of the activities in order to legitimize the resources allocated to the activities.
3. To be able to understand the way the interventions worked in the cluster processes in order to adjust and refine the instruments.

These elements had to be transferred into concrete procedures that could be efficiently managed by the program. Secondly, a set of indicators for measuring projects and activities throughout the program had to be developed. These should be grounded in the theories and conceptual model for cluster upgrading that lay behind the program’s goals and strategies (see **Exhibit 3**). According to this model, clusters can be upgraded if there are potential synergies for collaboration. These synergies can be found in the *structural* conditions of the clusters – the economies of scale and complementarities – and in the *relational* conditions – the actual capabilities and willingness among the actors to collaborate. To realize the potential synergies, a range of collaborative activities is implemented, tailor-made to the nature of the synergies. The indicators should be able to trace the additional impacts of the organized effort to enhance collaboration and accelerate the development of the cluster, through support from the program.

## Selecting Cluster Initiatives

The program owners had decided to select which cluster initiatives to support through open calls for proposals. The calls specified the terms, the selection criteria and the selection procedures. Given the limitation of the program in terms of resources and its dedication to support only the “few really good ones,” this paved the way for competition.

The first call was announced in December 2005, resulting in 24 applications, far exceeding the number that had been expected, given the high ambitions and requirements that were communicated. The program had funding for up to six projects. The second call, in 2007, initiated 10 applications competing for three new NCEs, and in the last call, in 2009, eight proposals were competing for three new NCEs (see **Exhibit 4**).

## Selection Criteria

In order to meet the objectives and ambitions of the program, the selection of the cluster initiatives had to be based on the assessment of two aspects:

- The cluster itself should have certain characteristics, in terms of structure, actors, resources and links. These characteristics had to be well-developed, and viewed as a whole, revealing a cluster with potential for further growth based on increased collaboration.
- The cluster initiative, defined by the resources invested, the organization, the commitment from the participants, strategies and leadership, had to be both relevant and “strong enough” to affect cluster processes and upgrade the cluster.

The cluster characteristics were more or less given facts that could be presented and assessed in an objective way. The cluster initiative, on the other hand, was the result of the planning process undertaken by the cluster’s stakeholder. The assessment of the information regarding the cluster initiative could therefore be described as an ex-ante evaluation of the planned cluster project.

Cluster characteristics and cluster initiative elements were categorized into six groups of criteria to be used in the selection process: three covering the cluster characteristics and three covering the cluster initiative (see **Exhibit 5**).

## Selection Procedure

The first part of the evaluation process was an evaluation of the proposals carried out by an expert panel. A panel of four people evaluated each project: two with expertise in the sector or technology that the cluster was related to, and two with expertise in cluster development and regional innovation. The latter evaluated all applications, while the sector experts evaluated the applications within their respective fields. The experts were to give scores from one to seven for how the proposal met each of the six main criteria. A guideline indicated what should be in place to give a seven and scores below. The experts first gave their individual scores and comments, followed by a panel meeting where the scores and comments from each expert were aligned and the panel’s score decided. After these meetings the leader of the panel would hand over a list where the applications were ranked and commented on.

This expert evaluation was followed by a series of interviews with each of the highest ranked project proposals. The aim of this was to clarify elements in the proposals that were either unclear or considered to be weak points by the expert panels. The program management carried out the interviews and project managers and leaders represented the projects from the business and R&D partners. In addition, to clarify resources and ambitions, the interviews also gave useful insights into partners’ and stakeholders’ reasons for joining the

initiative and their commitment to being involved in the processes. After these interviews a revised ranking was presented.

The third and final step in the selection process was the advisory board meeting for the NCE program. The highest ranked projects were invited to present their proposals, followed by a Q&A session to clarify what was necessary. The board meeting was concluded with a decision to accept six cluster initiatives into the program. The cluster initiatives emerging from this, and the two later competitions, as “winners” were given the status of “NCE clusters.” This was a brand showing that the cluster was considered to be strong and dynamic, as well as having potential for further growth (see **Exhibit 6**).

## The Monitoring and Evaluation Scheme

In their applications to be accepted into the program the cluster initiatives gave an overview of the resources and links within the cluster. They were also asked to describe how the cluster had developed and to give an assessment of the driving forces and dynamism within the cluster. Many of these descriptions were based on analytical contributions and gave a reliable and relevant picture of the situation. The program saw this as sufficient background for the selection process, but not for the further monitoring and evaluation of the cluster initiatives.

The program plan had introduced an analytical approach called “baseline analysis” that was to describe the cluster’s situation at the beginning of the cluster initiative. The picture should be drawn out using standardized indicators that could cover the most significant structural and relational aspects of the cluster. This should then be used as a reference for later monitoring and evaluations. The intention was also that this would be a useful background for strategic discussions in the leadership of the clusters. The analysis could point out critical factors in the cluster’s structure and relations, also offering comparisons with the other clusters, and help raise questions concerning strategic actions.

