NORWEGIAN CLUSTERS

2015

for the future’s innovative industries

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Collaboration generates challenges, opens doors and builds expertise. These are important ingredients included in a recipe for increased value creation.

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What needs to be in place for a Norwegian-based company to become a winner in the global market? And how can the cluster contribute?
Innovative clusters and business environments are strongly preconditioned to take a leading role in the restructuring and renewal of Norwegian industry, and to realise a considerable part of the value creation potential in our existing industries. Innovation Norway, the Research Council and Sida (State owned industrial development corporation) are in 2015 contributing, through the Norwegian Innovation Clusters programme, with support for 39 cluster projects, divided into 3 that have GCE status, 14 that have NCE status and 22 that have Arena status. The goal is to contribute to increased value creation in trade and industry by collaboration within the areas of innovation, internationalisation and developing expertise. Norway is dependent upon Norway-based value creation. We must systematically over a period of time to establish an environment where Swedish companies and organisations will be able to act on their own decisions, which means that we need to establish temporary and stable partnerships. The clusters that succeed have worked systematically over a period of time to establish trust between the partners, put forward an attractive strategy, created good meeting places and stimulated R&D projects. They are a driving force for faster restructuring, they open doors for a global investment, they make use of their education, their contacts at universities, and relevant educational institutions are linked through a network of companies and organisations. They innovate through applying new technology, new knowledge, pushing together technology and products in new ways and developing new thinking for established business chains. They train by communicating with colleagues, clients, suppliers and competitors. They make use of their education, their contacts at educational institutions and research environments and they learn by following development trends. Innovation research demonstrates that the Norwegian economy is benefiting from a range of strong industry clusters where customers, suppliers and research educational institutions are linked through longstanding and binding partnerships. We therefore need more innovative clusters and business environments, also in industries and sectors where it has not traditionally been common to work in clusters. Economic analyses from Statistics Norway and the Research Council demonstrate that clusters make a stronger contribution to increased value creation in the partner companies. Furthermore, they contribute to looking upwards, they facilitate more industry focused research, they contribute to industry focused education offers and build up forms of innovation that have facilities for testing, simulation and visualisation. All of this contributes to increased value creation in the partner companies. They learn by communicating with colleagues, clients, suppliers and competitors. They innovate through applying new technology, new knowledge, pushing together technology and products in new ways and developing new thinking for established business chains. They train by communicating with colleagues, clients, suppliers and competitors. They make use of their education, their contacts at educational institutions and research environments and they learn by following development trends. Innovation research demonstrates that the Norwegian economy is benefiting from a range of strong industry clusters where customers, suppliers and research educational institutions are linked through longstanding and binding partnerships. We therefore need more innovative clusters and business environments, also in industries and sectors where it has not traditionally been common to work in clusters. Economic analyses from Statistics Norway and the Research Council demonstrate that clusters make a stronger contribution to increased value creation in the partner companies. Furthermore, they contribute to looking upwards, they facilitate more industry focused research, they contribute to industry focused education offers and build up forms of innovation that have facilities for testing, simulation and visualisation. All of this contributes to increased value creation in the partner companies. Some more indirectly than others, but they are nevertheless very important. It is a pleasure to see that a majority of the clusters are good examples of this. This is reflected in an extensive level of activity and activity and project meetings in the clusters. In the magazine we are highlighting and presenting the work that is taking place in the clusters and in the companies.
Contributing to increased value creation

An important effect of the investment in clusters is increased value creation for the partner companies, but this is by far not the only one.

### THE PROGRAMME
Norwegian Innovation Clusters and Business Economics have carried out a financial statement analysis of the partner companies in several clusters and they conclude that it has had a positive effect; in several clusters and they conclude that it has had a financial statement analysis of the partner companies for the period from 2009 to 2014, the growth in income has been 10 percentage points higher for the companies involved that for the medical products industry in general from 2008 to 2012. In GCE NODE the value creation per employee has increased 13 percentage points higher than the industry average and twice as high as the value creation in the region in general. Similar analyses in other clusters would probably have given us the same trend.

The cluster makes a difference for value creation in clusters also confirmed by an analysis of effects carried out by Statistics Norway (Statistik Sentralbyrå). The analysis, however, shows a somewhat lower profitability growth than in the control group.

### Ripple effects
In addition to the direct economic effects, goal-oriented collaboration and focus generates a number of ripple effects that indirectly increases competitiveness. The cluster programmes e.g. contribute to the following:

- Increased innovation in established businesses by mobilising premier companies and knowledge environments to invest long-term and strategically, but also to enter into specific collaborative projects aiming for quick implementation in the markets.
- Improved attractiveness of the host, so that it will be more attractive for internationally oriented companies to invest in Norway.
- Regional business development when the clusters appear like motors for new expertise based business.
- Companies improve their understanding of and make the most of disruptive opportunities, in which the application of new technology, new market trends and niche models are important contributions. The links to leading international environments are likely to give them important impulses.

### International links
Norwegian clusters form part of international production and value chains. Some are leaders within these chains, others are perceived as subcontractors. If Norwegian clusters are to be strengthened and their competitive advantages the companies will have to increase their expertise on international markets, gain international experience and share these experiences with other participants in the cluster.

