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Industrial Incubators: Creating new business from industrial companies

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Business Acceleration and Incubation

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Industrial Incubators: Creating new business from industrial companies

Executive summary

The purpose of this paper is to give a description of SIVAs cooperation with larger industrial companies in industrial incubation, and how SIVA works to identify industrial commitment. In Norway industrial incubators has become an effective tool for establishing new companies and to diversify, restructure and revitalize established industry. The national Program for Industrial Incubators was established in 2004, and is operated by SIVA. This paper describes three cases of various industrial incubators before giving an overview of key elements in development of industrial incubation. It will also show how SIVA uses an alignment process to secure industrial commitment, described through a model of four content elements of the alignment process.

The paper will be summed up with some concluding remarks on lessons learned.

Content

Introduction

SIVA, the Industrial Development Corporation of Norway, is a governmentally owned company assisting and cooperating with Norwegian industry on different development programs. The Industrial Incubator Program is one of these. The program has a national scope and has been developed and operated by SIVA the last seven years. This paper will give a description of the process of developing industrial incubators and how we work on identifying the level of industrial commitment related to this.

Industrial commitment has proven to be the single most important element in the development of industrial incubators. There is no quick-fix on how to identify this industrial commitment. Therefore, SIVA uses substantial time and resources on this phase, and has developed a model of aligning the needs and commitment present before establishing incubators. This process, being a substantially more extensive process than a feasibility study will be addressed in the following.

First some notions on the context SIVA work in will be given. Then three cases of different incubators will be presented to show how industrial incubations can answer different challenges caused by different economical drivers. Also, some thoughts about content elements in the alignment process will be shared using a model for establishing industrial incubators, showing how SIVA works to identify industrial commitment.

The paper will be summed up by giving some concluding remarks on lessons learned.

Background and context

The Industrial Incubator Program in Norway was established as *one* tool to counteract some of the effects caused by changing competitive conditions and economical fluctuations within the industry. The industry's position in the economy has changed dramatically the last four decades, as in most western economies.

Norwegian industry's part of total employment peaked in 1971 when close to 400 000 persons were employed within different industry sectors, which was about 23.5% of total national employment. The following period was a hard time for Norwegian industry with employment dipping to 265 000 in 1992. Both increasing efficiency and productivity[1], and outsourcing of labor-intensive production to other countries are parts of the reason, but we also see a shift where the industry has lost labor force to other sectors.

The industry sector again experienced growth in the period up to 1997, when the employment in the sector was about 300 000. Today, the Norwegian industry employment make up for about 9.5%[2] of the total labor force, and the number of employees are again falling. The industrial employment today is about 237 000.

There are wide differences between the various sectors within the industry. While industries as textile, timber and pulp have experienced a large reduction in employment, other sectors as Minerals, Oil and

[1] The value of production in the industry sectors doubled in the period between 1971 and 1992.

[2] The total work force has increased a lot in the period due to growth in the population, but more important because the ratio of women participating in the workforce has had increased.

Gas, as well as the subcontractor industry have had an increase. The development in Norwegian Industry has been tending toward specialization and thus making the total industry more sensitive to economic fluctuations.

SIVA

SIVA, the Industrial Development Corporation of Norway, was funded in May 1968 as a tool for the Norwegian government to build physical infrastructure for emerging industrial actors. The company is owned by the Ministry of Trade and Commerce and operates throughout all of Norway. SIVA have also established and run industrial parks, incubators and innovation centers abroad, such as in Russia, Latvia, Lithuania, Bosnia and Herzegovina, Croatia and Romania.

The first twenty years the main objective of the corporation was building factories and industrial parks to lessen the financial risks of establishing and up-scaling new industrial activities. Today SIVA has established and owns 44 industrial parks, some as subsidiaries and some as partly owned companies.

In the late nineteen eighties SIVA's activities was broadened to also include the more soft sides of industrial development, and the innovation department was established as a second leg, the real estate department being the first. There was a need for more stimulating activities to increase the value creation of the companies located in the parks, and SIVA contributed with much of the same tools that later was to be developed into a more systematic approach through establishment of the first SIVA business incubator in the year 2000.

The innovation department now works mainly through developing and running different support programs to strengthen and further develop companies within different sectors as well as focusing on creating the "unborn industries". Up to now this has been done through four main programs; the Business Garden Program[3], the program for Female Entrepreneurship[4], the Research Incubator Program and the Industrial Incubator Program. All of these programs are funded by the Norwegian Ministry of trade and Commerce and the Ministry of Regional Development.

In total SIVA now have about 100 innovation- and development companies in its portfolio, covering most geographical areas in Norway - both in the central and the more peripheral areas - and within a wide range of industries. We have a strong emphasis on networking, and arrange several meetings and seminars for the managers of these innovation companies every year.