Baseline analysis was drawn up for all 12 cluster initiatives that were accepted into the program in 2006, 2007 and 2008.<sup>3</sup> The baseline studies were funded by the program.

The consultant, Oxford Research, was commissioned to outline the methodology and content for the baseline analysis and to carry out the analysis for the first six NCE-supported clusters. The steps in the process were as follows:

1. *Defining the NCE cluster:* The basic definition of the clusters was already given in the applications. However, the geographical and sector boundaries were described with a clear understanding that this was a chosen and not factual way of limiting the cluster.

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<sup>3</sup>Baseline analysis for cluster initiatives started 2006 and 2007, conducted by Oxford Research, analysis for C.I.s started 2009 by Econ Pöyry. The cost of a baseline analysis for one cluster was €15,000 – €20,000.

Based on this definition, the analysis identified (1) the core companies in the cluster, (2) the related companies and (3) the R&D institutions and other partners.

2. *Establishing a company database*: Containing core information regarding the companies.
3. *Dialogues with the NCEclusters*: Interviews with the management and selected companies to supplement and verify the characteristics and history of the cluster, and to identify important questions for the further development of the cluster.
4. *Collecting statistical data*: Retrieving register data based on the organization numbers from the database.
5. *Survey studies of the companies and R&D/other institutions*: The surveys asked for information that could not be found through statistics, regarding relations between the companies, the social capital, financial capital, access to skilled employees, etc.
6. *Analyzing and reporting*: The presentation showed the results for all the indicators of each NCE, and all the NCEs together. For most indicators the NCEs could benchmark their scores with the other NCEs.

The indicator set contained a total of 72 structural indicators and 31 process indicators, categorized as follows:

<b>Structural Indicators</b>	<b>Process Indicators</b>
<i>Critical mass</i> : Number, size and profile of companies, core competence.	<i>Complementarities</i> : Participation in the cluster's collaborative activities, assessments of the climate for collaboration.
<i>Innovation activity</i> : Number of companies with innovation activities, with R&D or other external collaboration, barriers for innovation.	<i>Innovation pressure</i> : Number of strategically important customers and suppliers, the level of competition.
<i>Workforce</i> : Educational level, labor market characteristics.	<i>Development and dispersion of knowledge</i> : Sources of ideas and innovation, workforce mobility, spin-offs from cluster companies and knowledge institutions.
<i>Knowledge resources</i> : R&D resources, educational institutions, access to resources.	<i>Mutual learning</i> : Number of projects based on cooperation between companies, assessments of level of trust.
<i>Financial capital</i> : Innovation funding, seed and venture capital, European Union funds, access to risk capital.	<i>International contacts</i> : Number of foreign participants in the cluster, share of foreign owners, number of companies with international links.

In addition to these indicators, the baseline analysis also gave a brief description of the cluster in terms of its history, its geography and sector characteristics, and economy



and market position. It also listed the companies forming the core partnership of the cluster initiative.

## Monitoring Through Annual Reporting

The contracts between the program and the supported clusters stated that the NCE clusters were to submit an annual report to the program. The purpose of this report was primarily to inform the program management and sponsors about what activities had been implemented and the initial outcomes of these activities. The reports were also to give updates on the number of partners and participants, and specific changes in the cluster initiative's goals, strategies and organization. The information required to make the report should be available through a basic registration system kept by the management. This was a system for monitoring progress, not for evaluation of results and impacts.

The reports gave indications of how the NCE-supported clusters were performing and progressing in certain fields targeted by the program, e.g.:

- Increased number of partners and participants indicated a growing commitment to the idea of cluster collaboration.
- Increased participation in forums and networks indicated a growing interest to share knowledge and strengthen the social networks.
- Increased number of joint innovation and R&D projects, facilitated by the cluster initiative, could be regarded as a direct outcome of the cluster initiative and would indicate a positive impact on the cluster's and companies' innovativeness.
- Increased numbers of projects aiming at international business development, and projects with international partners indicated a positive impact on the international orientation.

(For more information see **Exhibit 7.**)

The NCE program management would then use the reports from the projects to produce a report on the total activities within the program and submit this to the ministries to account for how the state funding was being used. The public sponsors contributed to the cluster activities with up to 50% of the total budget, the rest was funding from the partner companies and other participants. The cluster managers would also need the same report to account for how the private funding was used. The reports were the basic instruments that legitimized the resources put into the cluster development from cluster members and from the public sponsors.