Large companies assisting smaller subcontractors’ export into international markets is therefore crucial for the value creation in Norway.

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- **International links**
  - Norwegian clusters form part of international production and value chains. Some are leaders within these chains, others are perceived as subcontractors.
The clusters are important for faster restructuring of Norwegian industry—in accordance with the companies’ premises. As restructuring is demanding, often hurts, and is connected with great uncertainty—being challenged could be a salvation.

They believe mobile-internet, automation of knowledge work, “Internet of things” cloud technology, advanced robots, self-driving vehicles, next generation gene technology, energy storage, 3D printing, advanced materials, advanced oil and gas exploration and renewable energy are disruptive technologies that will disrupt the development of business in the next 10-15 years.

The cluster challenges
Going in a new direction is demanding, particularly when there doesn’t appear to be an acute crisis. As a whole, Norwegian trade and industry is doing well. Productivity, employment and local expertise are high.

— The economic downturn in Europe in the last 6-8 years has highlighted the unique situation the Norwegian economy has been in during the last few years. When Norwegian trade and industry is to change from an “exceptional position” to “restructuring” the starting point is good, but there is also an additional challenge with regards to realising the need for restructuring.

— The clusters contribute to adaptability in trade and industry. A cluster project is a departure from the companies and their usual environment.

In summary, the strategy for development of trade and industry is the reason Norway and most other countries have developed cluster programmes.

Investing in green sailing
NCE Maritime CleanTech is an example of how companies in one region establish a cluster and thus a platform for restructuring.

— If we hadn’t worked together to develop maritime environmental technology, we would have been left behind, says chairman of the board in NCE Maritime CleanTech Inge Sørfonn. When the cluster was founded in 2011 and applied for funding from the arena-programme, over 100 companies were in the formative stage of meetings.

— Several maritime industry companies in the Bømlo/Mandal region (Orkanger), however, glimpse a large green maritime market in the horizon, and they joined together in future-oriented innovation projects, says Inge Sørfonn, who is Technical Director of Wärtsilä.

— It was proved that they were far from alone. Currently several companies are launching their own “world’s first this-and-that” maritime environmental project. Fortunately the maritime environment is so many different companies in the industry cluster between Bergen and Stavanger are making well along the way.

— We have begun an exciting journey. Falling oil prices and restructuring in the oil and gas sector is world leading in areas like safety, training, use of video, use of robots and signal handling. This can be used for good purpose within welfare technology, says Arild Kristensen.

The centre for acute medicine (Senter for akutmedisin) and the helicopter simulator at Sola are two examples of expertise environments that can contribute to innovation within welfare technology. Innovation groups have been established in the following areas:

— Functional, age-related housing
— Safety and security
— Video within healthcare
— Training and simulation development
— Linking sectors

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More industry-oriented research

The clusters can compensate for capacity and long-term views for the individual companies by stimulating collaboration around more industry-oriented research. And we need more of this.

TRANSFORMING new knowledge from the research arena to new, commercially profitable products – is demanding, particularly for small and medium size businesses.

- The clusters are a hotbed for research-based innovation, says the man responsible for the Arena-programme, Hans Eirik Melandsø.

Many of the mature clusters have gradually built up some expertise in obtaining funding for industry-oriented research projects in the cluster. Several of the less mature clusters are following suit. All GCE- and NCE-clusters, and most of the Arena clusters have taken on a role in this area. The cluster administration role can be project coordinator, driving force, and mentor/supervisor.

Via active businesses and competent facilitation the cluster can function as a platform for qualifying common projects, that the companies would not have had sufficient resources or expertise to carry out on their own.

In the cluster small and large partner companies can share experiences and find collaborators in order to apply to the Research Council (Forskningsrådet)’s programmes for industry-oriented research, the EU’s Horizon 2020 or other programmes. This year eight of the Research Council’s programmes are announcing 900 million NOK for research and innovation projects for industry.

- Some clusters have created an international network, which the companies can capitalise from, in international competitions, such as the EU announcements. Thus, the clusters have taken on a proactive role and created an arena of opportunities for the companies, says Hans Eirik Melandsø.

The EU-programme Horizon 2020 gives us many opportunities, but there is extensive competition and the programme is making tough demands, particularly for small and medium size companies.

In order to apply for funding from Horizon 2020 a good R&D business case is required, and often a European consortium with participants from minimum three European countries, which requires more long term positioning.
EU-programmes in the cluster

NCE Health Technology (former Glo Bio-medics) is a good example of how the cluster can contribute. In the cluster companies, hospitals and research institutions are working together with regard to the development of medical technology. They have established their own EU-programmes and invested.

- Investing in Horizon 2020 has given results. As a result of our EU-programme 2014 our project was taken into eight Horizon 2020 projects, and NCE Health Technology is the coordinator for the largest project, says CEO of NCE Health Technology Kathrine Myhre. The cluster had inviva status in the period 2009-2014.

Horizon 2020 is the world’s largest research and innovation programme with a budget of 80 billion Euros for the period 2014-2020. The objective of the programme is to improve economic growth and increase employment in Europe. Norway is taking part as a fully functioning member. The programme has three priorities:

- Competitive business
- Innovative society
- Sustainable growth

Under each priority there are sub-programmes, where one is invited to present project proposals. The programme is open to applications from companies, researchers, and organisations and can support the whole value chain from basic research and applied research to product development and market maturing. The applications are judged according to how new and creative the idea is, whether the applicants are the best at implementing the project and whether there are clear and positive gains for society.