The Industrial Incubator Program

The program for industrial incubators was established in 2004. SIVA had by then already established more than 20 research incubators connected to universities and regional colleges. Increasing international competition and refocusing of traditional large industrial companies on their core activities, combined with strong financial fluctuations, revealed the need for a support tool for restructuring, revitalizing and increasing competitiveness through creating new ventures from spin-outs from the existing industry.

[3] A program designed to strengthen smaller companies in rural areas, through co-localization, cooperation, mentoring and business development services.

[4] The Female Entrepreneurship Program is designed to strengthen the focus on engaging more women in entrepreneurial activities. The projects within the program acts across the other programs SIVA run.

During the challenging period for Norwegian onshore industry in the late nineties, the belief that the time for the Norwegian industry sector was ending was spreading. It was said that the sector was a sunset sector, no one would wish to work there, the competence demand was low and it was regarded as environmentally questionable. The future of the industry sector was one for the low cost countries, it was claimed, and academics and policymakers started to talk about the post-industrial society.

SIVA started the work to re-rise the focus on the importance of the industry sector, in close cooperation of the largest industrial companies in Norway. Our claim was, and still is, that the industry sector has an important future, also in Norway. Norway is rich on raw materials as fish, oil and gas, minerals, forests and hydro power. We have a high level of education and competence, and a democratic work life with a high adaptability to structural changes. The political situation is stable. Still, there was little doubt about the need for a shift in focus for Norwegian industry in order to cope with changing international competition. In a high-cost country like Norway, labor intensive production can hardly be competitive.

On the other hand, the Norwegian workforce is characterized by highly educated workers, both as engineers and skilled workers. This contributes to high productivity and continuous innovation both regarding products and processes.

Norway also has good R&D actors, as NTNU and SINTEF. The interaction between R&D and producers also helps speed innovation, and the focus on the innovative[5] elements of the industry, and not at least the environmental focus, is as SIVA sees it crucial for new industry to succeed.

With this background SIVA decided to develop a tool where it together with large industrial companies in Norway could boost the development of *new* industrial ventures, increase the competitiveness of the industry and to secure that the broad competence within the Norwegian industry could still be upheld.

The first industrial incubator was established as a pilot project in Verdal, Mid-Norway in 2003. Verdal, being a small local community, in a large degree dependent on the corner-stone company Aker Verdal faced a difficult situation when Aker decided to lay off a large number of employees, due to a lack of incoming orders and a strategy of spinning out much of their internal activities. The pilot-project in Verdal became a success[6] and the Norwegian government, through SIVA as operator, decided to establish a publicly funded national program.

Up to date SIVA has developed more than 25 Industrial Incubators throughout Norway, all established in close cooperation with industrial companies, or mother companies[7], within different sectors as oil and gas, metals, paper and marine- and maritime industries. Most of these incubators can show very good results whether it comes to creating new companies or working with new products and services within

[5] Often when measuring innovations the focus has been on product innovations rather than process innovations. Also many of the innovations coming from industrial companies are incremental innovations, which also have been more difficult to measure. In the Industrial Incubator Program we have opened for reporting both new established companies *and* "company internal innovations". That is both new products in existing companies but also new ways to organize productions and operations. In this way we focus our evaluations on what creates new value for companies, not only on counting new companies or increase in employment.

[6] 15 new companies created during the first year of operation.

[7] The mother company is the industrial actor, or actors, initializing the establishment of an incubator, and that «harbor» it. The strong commitment of the mother company is the first thing we look for as a first mover in any incubator establishing project.

existing companies. Close to 200 new industrial companies have been created and several larger companies have been given support in restructuring and revitalizing their operation.

Program results

SIVA has measured the economic impact of our incubator programs since the year 2002. For the industrial incubators we have generated numbers on value creation and tax generation for the period from 2004 until 2009. This has been done through information gathered from accounts and auditor's reports of companies created in the incubators companies. In figure 1, the green line indicates the value creation of the Industrial Incubator Program (The dark blue line represents the Research Incubator Program; the light blue line combines the two other lines).

In this six year period there was established about 180 industrial companies in the industrial incubators. The value creation of these companies (cost of salaries and operating result) were accumulated to 3.35 billion NOK. The tax return in the same period is accumulated to 926 million NOK[8]. The input of public funding through SIVA in the same period was about 79 million NOK, meaning the value created was more than 42 times SIVAs input[9].