The NCE projects were also asked to present two one-page "success stories" that could show good examples of activities or impacts resulting from the projects. The stories should also be relevant outside the cluster and they should be presented in a way that both created interest and gave insight into what was going on in the real world, hidden underneath the facts and figures that were reported. The case stories could hopefully also inspire others to find new approaches and take new steps. The NCE program used selected case stories in its reports and communication to the ministries, as well as in other

communication activities. In 2010, the official report from the NCE program came in two parts: the “facts and figures” report and a new publication, “Norwegian Clusters,” containing 10 stories from the clusters, as well as contributions from the national program level and from one region actively supporting cluster processes.

## NCE Portfolio Review

The annual reports from the cluster initiatives were, in addition to assessments from individuals in the innovation agencies acting as regional contacts and advisors for the cluster management, used as input for an NCE portfolio review conducted annually by the program’s board and management. This review had a special focus on the role of the cluster leadership and management: How well was the cluster process facilitated? How well were partners and stakeholders mobilized? How were opportunities and challenges met?

Main comments from this review, and specific challenges in particular, were presented and discussed in meetings between the program management and the cluster management.

## Evaluations of the NCE-Supported Cluster Initiatives

The NCE program signed contracts with the NCE clusters for a period of three and a half years. After three years the NCE projects were to be evaluated. Alongside a proposal for a revised plan for a second three-year period the evaluations were to be used as the input for the decision by the NCE program board to renew the contract – or terminate the support. There were two parts of the evaluation: a self-evaluation prepared by the NCE project management and board, and a “real” formal, external evaluation, carried out by an evaluator commissioned by the program through an open call for tender.

The self-evaluation and the external evaluation were given the same set of questions, structured into three main areas:

- What is the relevance of the strategies and activities given the challenges and opportunities the clusters are facing and given the overall objectives of the program?
- To what extent has the NCE project achieved its goals so far, and what are the critical factors for further progress?
- Are the NCE projects efficiently managed and in what ways have the program's services influenced the way the processes are managed?

The order of the process was (see **Exhibit 8**):

1. The NCE projects submitted their self-evaluation to the program. This was then submitted to the external evaluation team.

2. The external evaluation team submitted a draft of their evaluation report to the NCE project for quality check and information, before the report was handed over to the program management.
3. The plan for the next period, also based on input from the evaluation, was delivered to the program management.
4. Based on the three sources, the program management gave its recommendation to the program board whether the contracts should be renewed and on what conditions.

The NCE program stated very clearly that this process should not be considered a pure formality; the evaluations as well as the plans were crucial for the decision regarding renewal. It was also pointed out that an acceptable or good evaluation was not enough to get a new contract, if the plan for the next period did not come up with revised goals and strategies, reflecting changes in the external environment and a stronger commitment from the cluster partners. On the other hand, moderate progress in the period could partly be compensated for by a plan for the next period showing ambitions to upgrade the strategies and efforts. In other words: learning from the first contract period was an important input to the revised plan for the next period.

## The External Evaluation

The external evaluations of the first six NCE-supported clusters, started in 2006, were carried out during the first half of 2009. In 2010 the same procedure was applied for the evaluation of the three NCEs started in 2007.<sup>4</sup> The evaluations were based on several sources:

- Available documentation from the program and the projects.
- An update of the statistical data for the companies collected in the baseline study.
- A survey given to the same companies and institutions that received the survey in the baseline study three years earlier.
- Interviews with cluster management, core companies, R&D institutions and other stakeholders, carried out during a two-day visit to each cluster.

One important element in the evaluation was to update the baseline study presented three years earlier. This would show how the cluster itself, or more precisely the cluster as it was defined three years earlier, had developed along the criteria for cluster upgrading and had measured against the set of indicators that were selected. The observed changes could not be interpreted as a direct result of the cluster initiative. Some of the changes were not necessarily even influenced by the activities implemented through the cluster organization. In fields where the cluster initiative had implemented powerful actions a stronger causality between the input and outcome could be expected. The new picture of the cluster and the observed changes could only be used as a background for evaluating the impacts from the cluster project.

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<sup>4</sup>The 2009 evaluations (six NCE clusters) were conducted by Econ Pöyry, with a total cost of €125,000. Report: Econ Pöyry, "Evaluering av seks NCE prosjekter" (with English summary), Rapport 2009-045 (Econ Pöyry, 2009). The 2010 evaluations (three NCE clusters), by Oxford Research, with a total cost of €62,500. Report: Oxford Research, "Tillit og brede prosesser. Evaluering av tre NCE-prosjekter" (Oxford Research, 2010).