The grant can constitute up to 25% of the project costs. This is widely very attractive for the companies and their owners.

- An increased elderly population and increased cost in the health sector are defined as a societal challenge by the EU, which targets a cluster working with medical technology and new solutions for the care sector, says Kathrine Myhre.

NCE Health Technology was early on aware of the potential of Horizon 2020. Together with central cluster partners they started as early as 2012 to map out challenges and potential as a foundation for the cluster’s EU strategy. This challenge was to acquire knowledge and expertise. In the spring of 2013, the cluster’s Health Technology-engaged senior expert in order to create a clear strategy for the investment, and based on this, the cluster applied for means in the EU programme, says Kathrine Myhre.

The cluster applies the methods Qualifying process, the Logical Framework Approach, Lean Launch Pad and Business Canvas Model in this work.

Driving force in “the valley of death”

Commercialising an idea demands patience. It’s often a minimum. In the next round workshops in the region. This contributes to raising important questions and uncovering weaknesses early on in the process. Guidance, methodology and networks are particularly important for smaller and medium-sized companies that have not been through such an application process earlier. In order to go through the application process successfully, one should be dealt with like a process. We have acquired support from Horizon 2020 and the funding of the initiative. In the spring of 2013 NCE Health Technology was early on aware of the project application to the EU programme’s priorities, expectations and requirements from important stakeholders and the company’s growth strategy.

The cluster has facilitated meeting places for companies, researchers and organisations in order to support and tailor-made mentoring and expertise in how to prepare good project applications.

- A good project application for Horizon 2020 requires expertise and patience in addition to a good idea and a good network. In order to have this place, financing is necessary, says Kathrine Myhre.

In 2014 applications were sent from the NCE Health Technology-cluster for a total monetary support of 150 million NOK. Applications of 60 million NOK have been granted. The cluster is the coordinator for one of the projects in Horizon 2020. In 2015 activities in this area will increase further.

Qualifying process

- Writing a project application to Horizon 2020 will be a process in itself. We have acquired expertise and developed a methodology in order to guide the partners in the application process in the best possible way, says Kathrine Myhre.

The cluster assists the partner companies in the qualifying process with guidance, network and methodology. The cluster applies the methods Qualifying process, Lean Launch Pad and Business Canvas Model in this work.

Research-based innovation is the goal

In the iKuben-cluster collaboration within research-based innovation and expertise development is the driving force in “the valley of death” and in the commercial phases, says Kathrine Myhre.

This is in itself valuable, but costly in terms of both money and time. However, when this contributes to financing of the project and the idea can be taken further towards the market, the company is well positioned to succeed, says Kathrine Myhre.

- “We would not have succeeded with this without the cluster”, is the message when the company managers in Ruben project their innovation project, says CEO in Ruben-ålle Apas.

The cluster has 27 partner companies in the county of Møre and Romsdal within logistics, material technology and production technology. The major players in the region have their own condition inspectors and maintenance of advanced systems within the marine sector and oil and gas sector.

When Ruben acquired Arena-status in 2012 they started applying for project applications from the Research Council. In the course of three years the cluster has applied for support for a total of seven innovation projects, one development project with Ruben as the owner and Materialising as the R&D environment and one competence project with Tekniske Høgskolen in Molde in collaboration with NTNU as the owners. All of the nine applications succeeded. The projects have a total budget of more than 160 million NOK.

The recipe for success for Ruben has been to ensure that at least two companies in the cluster become part of each project, that they have close contact with the Research Council’s regional representative and that the R&D environment write the applications. It has also been important to include more than one expert environment in the projects. In this way they have focused on increased competitiveness for the participating companies through collaboration on research-based innovation.

- The cluster has facilitated meeting places for companies and research environments where the companies’ issues are discussed. The researchers know the programmes and have written the applications and the companies own the innovation projects, says Hildi Apas.

During the first years the young cluster has worked actively with projects linked to the Research Council. Now they are also focusing on applying for project applications to the EU’s programme, says Hildi Apas.
Clusters in the Norwegian Innovation Clusters programme have to deliver results for their partner companies, and they are required to have a clear strategy for how to do so. Via an annual strategy dialogue the clusters are challenged to think big.

Strategy is important for a company, and even more important for a cluster project. This is because the clusters to a large extent have a chance perspective in their collaboration projects, where they continuously have to create synergy for the objectives that have been agreed.

Often strategic prioritising is high on the agenda when the cluster is young and forming. However, after a few years attention is often rarely directed towards operational tasks and individual projects. If the strategic work isn’t prioritised sufficiently one can easily miss opportunities to be ahead of the development. When change becomes an acute and forced necessity, it may be too late and too demanding to handle.

The dialogue is primarily to address challenges and possibilities in the borderline between programmatic and cluster on what we call the cluster Further, says Bjørn Arne Skogstad.

This also includes mobilisation of good goals to participate in a dialogue around the same table. The mobilisation includes regional and central agents from the three owners Innovation Norway, the Research Council and SIDK.