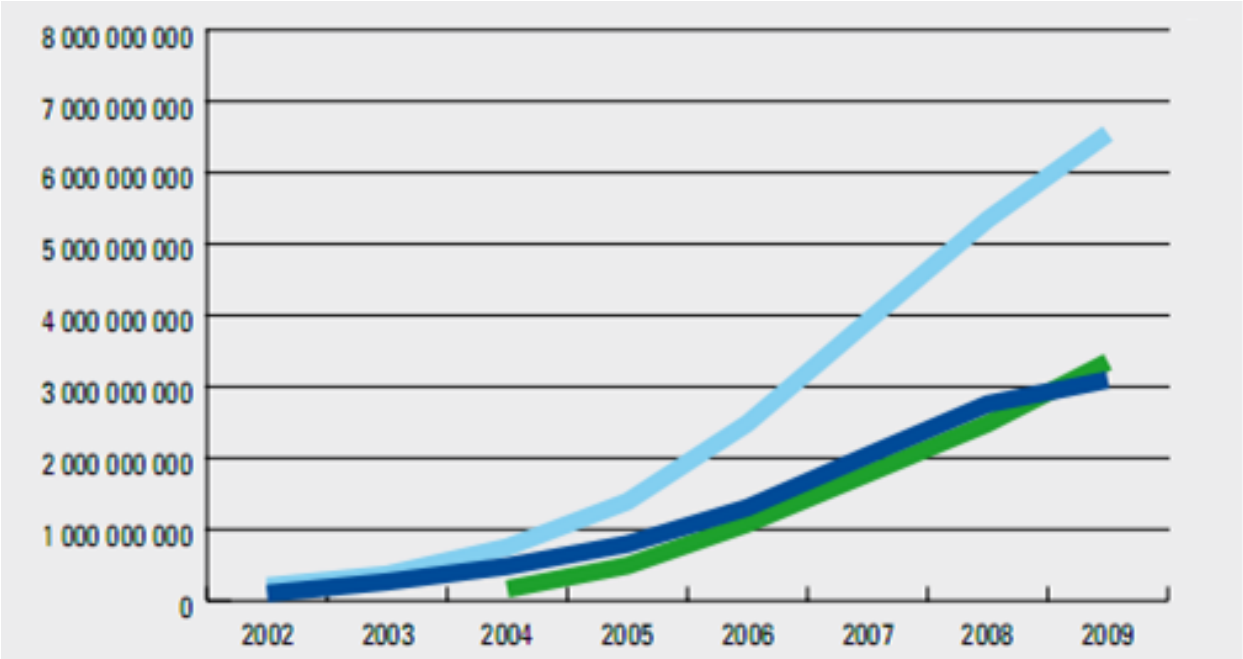

FIGURE 1: ACCUMULATED VALUE CREATION, NORWEGIAN KRONERS

[8] It is important to note that these numbers only make up for a part of the whole picture. At the point where companies are bought or merged with other companies they fall out our statistic. Thus the real numbers are expected to be substantially higher.

[9] In addition to SIVAs input other public funding sources as Innovation Norway and regional governments contribute with operational funding.

In 2008 Nordlandsforskning, the research institute of Northern Norway carried through an evaluation of the Industrial Incubator Program. This evaluation shows that the program has had good results on a range of different aspects[10].

- 75% of the companies created through industrial incubators state that the incubators has been essential for the establishment of their company.
- The incubators has contributed to develop internal development processes in the mother companies, which otherwise would not have taken place.
- Every 1 NOK SIVA has invested has triggered 2 NOK of private capital in form of equity.
- More than 90% of the companies created in the incubators expect to reach international markets within two years.
- The ratio of female entrepreneurs has grown from less than 4% in 2004 to more than 20% in 2010; this is largely due to a strong focus in SIVA on female entrepreneurship.
- 85% of incubated companies are still operational after three years. In comparison, numbers from Statistics Norway[11] show that only 30% of the total number of companies established in Norway in 2003 was active after five years.
- Companies created in industrial incubators grow faster, they have a larger number of employees, and they reach market faster than the average of new-established companies.
- Incubation increases the value of the companies, and makes them more attractive for partners and financial actors.

Three Cases of industrial incubators

As cases to describe different entrances to industrial incubation three incubators will be presented. First; there is an initiative to establish maritime industrial Incubators, as an answer to the financial crisis and its impact on the maritime industry. Second; we will look into an Industrial incubator in Northern Norway developed to exploit the new possibilities within the oil and gas sector in the northern regions, working with developing networks of subcontractors. Third; we will take a look at the first industrial incubator we were engaged in, Proneo, a venture driven by planned restructuring and the following freed capacity in the mother company.

Drivers for industrial incubation

SIVA focuses on three main economic drivers for establishing industrial incubators in Norway, which can result in both reactive and proactive processes. These drivers are represented by the three cases, but before turning to the cases, some notions on the drivers themselves will be given.