Results and recommendations from the external evaluation were presented in an internal report for each of the NCE clusters. The cluster management was given the opportunity to comment on the report in the proposal for a new contract period. These comments indicated that the evaluations in most cases were well-accepted. Critical points or questions in the external evaluation were in many cases also reflected in the self-evaluation, but with a tendency to be raised in a milder form. Several strategic changes and adjustments in the plan for the next period could also be traced back to the recommendations given in the evaluation reports.

## Findings From the Evaluations

The development of each of the clusters during the previous five years, in terms of employment, value creation and productivity, was compared to a reference group consisting of all Norwegian enterprises within the same industry group(s).<sup>5</sup>For the group of the first six NCE clusters the analysis indicated a positive development in productivity compared to the reference group. For the two other indicators a possible “cluster effect” was less significant (see **Exhibit 9**).

The relevance of the strategies and implemented activities was, in general, regarded as high in all the clusters. The cluster initiatives had been successful in tailoring approaches to their specific needs. Knowledge and competence development had been a prioritized activity in all the clusters during the first three years, indicating the fundamental role of a strong knowledge base for developing the clusters. A general piece of advice in the evaluation reports was to find a balance between the long-term, ambitious, but also risky, activities and the “quick wins” that could demonstrate the value of collaboration.

“All projects have made good progress towards objectives and reached some important milestones,” the evaluation of the first six NCE clusters concluded. The cluster initiatives were, however, still in an early phase and substantial impacts could not be expected, according to the evaluators. The goals of each of the cluster initiatives, as well as the program’s goals, were structured into a goal hierarchy for the NCE program (see **Exhibit 10**).The results of the cluster initiatives were, in general, outcomes that could be related to the lower levels of sub-goals according to this model. Typical outcomes were establishment of industry-relevant educational programs, expanded research agendas and strengthened infrastructure for R&D, along with increased availability of networking and learning events. Impacts on the higher-level goals, such as increased innovation level or competitiveness for the cluster as a whole, could probably not be expected after three years.

The evaluation concluded that these outcomes and impacts would most likely not have been achieved without the organized processes implemented by the NCE projects. This was an

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<sup>5</sup>Based on the NACE standard: “Nomenclature statistique des activités économiques dans la Communauté européenne.”

important finding from the NCE program's point of view, confirming the additionality of the programs.

The cluster initiatives were efficiently managed, according to the evaluations. One important factor behind this conclusion was that the initiatives were making use of existing structures rather than establishing new ones. It was also pointed out that the clusters enjoyed a high degree of flexibility, both centrally from the NCE program and locally from their members.

## Summing Up the First Five Years

In October 2010, five years after the NCE program was approved by the Norwegian government, Bardalen and his program management team could state that the NCE program was, by and large, running according to the strategies and plans. The government allocated the public share of the program's funding. Ministers and other politicians regularly visited the NCE-supported clusters and the NCE program was often referred to as an important instrument in the national, as well as regional, innovation policy.

The planned procedures for selecting, monitoring and evaluating the cluster initiatives had essentially been implemented. Nine out of the 12 supported clusters had been evaluated after three years and all nine had been given a new three-year contract with the program. This did not mean that all the initiatives were on track and performing well by all parameters. Strategic or operative changes were required in several of the clusters. The evaluations, as well as both hard facts and plenty of positive case stories from the clusters, indicated that the initiatives supported by the program had been able to activate some of the upgrading processes in the clusters.

According to the program plan from 2005, the next step was to carry out a formal, external evaluation of the NCE program as a whole. This evaluation was scheduled for 2011. For some time already, several discussions regarding the program's strategies, activities and performance had ended up referring to the planned evaluation, and the documentation and verification that could be expected from this evaluation.

The NCE program management was expected to make a proposal for the scheduled program evaluation, presenting the purpose of the evaluation, the main questions and a budget. The basic question Bardalen and his team had to answer was whether a new evaluation could generate new knowledge that could add value to the program to such an extent that the cost could be legitimized.

## Exhibits

### Exhibit 1: NCE Program Objectives and Strategies

#### The NCE Program – Extract From the Program Plan, 2005

**-Mission:**

*The NCE program will contribute to national value creation by enhancing development processes in clusters with strong growth potential.*

**-Main objective:**

The NCE program will facilitate growth by generating and reinforcing cooperation-based innovation and internationalization processes within clusters with clear ambitions and substantial national and international growth potential.

**-Sub-objectives:**

1. The program shall create interest and commitment for the development of clusters with growth potential.
2. The program shall contribute to:
  - Increased cooperation and improved infrastructure for cooperation within the cluster.
  - Increased innovation capabilities.
  - Higher level of internationalization.
  - Higher level of attractiveness.
  - Increased competitiveness and value-creation for the cluster.
3. The program shall provide increased insights into collaboration-based development processes in regional clusters, resulting in operational models for cluster development and improved policy learning.