Central company managers from the cluster participate as the role of chairman, often other board members in addition to the administration. Often other representatives from the competence partners, such as regional colleges and universities, participate.

Discovering the context, took action

The dialogue around NCE Smart Energy Markets could strengthen its innovation platform in the cluster and how this could affect the innovation strength of the partner companies and collaborative work in the cluster was the starting point for the simulation centre. The organisational and cultural setup of a well-functioning innovation platform should be built, what elements to include and how this is solved in other clusters, was central to the dialogue.

The simulation centre is placed in a newly created building on the campus of technology (DIbil), and gives the companies a fantastic opportunity for innovation methodology and good strategic points to compete in the global market.

In a 250 m2 room with a ceiling height of 4,6 metres, a 13 meter long curved screen, projectors showing high definition, and data capacity, light and sound, complex contexts can be presented in an intuitive way. This is valuable in many situations.

- We use it as a showroom for training and education, for training and for research, and for innovation projects,” says Knut H. Johansen.

A company is established to run the simulation centre. World-class technical equipment requires expertise it is to be applied well.

- Having world leading expertise in visualisation in the simulation centre means we are building a stronger ecosystem for innovation, says CEO in the cluster project, Vidar Bekkevik.

In April 2020 the cluster was included in SINTEF incubator and a solid innovation platform is emerging in the Halden-based cluster, which is developing IT solutions for the energy market.

- Close collaboration and good advice from SINTEF Innovation Norway have contributed to awareness around the importance of establishing infrastructure for innovation, says Vidar Bekkevik.

Not enough time

Through the strategy dialogue we have been challenged to find good solutions for innovation processes. We also obtained good advice and useful contacts, says CEO of NCE Media, Anne Jacobsen.

The media sector is undergoing restructuring partly because the companies and the customers in the cluster are the answer with regards to innovation methodology and good strategic points to compete in the global market. Then this is followed up with a dialogue concerning strategy for innovation and thus a good starting point for how to do so. Via an annual strategy dialogue the clusters are challenged to think big.

The dialogue challenges the strategy work in the clusters, but it also works the other way round. More clusters. For the Arena clusters we implement the programme and each cluster has become an established channel that the clusters use according to their needs throughout the whole year, says Hans Erik Melandsø, who is responsible for the Arena cluster programme.

Through many of clusters programmes and good communication with the clusters, the programme management has gained expertise and experiences that each individual cluster can make good use of.

- We use experiences from the clusters and our expert network, says Vidar Bekkevik.

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Global focus for the companies

What needs to be in place for a Norwegian-based company to become a winner in the global market? And how can the cluster contribute?

IN THE PROJECT “Global Innovation Winners” the NCE- and GCE-clusters are working together to find good answers to these questions. And to do something about it.

Global competition is increasing in most sectors. The technological and market development is global and it happens increasingly at a faster pace. High costs in Norway must be compensated for by higher expertise, effectiveness and innovation pace.

- Many clusters have “global innovation winners” among its partner companies, but we could be even better if they develop further and cultivate new innovation winners.
- Says CEO of GCE Blue Maritime, Per Erik Dalen. He has constituted the project team, together with the leader of NCE Smart Energy Markets, NCE Systems Engineering, Kongsberg and NCE Oslo Cancer Cluster, and representatives of each of the three owners.

Innovation is about “opening doors” to new partners and the ability to apply new knowledge. It’s also about focus. In these areas the cluster plays a key role for the partner companies. Those who are already global innovation winners, but first and foremost for those who have ambitions to be.

From the autumn of 2013 the NCE clusters have worked with common projects, each with it’s own position. During the summer of 2014 GCE was established and naturally incorporated in the project. In 2015 the Arena clusters will also be incorporated into the common project.

- The project Global Innovation Winners has given us an “infectious inspiration”. There is extensive activity in this area in most of the clusters, with concrete collaboration projects within expertise sharing, networking and R&D projects, says Per Erik Dalen.

Why do some win?

In the first phase of the project the clusters create, in collaboration, awareness around critical success factors for a Norwegian-based global innovation winner – and how the cluster can contribute to cultivate partner companies to become global innovation winners. Therewith four main strategies were defined and six subprojects. In the next phase the clusters have followed up with activities for their own partner companies and together with other clusters and expertise environments.
Two workshops have been held with participants from more than 50 activities, including R&D and collaborative projects where partner companies in the clusters have established collaboration with companies and expertise environments in “the world's most innovative ecosystem”.

Following the visit to Silicon Valley several of the clusters wished to develop expertise within “Lean Start Up”, which is one of three leading innovation methodologies the project is focusing on. In March 2015 Toreen Hornfer, author and internationally leading seminar leader, ran four workshops in Oslo, Bergen and Trondheim. More than 100 people from the partner companies and incubators in seven of the clusters participated.

Another example of how the project Global Innovation Winners is influencing work in the clusters is the development of Rausino Creative Factory. This will be an incubator strongly inspired by Silicon Valley lab where start-up companies are situated in a hub with established companies. There is a focus on meeting places, that the established companies can post assignments to the start-up companies, and good access to state of the art equipment to test ideas and prototypes. The goal is to stimulate more innovation dynamics and spin out from existing companies.