Crisis in the industries – reactive processes

Examples on industrial incubators established on basis of crisis in the industries are the five maritime industrial incubators established the last couple of years as an answer to the financial crisis and its impact on the maritime sector in Norway. Here the Norwegian government pointed directly on industrial incubation as one of the solutions for the sector to overcome the crisis. This driver is represented by the first case; maritime industrial incubators.

[10] Nordlandsforskning 2008: Resultatevaluering av SIVAs industri-inkubatorprogram. http://nordlandsforskning.no/publikasjoner/rapporter/899-inkubatorprogram

[11] Statistics Norway: www.ssb.no

The need for diversification of local industry – proactive processes
Here the focus is on being in front of the competitive challenges. Creating new industry within different sectors, and new spin-offs from cornerstone companies counters the local community's total dependence on one single large company.

Proactive use of incubation as a tool also brings companies in front when it comes to developing emerging possibilities as the new oil and gas activities in Northern Norway. The second case that will be described, Kunnskapsparken Nord, is in this category.

Development driven by free capacity
Planned restructuring of local industry often give free capacity like physical infrastructure (harbors, office- and production facilities), energy supply and waste treatment. This, in turn, lowers the thresholds for establishing new companies through cost effective solutions on services and technical infrastructure. Proneo Industrial Incubator will be presented as a case.

Industrial Incubators as tools for restructuring during crisis

The financial crisis had a hard impact on the Norwegian maritime industry. At the time there were 29 maritime yards in the country, making up a large part of the Norwegian industry. There are 35 000 people working with building ships and oil installations, and additional 50 000 people employed in their subcontractors. The number of contracts to build new ships fell with 90 % from 2007 to 2009, and the latter year 17 of the Norwegian yards found themselves without incoming orders for the following year. The large offshore yards expected to use only 60% of their capacity in 2010.

As a response to this the Norwegian government decided to use industrial incubators to assist in diversifying the local industry and to back up new development within the maritime sector. This was designed as a long term solution through focus on restructuring the industry, creating new companies, products and solutions.

During 2010 the government granted money to start this work and pointed to SIVA to establish cooperation with industrial actors. In 2011 five maritime industrial incubators were established and are now in full operation. The first companies are under establishing.

The incubators are located in Florø, Haram, Ulsteinvik, Kristiansand and Stord. Examples on co-investors, among many others, are companies as STX, Statoil, GdF Suez and Rolls Royce.

The two maritime industrial incubators, Haram and Ulsteinvik, located in north-western Norway are both operated by Ålesund Science Park that also runs a research incubator on behalf of SIVA. The Science Park has been building their competence and capacity over years and has developed into a regional innovation company, representing a good example on how to use tools and methods of incubation *across* sectors.

Industrial Incubators as tool for diversifying and developing new industry
Kunnskapsparken Nord (Kupa) was established as an industrial incubator in 2008. It is located in Harstad and Tromsø in the northern part of Norway, and has a geographical focus on Nordland and Troms counties. The Norwegian government has a strong focus on developing the northern areas of the country. The "high north strategy" consists of three focus areas; Climate (ice melting, new transportation routes), the relationship to Russia and exploration of resources (energy, marine resources). Kupa has an important role in this area related to development of subcontractor industry within oil and gas, renewable energy, oil spill protection and oil recovery operations (ORO) in Northern Norway.

Kupa is owned by Statoil Technology Invest, Total E&P Norway, Bergen Group and SIVA. Their overall goal is to develop innovative, robust companies and create meeting places and networks between industry, research institutions and the public sector. The industrial shareholders contribute with financial capital, networks and expertise. An important aspect with Kupa is the fact that they work to develop and diversify the industry through using the same kind of competence and tools on development within *different* industrial sectors, as the focus on developing sub-contractor networks deploys toward all the three sectors mentioned above.

Kupa has three focus areas; Restructuring and development in established industrial companies, entrepreneurial assistance and stimulation of young entrepreneurship.

- Kupa assists **established companies** to develop products and services in the following industries: Oil and gas - Renewable energy - Oil spill prevention and control. They can provide project management for development projects and networking with other companies or institutions. They also establish contact with R&D institutions or governmental organizations and assist with obtaining funding for projects.

They assist **entrepreneurs** and companies, regardless of industry, in the early phase of their innovation process. The companies in the incubator receive help in developing their business plan and obtaining funding for the development of their idea. They are also assisted on market research, product development and contact with R&D institutions.

In order to **stimulate** interest in science, technology and entrepreneurship among children and youth, the incubator's "Dynamic Youth" projects are aimed at children and young people from 10 years of age until 30 years. They work closely with schools to develop the skills and experience necessary for pupils to start their own business. Kupa also has designed two programs for students; "Look North Trainee" and" Look North Recruitment" aiming to attract recent graduates to the Harstad region[12].