**-Strategies:**

*1. Mobilization*

- The program is based on annual, open calls for proposals, with clearly defined criteria for the assessment and prioritization of candidates.
- The program engages in active, open dialogue with regional cluster initiatives and other interested parties during both the development and implementation phases.
- Based on specific and clear selection criteria, the program provides support for cluster projects with substantial development potential through cooperation-based innovation processes and internationalization.

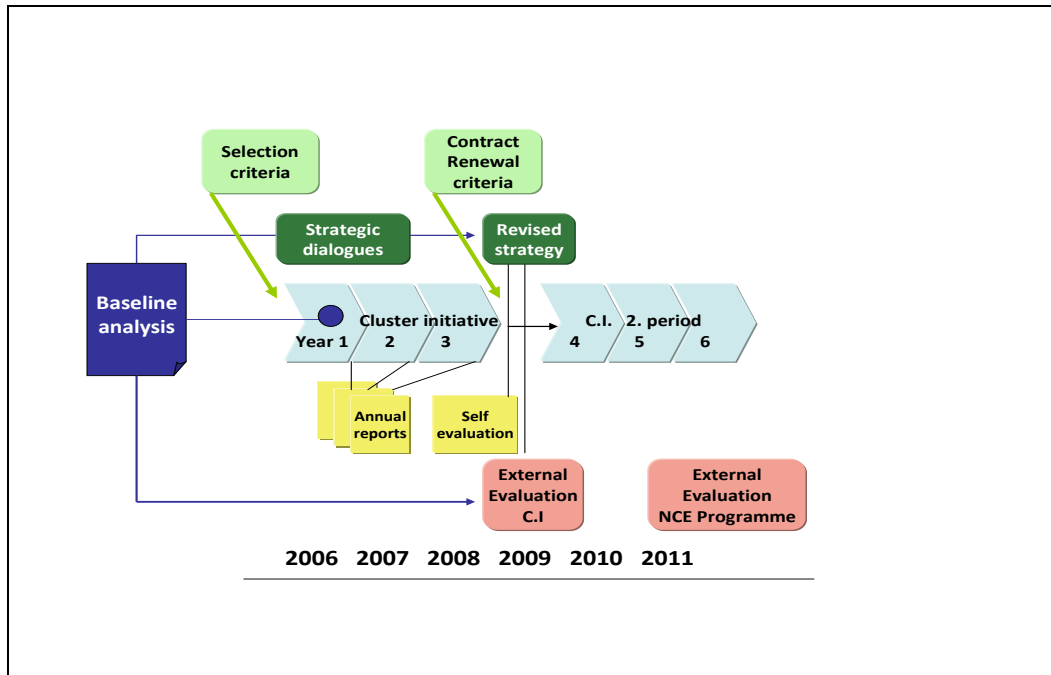
*2. Implementation*

- The program offers expertise and financial support to long-term development processes in selected clusters to facilitate the implementation of comprehensive processes related to innovation and internationalization.
- As part of long-term development, the program focuses on the activities, outcomes and impacts in accordance with each cluster's identified development potential.
- Under the auspices of the involved agencies, cluster development processes receive unified and efficient support, implemented in close cooperation with other relevant programs.