A third example is NCE Oslo Cancer Cluster’s work with combining “big data” and cancer research to develop next-generation cancer medicines. Two workshops have been held with participants from world leading analysis environments such as Lawrence Livermore Lab and August Bolinches. In addition to the Cancer Register (wwwregistret.no) and cancer researches from both the US and Norway.

One of the strategies has been to increase specific collaboration with global leading expertise environments. In the autumn of 2014 the leaders of the GCE- and NCE-clusters attended a week’s gathering in the Bay Area (Silicon Valley) where the aim was to further increase knowledge in several of the defined success factors in general, make connections in world leading expertise environments in particular, in addition to defining some common R&D projects.

A survey half a year after the gathering documented great activity in the clusters. More than 10 activities, including R&D and collaborative projects where partner companies in the clusters have established collaboration with companies and expertise environments in “the world’s most innovative ecosystem”.

The next step in the project is to look at how we can improve the mass screening of cervical cancer that the Cancer Register (wwwregistret.no) is responsible for. The combination of unique Norwegian data material and one of the world’s strongest data analysis environments will develop completely new models.

- The ambition is to establish Norway as an international “best bet” for developing individually adapted medicine, says Ketil Widerberg.

In summary Norway is gathering unique data on cancer, whilst the US has unique analysis capacity for data. Together this provides very exciting possibilities for developing future precision cancer treatment with a basic in Norway.

The collaborative project they work to increase the competence in academic circles and develop infrastructure in order to carry out analyses of data to those who will benefit from cancer treatment, and who will not.

- This can contribute to the patient obtaining the cancer medicine that is most effective. Which again means that we can save many lives. This is also a fast growing market where value creation is enormous, says Ketil Widerberg.

Where is the market heading?

Global Innovation Winners are based on the assumption that a Norwegian-based global innovation winner is leading within the global framework agreements and mega trends, and simultaneously that the companies have the ability to capitalize on “Norwegian advantages”.

- Defining the mega trends that we will be decisive for in the future business, and how one can make use of it, requires extensive awareness and expertise. The cluster can contribute to this. So says CEO of NCE Systems Engineering, Torkil Bjørnson.

- We are in fact competing with cluster environments in the EU, the US and Asia. Hence, we must collaborate more closely in each cluster. Across the Norwegian clusters, but also with the ones we are competing with. We must build “Norwegian national teams” that take advantage of “Norwegian advantages”, says Torkil Bjørnson.

Strong clusters are growing in the international market in the competition to become winner companies, and to meet the challenges following increased innovation pace and the value creation potential for new technologies.

- In most sectors we notice that the globally oriented companies are those that are most likely to benefit the most. The challenge is to be where the hosts are the most attractive, says Torkil Bjørnson.

By “global innovations winner” we are referring to a company that is competing on several continents, where new technology, new combinations of known technology, new areas of use for known technology, new production processes or new business models are decisive factors, and which is among the most advanced in its market.

Cultivating the cluster’s role as a driving force

For the clusters this is about cultivating the role as a driving force, building expertise, but first and foremost contributing to the establishment of collaboration between partner companies, across the Norwegian clusters and with world leading expertise environments.

- We will be the best – and can most strongly defend a leading position – by collaborating with the best. The challenge is to find and gain entry among those who will be the best tomorrow, says Chairman in Smart Energy Markets Knut Johansen.
Norwegian Innovation Clusters is a government funded cluster programme aimed at contributing to value creation via sustainable innovation. This is to take place by releasing and reinforcing collaborative development activities in the clusters, aiming to increase the clusters’ dynamics and attractiveness, and increasing each individual company’s innovation ability.

The programme consists of the following levels; GCE, NCE and Arena, and it’s a collaboration between Innovation Norway, SIVA and the Research Council. The Ministry for Trade, Industry and Fisheries and the Ministry for Local Government and Modernisation are financing the programme.

FROM THE BEGINNING of the year 2000 Norway has had a strategy for reinforcing trade and industry clusters via a national cluster programme. The Arena programme was implemented in 2002 and has since then supported around 70 cluster projects. Norwegian Centres of Expertise (NCE) was implemented in 2006 and is supporting 14 cluster projects. A third level, Global Centres of Expertise (GCE), was established with two cluster projects in 2014 and expanded to a total of three in 2015.

In June 2014 the Norwegian Innovation Clusters-programme was launched. The programme was extended with a global centre of expertise (GCE) level, and is founded on the previous cluster programmes with modules and elements that are to develop existing and potential cluster initiatives. The Norwegian Innovation Clusters-programme contributes with;

• Funding
• Competence services
• Advisory services
• Networking services
• Promotional services

The offers of the cluster programme has since the start in 2002 been in high demand within the regional business environment, and evaluations, analyses and feedback indicate positive effects and results.

Target group

The Norwegian Innovation Clusters-programme is targeting clusters with the following characteristics:

• A collaborative foundation that includes the business environment, knowledge environment and public development agents, with the business agents in the driving seat.

• Clear synergy opportunities within the cluster, or towards external environments, within or across value chains and technologies.

• Potential for increased value creation and reinforced competitiveness in the cluster based on collaboration between the agents.

• Broad participation from the most important agents in the cluster and active leadership.

• A strategic development project that can contribute to increased innovation and renewal, and that can trigger and be reinforced via support from the programme.