In the following, two examples of companies and innovation projects aiming to actively use upcoming possibilities in new industrial sectors will be presented:

Scale protection AS was established in 2010 by an entrepreneur coming from the petrochemical industry. Scale deposition is one of oil industry's major challenges, as it causes immature production decline for oil fields worldwide. Today de-scaling is done by injecting chemicals into the wells. This method is inaccurate and thus environmentally questionable as it is difficult to find the exact spot where scaling occurs, and larger quantities of chemicals are used. Scale Protection's business idea is to develop innovative well instrumentation and analysis methods to improve scale management by monitoring and prevention of scale deposition in oil producing wells.

The manager of the company states: "Our cooperation with Kupa led us a step further. The incubator represented someone we could thrust in our start-up phase, when not having any partners. We got advices on the road ahead and got connected to actors with the relevant competence"

Scale Protection AS has now signed a contract with Statoil where they in close cooperation will develop and verify the technology during a two years period. A first step will be to test the product "Scale Alarm" in a test loop planned to be set up in Harstad. This is an important step forward for Scale Protection and shows that the company's technology is interesting for major operator[13]

[12] http://www.kph.no/English-version

[13] http://www.scaleprotection.com/2011/11/statoil-loop-development-contract/

Lunn3 is a project on large scale development of subcontractors' network in northern Norway. Until recent years the geographical focus of the oil and gas sector has been on the middle, western and southern parts of Norway. With the increasing activity on exploration also in the northern parts of the country, the industry see the need to prepare both local and national industry to take part in the growing oil and gas industry in the area.

Lunn3 is a three year project focusing on development of competence within the oil and gas sector. Kupa is one of the core partners in this project and are working on establishing alliances of sub-contractors in the region. More than 600 companies are represented in the project, which is the area's largest commitment on development of sub-contractors.

The project is a good example on how to prepare industrial sub-contractors on new emerging possibilities.

Taking advantage of free capacity through industrial incubation

Planned restructuring of developed industrial companies often comes as an answer to changing competitive conditions in the industry, as was the case in the Verdal community. Proneo Industrial Incubator was established in 2003, as a local incubator (at that time with the name Indpro), and has since developed into a regional incubator with 18 employees. Proneo is located in Verdal, at Aker Verdal, a construction yard for large steel constructions and substructures for offshore oil platforms. Aker Verdal was established in 1969 (as A/S Ellingsen mechanical workshop), and has a coincided history with SIVA as the real estate part of the establishment was built and operated by SIVA as its first industrial investment.

Aker Verdal experienced turbulent economic times throughout the eighties and nineties, with periods of extensive lay-offs. In 1999 Aker Verdal decided to restructure the company and to outsource a large part of their operation, in order to focus on their core activity. The industrial area then had free capacity which enabled them to make available production and office facilities for other actors, internal and external, that wanted to establish new projects and companies. Even more important is the fact that these processes freed *human capacity*. Skilled workers could be hired in new ventures.

One important thing Aker did at that time was to release some of the most central persons in their management team to put them in charge of the newly established incubator that had been set up to facilitate new growth in the area. They initially had a goal of three new establishments before the end of 2000, but actually got fifteen.

In 2002 SIVA increased its activities in Verdal. Together with Aker Verdal SIVA established the real estate company "SIVA Verdal Eiendom AS" and took the responsibility of developing most of the real estate in the industrial park. Then, in 2003 SIVA also took ownership in the incubator, and the first Industrial incubator was a fact.

Through the work of Proneo, the area of Aker Verdal was turned into what today is known as Verdal industrial park. The industry is diversified, spin-outs and spin-offs have captured new and larger markets and new services and products are created. In addition to this, other companies have moved into the park. Today Verdal Industrial park consists of 140 companies with more than 2500 employees. Only 800 of these are now employed in Aker companies. Midtnorsk Stillas and Vitec As are two examples established through incubation.

Midtnorsk Stillas AS, a company working with scaffolds, was founded on basis of the scaffolding department at Aker Verdal. Four former Aker-employees established the company with support from Proneo, and have experienced a substantial growth through opening their markets, both geographically and through implementing new services. Today the company delivers custom made scaffolding solutions

both onshore and offshore, as well as hiring out personnel. They were rated as a gazelle company both in 2005, 2006 and 2007, and have grown from 4 to 35 employees.

Vitec AS was spun out of Aker in the early 2000s when 25 employees from the welding department established their own company. Aker still holds shares in the company, but 66% of the shares belong to employees. Today Vitec AS has developed into an international actor within their four focus areas:

Dimensional control and surveying of steel structures and plants. This includes services as fabrication- and plant surveying, product and delivery verification, evaluation of contractors and quality assurance.