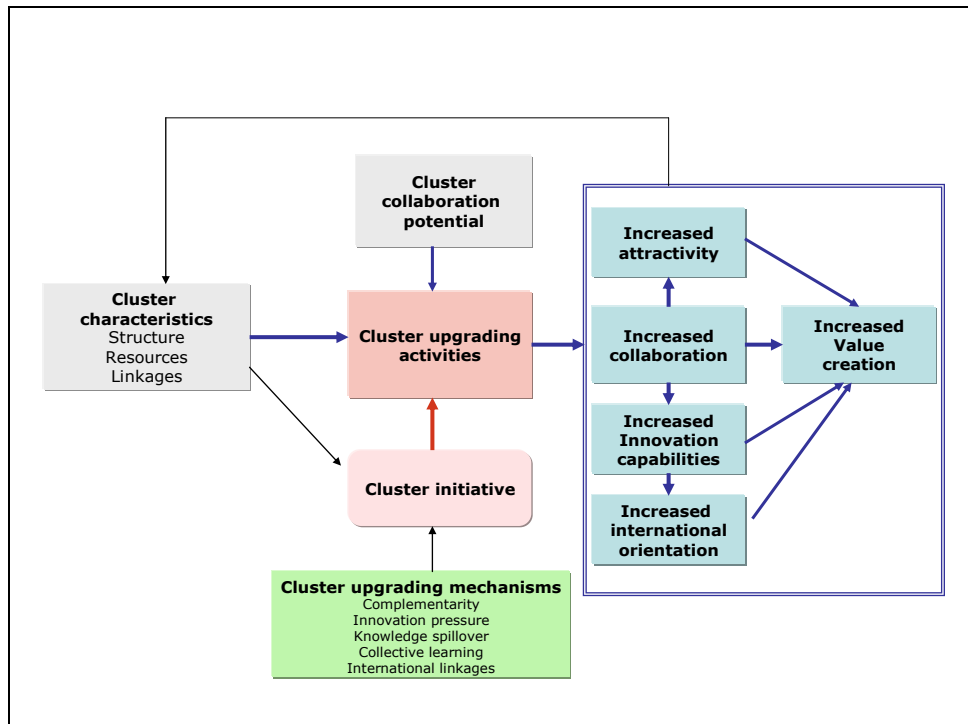
*3. Learning*

- The program establishes a learning arena among program participants in each individual NCE: as well as between the program and other relevant national and international initiatives.
- Experience gained from the program, as well as from other national and international networks, forms the basis of an active dialogue with innovation policy authorities and agencies, with regard to policy development in each respective field of activity.

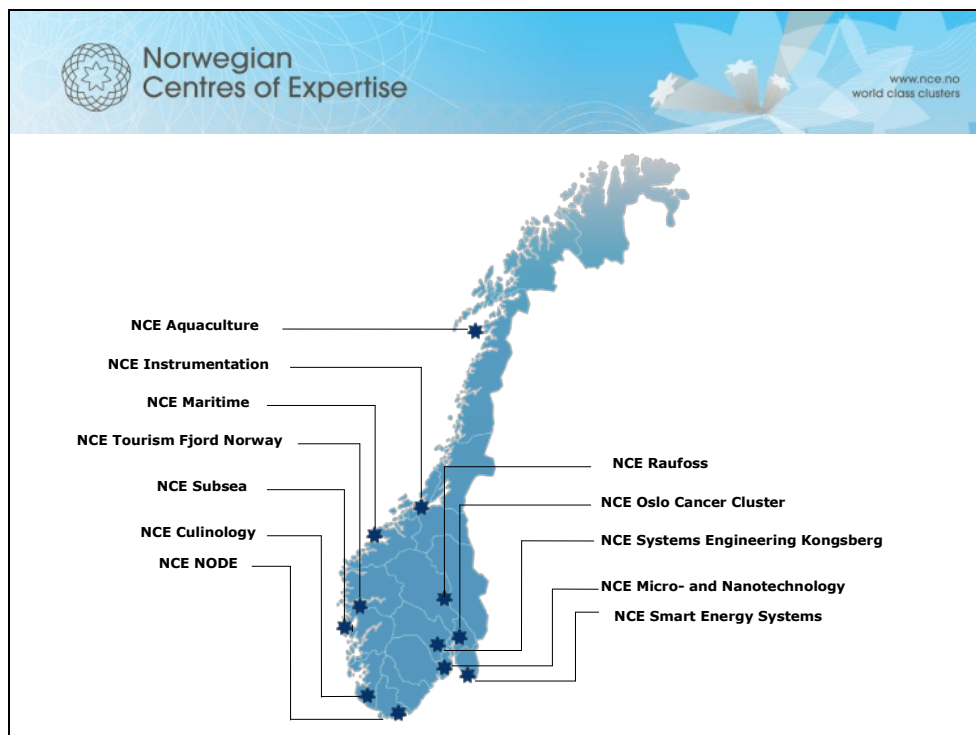
**Exhibit 2:** The Complete Model for Selection, Monitoring and Evaluation