The programme will choose the cluster projects that are to receive support based on;
• Open announcements including a competition to be accepted as a participant in the programme
• Clear selection criteria.
• Independent and professional project evaluations.

Four strategic focus areas

The cluster programme’s funding offer is channelled to four strategic priority areas. The cluster projects decide each year how efforts are to be divided between these areas, as a basis for the programme’s financial support of the cluster project.

A. General cluster development: Operations and development of the cluster based on agreed goals and strategies for the cluster collaboration.

B. Knowledge collaboration: Initiate and develop links and collaboration between the cluster and the best and most relevant research, development, innovation and educational environments nationally and internationally.

C. Innovation collaboration: Mobilise the cluster project’s participants to implement collaborative innovation projects in the clusters, and support this work with relevant physical infrastructure and collaboration platforms. This includes processes to identify ideas for new products, services or technology solutions, put together consortia that can develop ideas until conceptualisation or suggestions for large, concrete development projects that are lifted out of the cluster. This will be a specific aim at the NCE and GCE level in order to develop collaborative projects to bring forth more radical innovations.

D. Cluster-to-cluster collaboration: Initiate and reinforce links between the cluster and external clusters, aimed at technology collaboration, innovation collaboration, expertise collaboration or a common development of business collaboration. This can include collaboration with other cluster environments, regional, national or international across sectors and technologies, or within value chains. This is a particular aim in order to explore innovation and business opportunities on the borderline between sectors and technologies.

Three levels

The cluster programme’s funding offer is channelled to four strategic priority areas. The cluster projects decide each year how efforts are to be divided between these areas, as a basis for the programme’s financial support of the cluster project.

A. Arena

Arena is a 5-year programme, which NCE and GCE are 10-year programmes. An annual evaluation is carried out to ascertain if each individual cluster is developing according to strategy and objectives, and whether they are meeting the requirements set to be part of the programme.

B. ARENA

Arena is offered to environments that are in an early development phase, but there are good opportunities to reinforce the innovation collaboration. The aim is to stimulate increased innovation and competitiveness based on collaboration between companies, R&D and educational environments and public development agents.

C. NORWEGIAN CENTRES OF EXPERTISE

The NCE-programme is directed towards dynamic industry clusters that have established systematic collaboration and have potential for growth in national and international markets. Within their respective sectors and technology areas, the clusters are to have a national position.

D. GLOBAL CENTRES OF EXPERTISE

The GCE-programme is directed towards mature clusters that have already established a systematic collaboration within strategic areas both within the cluster and internationally with R&D institutions and other relevant partners. The companies in the cluster are to be part of a global value chain, and there is great potential for growth in both national and international markets. Within their respective sectors and technology areas, the clusters are to have a global position.
NORWEGIAN INNOVATION CLUSTERS

GLOBAL CENTRES OF EXPERTISE

01 GCE BLUE MARITIME The maritime cluster in Noro consists of more than 210 companies which design, build, equip and operate advanced vessels for the oil-based industry globally. The aim is to gain recognition as the world’s leading and most innovative knowledge and expertise cluster within the next 10 years within advanced maritime operations. GCE Blue Maritime will contribute to this by reinforcing the cluster’s interaction, increasing the pace of innovation, access to a highly skilled workforce and research capacity, in addition to contributing to increased rationalisation, internationalisation and knowledge about the cluster and its development opportunities.

www.bluemaritimecluster.no

02 GCE SUBSEA The cluster in the Bergen region consists of more than 100 enterprises that are developing and supplying expertise and technology for installation, operations and maintenance of subsea installations globally. The cluster has one of the world’s strongest specialist environments within subsea technology. NCE Subsea is contributing with meeting places and competence transfer, in addition to initiating collaborative projects within research, innovation, expertise development and international business development.

www.ncesubsea.no

03 GCE NODE The cluster in the south - Sørlandet - has around 60 partners that are developing and supplying technology and systems for offshore drilling and platform operations within the oil and gas sector globally. The vision is to contribute to maintaining the oil and gas industry at Sørlandet as world leading regardless of competition. GCE NODE contributes to this by facilitating collaboration and building expertise within mechanics, robotics, logistics and leadership.

www.gcenode.no

At present Norway has three strong GCE clusters with companies who are able to assert themselves as world leaders within their areas.
NCE AQUACULTURE: The aquaculture cluster along the Nordland coast has more than 20 partners that are developing and supplying farmed fish, seafood and equipment to the world market. The goal is to be a locomotive in the further development of Norwegian aquaculture and related businesses. NCE Aquaculture focuses on fish health and environmental issues, technology for safe operations and surveillance, product quality, quality of fry and hatchery, development of cod farming, sharing and delivery of education, in addition to framework agreements for future development.

www.nceaquaculture.com

NCE INSTRUMENTATION: The technology cluster in Trøndelag consists of more than 30 partners who are developing and supplying sensor, management and communication solutions to the maritime, subsea, aquaculture and medical sectors globally. The vision is to be a world-leading cluster for smart sensors and management systems with a range of innovative and industrial application areas. NCE Instrumentation will contribute by facilitating interaction, meeting places, building alliances, sharing experiences, expert development and profiling.

www.ncei.no

NCE SEAFOOD INNOVATION CLUSTER is recognised as one of the world’s most complete industry clusters and knowledge hubs within the seafood industry. The cluster consists of 70 partners that in total represent 150 small and medium companies. The cluster’s centre of gravity is in Hordaland, but is represented along the whole of the Norwegian coast and international seafood regions. The cluster is playing a leading role in the sustainable development of the industry through considerable investments in research, development and innovation.

www.seafoodinnovation.no

NCE TOURISM - FJORD NORWAY: The cluster gathers more than 100 tourist companies and destination businesses in the counties of Vestlandet. The goal is to become world leading within adventure tourism. The cluster contributes to developing and facilitating adventure products via a coordinated product and marketing strategy.