Services in welding technique, including welding laboratory for weld testing, mechanical testing, development projects and implementing of welding technology, project coordination of welding included qualification of welding procedures, and recommendations of steel quality, welding consumables and welding methods and –equipment.

Inspection and nondestructive testing (NDT). Vitec offers among other things to conduct NDT-testing, product and delivery control, implementing of NDT-technology and training of personnel, and hiring out skilled personnel and equipment.

Welders training. Vitec has established their own welders training center with special premises for teaching and training. They are approved to license "international welders", an European standard for welding education, through cooperation with the Norwegian Institute of Technology.

Through developing the company the human resources could be used more effectively, and by opening up to new markets and new areas of products and services the company has more than doubled their staff, and today employs 56 persons working world vide. An industrial service that traditionally, somewhat unrightfully, has been regarded as rather low-tech has through this company really shown the high level of competence and technology implemented in the welding area.

Content elements of industrial incubation

Industrial commitment has proven to be the single most important part of industrial incubation. It is hard to achieve successful industrial incubators without having the industry in the driver seat, and to open up the mother company in terms of: 1). Funding and ownership, 2). Management and competence contribution, 3). Market access, and 4). A stable and clarified relation to stakeholders.

In the following, these four elements will be closer examined to show how SIVA works with identifying and securing industrial commitment in the processes to establish industrial incubators. This process, the alignment process, is not a quick review of the different elements, but a thorough process where SIVA works closely over time with the industrial actors to lay the ground for establishing an incubator.

Aligning the industrial commitment

The process of establishing an Industrial incubator always begins with an alignment process. This is a project lasting up to six month to make sure all necessary stakeholders are on the same track, and to find the level of commitment of the mother company. The ownership, funding, access to resources and the incubation process are described and agreements are signed. This is a more extensive process than just a feasibility study, where SIVA works closely with the industry to lay the ground for industrial incubation. In

this process typically future owners and other stakeholders will participate, as well as representatives from SIVA.

"They must want it more than us" and "one size does *not* fit all". Even though the Norwegian government pointed to SIVA and the Industrial Incubator Program when looking for tools for solving the effects caused by the financial crisis (and structural changes in the maritime industry), it's not a ready-made tool for quick implementation. Each single incubator must be created in close cooperation with the other stakeholders. Pushing solutions over their heads would be asking for trouble. Without local mental ownership, as well of course as financial ownership and industrial commitment it's hard to get an incubator functional. We *have* experienced the need of terminating cooperation due to lack of industrial commitment although this has only happened in a few cases

The alignment process will result in a business plan, company statutes and a description of ownership structure. For SIVA this phase also acts as a critical mass evaluation, examining the possible scope of ideas for the incubator.

If SIVA together with the mother company decides to establish an Industrial Incubator, this is done as a shareholding company. In most cases SIVA will own about one third of the company while one or more industrial companies will hold the majority of shares.

The alignment process will examine the content elements of the incubation development and future operations, as described in the following figure, consisting of drivers, the alignment process and continuous activities.