**Exhibit 3:** The Model for Cluster Upgrading Through Cluster Initiatives



**Exhibit 4:** Cluster Initiatives Supported by the NCE Program

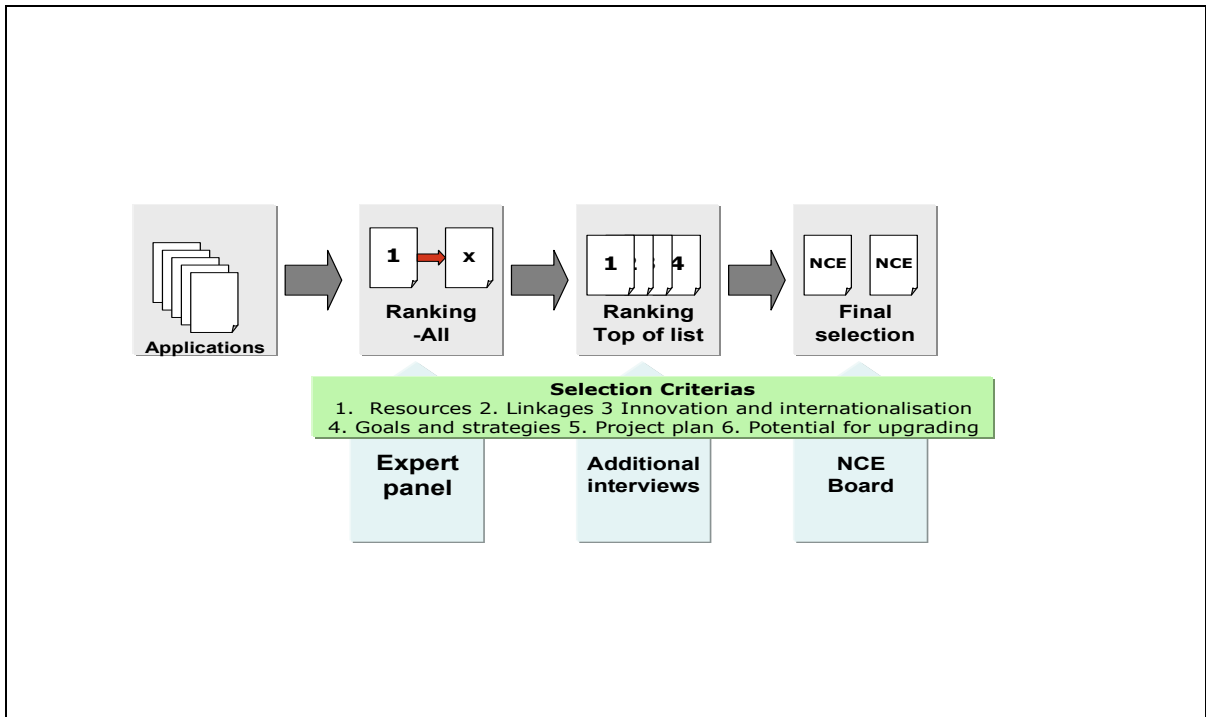


**Exhibit 5:** The Criteria for Selecting Clusters

Cluster Characteristics	Cluster Initiative Elements
<p><b>1. Cluster structure and resources</b></p> <ul style="list-style-type: none"> <li>• Size, scope, market position</li> <li>• Number and types of companies</li> <li>• Factor resources: R&amp;D, education, human capital, financial resources</li> <li>• Specialization, core competence</li> </ul>	<p><b>4. Cluster project goals and strategies</b></p> <ul style="list-style-type: none"> <li>• Ambitions for the 10-year horizon</li> <li>• Realistic and measurable goals</li> <li>• Relevance of strategies to opportunities and barriers</li> </ul>
<p><b>2. Cluster awareness and links</b></p> <ul style="list-style-type: none"> <li>• History of collaboration</li> <li>• Social networks</li> <li>• Internal and external links</li> <li>• Common interests in cluster collaboration</li> </ul>	<p><b>5. Project organization and plan</b></p> <ul style="list-style-type: none"> <li>• Partners commitment and ownership</li> <li>• Organization, management and governance principles</li> <li>• Plan for implementation</li> </ul>
<p><b>3. Innovation and international orientation</b></p> <ul style="list-style-type: none"> <li>• Level of innovation – and collaborative innovation</li> <li>• International links and cooperation</li> <li>• Position on international markets</li> </ul>	<p><b>6. Potential for upgrading of the cluster</b></p> <ul style="list-style-type: none"> <li>• Growth potential in established or new markets</li> <li>• Additionality of the cluster initiative</li> </ul>