NCE MEDIA: The media cluster consists of global technology companies, national broadcasters, regional and local newspapers, R&D institutions, supply industry and small and medium companies - including a number of small, forward-looking entrepreneur companies. NCE Media’s goal is to contribute to developing the media cluster in Bergen to an internationally leading environment for innovation and knowledge development within the media area, with a particular focus on visualisation technologies.

www.medamera.no

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NCE MARITIME CLEANTECH: Is an industry cluster situated in south-western Norway with main emphasis in the region between Bergen and Stavanger. The industry cluster consists of businesses from the whole of the maritime value chain, supplier of renewable energy, in addition to research and educational institutions. The main aim of the cluster is to reinforce partner companies’ competitiveness by launching innovative solutions for energy effective and environment and climate friendly, maritime activities.

www.maritimecleantech.no

At present Norway has 14 strong NCE clusters with companies asserting themselves in the global market within their areas.
NORWEGIAN CLUSTERS
2015
NORWEGIAN INNOVATION CLUSTERS

26

NCE EYDE
Is a cluster consisting of 27 partners that constitute the southern Norwegian process industry and represents 100 years of technological development. The members produce specialised products for the world market, and are owned by some of the world’s largest global group of companies. The companies export around 90% of the production. The companies in NCE Eyde work continuously to reduce their own environmental impact and have together prepared an innovation agenda, which is based on an optimistic and solution-focused approach to climate challenges.

www.eyde-nettverket.no

NCE SYSTEMS ENGINEERING, KONGSBERG
The cluster in the Kongsberg-region consists of 8 partners and 13 member companies that are developing and producing within maritime, subsea, car parts, aerospace and defence to the world market. NCE Systems Engineering Kongsberg is to contribute to Kongsberg and Norway developing as one of the world’s most attractive places for development and industrialisation of advanced high technology systems.

www.nce-smart.com

NCE OSLO CANCER CLUSTER
The cluster consists of more than 60 research environments and businesses in Scandinavia that are developing and supplying cancer diagnostics and medicines to the world market. The cluster aims to improve life for cancer patients by accelerating the development of new cancer treatments. NCE OCC is contributing to this by facilitating collaborative projects and access to expertise.

www.oslocancercluster.no

NCE RAUFOS
The cluster in the Raufoss-region has 17 member companies in addition to a network with over 40 members. The companies are developing and producing car parts, electronics and defence products to the world market. The cluster is a national centre of expertise for lightweight materials and automated production and aims to fill the role as the Norwegian centre for all goods-producing industry. NCE Raufoss is contributing to value creation in its members through collaborative projects.

www.nceraufoss.no

NCE HEALTH TECHNOLOGY
is a cluster consisting of 185 businesses, companies, hospitals, research institutions and investment companies that focus on medical technology and innovation. The majority of the partners are located in the Oslo region. This cluster has a strong national position as a leading expert on national and international collaboration, innovation and business development within health technology.

www.oslomedtech.no

NCE MICRO- AND NANOTECHNOLOGY
The cluster consists of around 30 research environments that are developing and producing micro and Nano technology. The cluster has a leading position in the Norwegian electronics and ICT environment. NCE MNT will through various meeting places and collaboration projects strengthen Norway’s place in one of the world’s fastest growing and most competitive industrial markets.

www.nce-mnt.no

NCE SMART ENERGY MARKETS
The cluster consists of around 30 research environments and companies in the Helen region supplying expertises and equipment globally for commercial energy trade. The cluster aims to be the most growing and international oriented industry cluster in Norway within energy and IT. NCE Smart Energy Markets contributes to this via meeting places and collaborative projects. They are developing a competence centre of world class and are accelerators for new startups and growth.

www.ncest.com

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www.nceraufoss.no

NCE CULINOLOGY
The cluster has its centre of gravity at the venue Måltidets Hus in Stavanger and consists of over 20 partners within production, processing and preparation of food. The cluster is developing expertise and food based on Norwegian food production. The cluster is to mobilise culinary arts and industrial production in order to increase value creation throughout the value chain. Raw materials, processing, and product and sales profiles.

www.maaltidetshus.no

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www.nceraufoss.no
The partners have experience from repair and maintenance services for the fish industry in Finnmark and are collaborating on supplying services to the growing oil and gas industry.

The cluster consists of partners within arctic marine biotechnology in the Troms region.

Companies within the tourism and experience industry in Nordland, Troms and Finnmark are collaborating to make the region a preferred travel destination with attractive winter experiences.