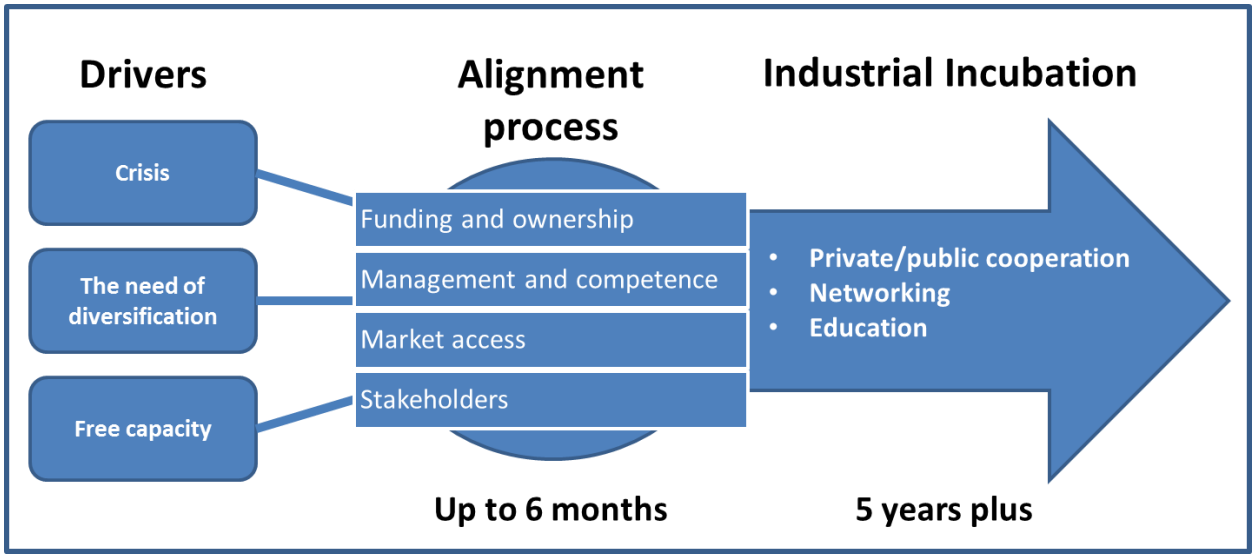

FIGURE 2 ESTABLISHING INDUSTRIAL INCUBATORS

Funding and ownership

The industrial commitment is in part represented through *active* ownership. The mother company always holds a substantial part of the shares in the incubator, and the large share the industrial actors holds in the company is important both when it comes to mental and financial ownership.

For SIVA, the way the mother company perform their ownership is important. This is expected to be done through actively engaging in the development and operation of the incubator. Top managers from the mother companies hold positions as board directors, linking the operations of the incubator directly to the management of the mother company, and opening up for access to new ideas and projects.

The private operational funding comes from the mother company and in some cases from banks or other financial stakeholders, as grants. Some of the mother companies also take ownership in new companies, and in that way contribute with investment funding.

The public funding to incubators in Norway includes both equity capital and funding of operational costs. SIVA does not provide support as funding to develop real-estate - although SIVA in some cases can build, own and lease out production facilities. In so cases, the lease will be according to market conditions. Regional government is often an additional source of public funding.

Without the commitment from the industrial actors when it comes to equity and operational funding SIVA will not participate in establishing the incubator, this is an absolute precondition for SIVAs engagement.

Management and competence contribution

It is required that the mother company contributes with competence on several levels. Both contributing with board directors and the competence of internal experts is of importance for the development of the incubator and to speed up the growth of the companies in the incubator. Internal staff works with the incubatees on an hourly basis, often paid for by the mother company. This increases the flow of ideas and the rapid development of projects through access to core competence at low costs.

Also, the managers of the incubators often come from central positions in the mother company. These are persons with core knowledge about the mother company, its operation and its employees. This often lessens the threshold to bring internal projects out to the incubator and it acts as an additional link to the management of the mother company.

The close links to the mother company also reduces the risk for employees in the mother company to establish new companies. If they do not succeed they are most often welcomed back to their old job.

This linkage helps bring projects and ideas into incubation, but at the same time it is vital to also bring external people into the development of the incubator. This is because relying only on the one sided relationship between mother company and the incubator *can* lay the ground for lock-in processes. Although the mother company is always the most important source of ideas, the incubator should always have alternative sources of ideas outside the mother company.

SIVA always holds a position at the boards in the Industrial Incubators we establish. Our board members contribute with their experience and work actively with the development of the incubators. As a rule, we never take the position as board directors.

Market access

Another important contribution from the mother companies relates to market. They are expected to sign contracts as first customers, and to commit themselves to purchase a given amount of services or products from the new companies. They also open up their own markets for new companies, both regarding subcontractors and own customers. Bringing potential clients into company development in an early stage greatly increases the chance of success of the new venture, as this creates opportunities in form of

lowered thresholds for new companies to test products or services on demanding costumers and to take advantage of their competence.

We also find that the close cooperation with well-known and respected industrial companies raises the awareness and status of incubators. This increases the incubator attractiveness, making it easier to attract external entrepreneurs.

Stakeholders

Although the mother companies always will be the most important stakeholder in the establishment of an Industrial Incubator, we also emphasize the significance of other stakeholders, as regional and local government, surrounding industries, relevant competence providers, banks and other financial institutions. For SIVA, being a national development actor, it is important to leverage our plans with the regional authorities and actors to secure support to, and the position of the Incubator.

Establishing relations to competence providers as R&D institutions, regional colleges and universities as stakeholders are also central in this phase. These acts as additional sources of ideas, and also as sources of expert competence to be used in idea development processes.

Also, relations to banks and finance actors are established through the alignment process. These are important as providers of grants and risk capital for new companies.

In addition to the four content elements of the alignment process also three continuous follow-up activities are important for SIVA; networking, education and evaluation, as described in the next section.

Networking

In all of our programs SIVA has a strong focus on networking. This apply both to taking advantage the extensive networks of our partners[14] and on building strong regional and national networks for incubator managers.

SIVA holds several networking events throughout the year, as arenas for the incubator managers to share experiences and learning-points. Together with the formal education that SIVA offer (see section 3.3), these arenas are where the knowledge sharing between Norwegian incubator managers on the national level often happens. The interaction on these events plays an important role in forming the best practices of incubation in Norway. They are also important arenas as meeting-points for incubator managers and the staff of SIVA, where challenges and new possibilities within the national program can be discussed in an informal setting, outside of the board of directors.