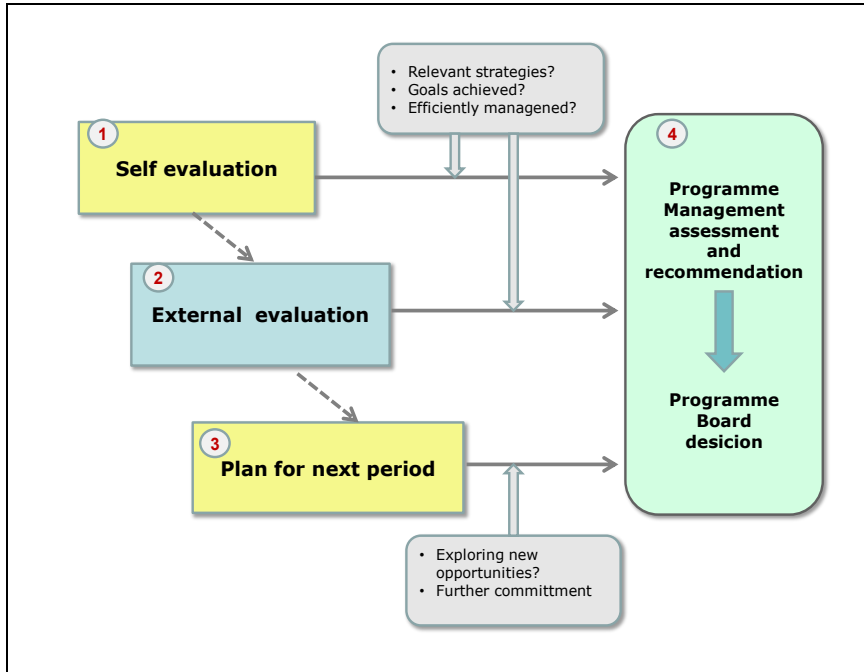
**Exhibit 6:** The Selection Procedure



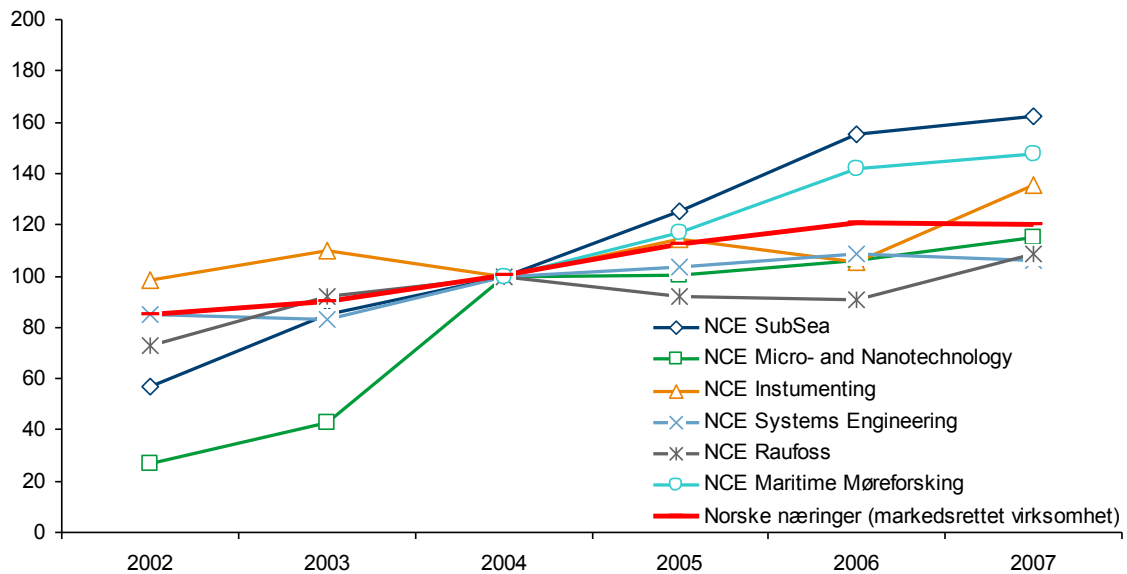
**Exhibit 7:** The Set of Quantitative Indicators in the Annual Report With Data for Nine NCEs, 2007, 2008, 2009

		2007	2008	2009
	<b>Participation</b>			
1	Partner/core companies	235	262	317
2	Other participating companies	150	230	213
3	R&D and educational institutions	45	61	69
4	Public/other partners	193	199	210
5	Steering committees – % female repr.	18	25	28
6	Participants in committees/working groups	275	427	578
7	Organized forums/seminars	101	131	142
8	Participants in forums/seminars	2414	3620	4235
9	Foreign participants	27	57	80
	<b>Activities and outcomes</b>			
10	Innovation projects based on cluster processes	48	175	152
11	- <i>In collaboration with R&amp;D</i>	30	93	100
12	- <i>With international partners</i>	36	72	47
13	- <i>Joint applications for R&amp;D&amp;I funding</i>	30	80	75
13	- <i>Funding from other (national) R&amp;D&amp;I schemes (NOK)</i>	50	175	221
14	- <i>Funding from EU programs (NOK)</i>	12	19	10
15	International business development projects	58	66	63
16	Educational and competence projects	53	48	84
17	New companies in the cluster – resulting from the cluster process	14	14	16
18	Employment in these companies		36	268
	<b>Profiling</b>			
19	Articles/interviews/etc., in media	186	603	524
* Contracts with three of the clusters starting from October 1, 2007.				

**Exhibit 8:** Evaluation of the NCE-Supported Cluster Initiatives



**Exhibit 9:** Productivity\* 2002 – 2007, Index =100 in 2004



Source: Econ Pöyry, "Statistisk sentralbyrå, Brønnøysund-registrene og PROFF™ Forvalt."

*Norske næringer = Norwegian industries (market-oriented).*

\* Productivity (A) is defined as Value Creation (V) per Employee (N) in the enterprise.

Value Creation (V) is defined as Wage Costs (W) + Net Result (R)

**Exhibit 10: NCE – Hierarchy of Goals**