01 ARENA ARCTIC MAINTENANCE The partners have experience from repair and maintenance services for the fish industry in Finnmark and are collaborating on supplying services to the growing oil and gas industry.

www.arktiskvedlikehold.no

02 ARENA BIOTECH NORTH The cluster consists of partners within arctic marine biotechnology in the Troms region.

www.biotechnorth.no

03 ARENA WINTER ADVENTURES Companies within the tourism and experience industry in Nordland, Troms and Finnmark are collaborating to make the region a preferred travel destination with attractive winter experiences.

www.winterin troms.no

04 NORWEGIAN COD CLUSTER With a geographical centre of gravity in Lofoten and Vesterålen the cluster companies are forming a natural value chain, which includes fish catch, production, processing, use of remaining raw materials, supply of logistics in addition to sales and export of cod.

05 ARCTIC MARITIME CLUSTER Partners in Nordland, Troms and Finnmark are collaborating on developing and implementing equipment, design and processes which make maritime operations in arctic climate as effective, safe and environmentally safe as possible.

www.arena-amk.no

06 MINERAL CLUSTER NORTH RDI and educational institutions and companies in Nordland, Troms and Finnmark are collaborating with regards to knowledge building and international focus in order to increase the value creation in the north Norwegian mineral industry.

www.mineralplogenset.no

07 HELGELAND OIL AND GAS CLUSTER The partnership consists of supply companies, financial institutions, RDI and knowledge and development agents. The vision is that oil and gas cluster Helgeland is to be the leading supply cluster in the northern areas.

08 SMART WATER CLUSTER The companies in this mid-Norwegian cluster are collaborating on developing systems for recycling and reuse of water.

www.smartwatercluster.no

09 ARENA NXTMEDIA The partners are collaborating on innovation within media technology in the Nordland region.

www.nxtmedia.no

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02 ARENA BIOTECH NORTH

03 ARENA WINTER ADVENTURES

04 NORWEGIAN COD CLUSTER

05 ARCTIC MARITIME CLUSTER

06 MINERAL CLUSTER NORTH

07 HELGELAND OIL AND GAS CLUSTER

08 SMART WATER CLUSTER

09 ARENA NXTMEDIA

The Arena programme currently has 22 projects with companies that wish to strengthen its long-term innovation ability through collaboration.
NORWEGIAN CLUSTERS
NORWEGIAN INNOVATION CLUSTERS

10 IKUBEN: iKuben includes internationally oriented industry companies in Møre and Romsdal. They develop systems and components, inspection of condition and maintenance of advanced systems for the maritime sector and oil and gas sector. The "I" in iKuben relates to innovative, international and industry.
www.ikuben.no

11 NORWEGIAN ROOMS: The partners in the Møre region are collaborating with regards to building profitable brands on the international arena and develop a viable finished goods industry within furniture and interior.
www.norwegianrooms.no

12 LEGASEA: Companies within catch, fish farming and industrial processing of marine oils and ingredients in the Møre region are collaborating on utilisation of marine bio resources and remains from raw materials on an industrial scale.
www.legasea.no

13 DESIGNARENA: The partners aim to create the Nordic capital for design-driven innovation in western Norway. The cluster is working towards applying, develop and build expertise within design-driven innovation – with a focus on sea related industries.
www.designarenabergen.blogspot.no

14 NORWEGIAN SMART CARE CLUSTER: The partners in Rogaland are collaborating on innovation, development and commercialisation of new solutions within welfare technology.
www.smartcarecluster.no

15 ARENA USUS: The network consists of member companies within tourism, the experience and culture sectors in Agder and Telemark. They are collaborating on systematic, holistic and coordinated application of guest flows in Agder, in order to improve their competitive position.
www.arenausus.no

16 ARENA DIGIN: The cluster consists of small and medium ICT companies in the south of Norway, that collaborates in order to meet needs within information and communication technology amongst private and public customers.
www.digin.no

17 ELECTRIC MOBILITY NORWAY: The partners in the county of Buskerud are collaborating on developing new solutions for electric vehicles and electric power-based transport.
www.electromobility.no

18 SUBSEA VALLEY: The partners are collaborating on strengthening the subsea environment in eastern Norway. The companies represent a broad spectrum of products and services within subsea.
www.subseavalley.com

19 OSLO EDTECH CLUSTER: The cluster consists of companies that work with technology that can streamline, improve and enable adapted learning, independent of time, place and room. The cluster is focusing on development, commercialisation and export of Norwegian IT-based learning products.
www.edtechnorge.no

20 NORWEGIAN FASHION HUB: Companies with head quarters in the Oslo region are collaborating on making fashion design into a serious, sustainable and value-added industry in Norway with international recognised brands.
www.norwegianfashionhub.com

21 ARENA HEIDNER: Heidner is a research-driven industry cluster with partners in animal breeding, fertiliser, plant processing, fodder production and utilisation of remaining raw materials and waste.
www.heidner.no

22 I4PLASTICS: Small and large companies and expertise agents within plastics processing, mainly located in Innlandet are collaborating on strengthening competitiveness by innovation and securing accessible relevant expertise.
www.i4plastics.com

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GCE, NCE and ARENA are organised by Innovation Norway, Siva (The Industrial Development Corporation of Norway) and the Norwegian Research Council.