FIN, the association of innovation companies of Norway is a formalized network acting as an interest organization for Norwegian incubation operators. This network plays an important role as advocate toward the government in incubation issues, and in creating awareness of the importance of incubation, both towards industry, politicians and unions.

[14] SIVA has co-invested in innovation- and development companies in Norway together with more than one thousand partners.

Education
Incubation management is a relatively new profession in Norway. Even though recruiting management from central positions in the mother companies is an important asset, there has been a demand for professional input on business development.

SIVA has therefore developed and offer courses to the incubator management through NTNU[15]. The course "Incubation Management" is a course on master-level aimed to give input, share experiences between participants and to create a common national professional platform for incubation managers. The first courses have been delivered in 2011 and so far 75 managers and business developers from Norwegian incubators are registered on this course.

In addition to this SIVA invites all new managers for a "SIVA-day", which is a one-on-one crash course about SIVA and the incubator program. This has turned out to a good arena for establishing a mutual understanding of possibilities and demands, between SIVA and the incubator managers.

Evaluation
Every year the industrial incubators reports to SIVA on their production. They report on both new established companies and "company internal innovations", which are both new products in existing companies but also new ways to organize productions and operations. In this way we focus our evaluations on what creates new value for companies, not only on counting new companies or increase in employment.

Every year SIVA and the incubators will have development talks to evaluate the qualitative ides of the performance.

The combination of long-term funding, yearly evaluation and development talks has created a sense of economic security for the incubators at the same time that the incubators have continuous focus on their own production. In this way the Industrial Incubator Program provides the Norwegian industry with a tool to lessen the costs-risks associated with restructuring and creating new companies.

Concluding remarks:

To conclude, what are the most important lessons learned through operating the Industrial Incubator Program since 2004? In the following some of the key elements will be summed up.

The alignment process:
We have found that this is one of the most important elements in establishing industrial incubators because this is where the level of industrial commitment is identified. This phase has not until recently been implemented as part of the establishing of research incubators, but have now been so because of the experiences with the Industrial Incubator Program. Only in a few cases have we seen the necessity of terminating the project during or after the alignment process. One of these cases was when we discovered the local factory management did not have the needed level of commitment. This was done in spite of a strong will from the group executive management. Since the plant management is the nearest stakeholders, our consideration was that the lacking commitment on the relevant managerial level would

[15] The Norwegian University of Science and Technology

be a hindrance to the close links we need between the managements of the mother company and that of the incubator.

In addition to being an opportunity for us to do a critical mass-evaluation, testing the commitment of the mother company and the relevance for other stakeholders, this phase also is a maturing process for both SIVA and the other participants of the project.

As shown earlier some core elements have been important for SIVA to examine through the alignment process:

Funding: The level of private funding is a first test of industrial commitment. In other programs SIVA run, the operational funding is given on a yearly basis, but with options to receive funding up to five or ten years. We see that public money triggers private funding both as equity and operational funding. In the Industrial Incubator Program we have seen the importance of long term commitment when it comes to operational funding because this lowers the risk for the private partners to engage in the incubators, making it easier to commit the industry financially. This is the reason why we, when we engage in a new industrial incubator, set aside funding for a minimum of five years, making the funding less vulnerable for political implications. This does not mean that the incubators are secured public funding for the five-year period. We always have the possibility to withhold funding when incubators do not perform as required.

Ownership: Industrial commitment is also identified through the level of equity investment by the industry, but more important how the industry conducts their ownership, through holding positions as board directors.

The management of the incubators and its close links to the management of the mother company plays an important role for the incubators success.

The director of Aker Verdal did a bold move releasing two of the most central persons in his management group to establish the incubator at Verdal, but the direct access to the inner circles of the mother company and the thrust that was given gave the basis for the success of the incubator.

The access to ideas and expertise within the mother company in many ways is the life nerve of industrial incubation. Also management continuity is important. In cases where we have seen a large turnover of incubation managers we also see a quick dip in the incubators productivity.

The **competence** element is a many-fold input. It comprises of both the formal education and experience sharing provided through SIVAs network; the competence input from the mother company; but not at least the fact that industrial incubation is a tool for maintaining competence from the mother company locally when restructuring their operation.

In addition to this the close cooperation of the incubators with regional and national competence-providers is of importance providing cooperation with the most qualified researchers on the relevant topics.

Often larger industrial companies in Norway are located in less central areas, often acting as corner-stone companies. When these companies scale of some of their operation the alternative workplaces are located elsewhere and require that workers move out of the local community. So not only are the industrial incubators tools for using this freed competence to create the industry of tomorrow, it also contribute to keep highly skilled workers in the community.

Market access: A vital part of the industrial commitment materializes through the mother companies' assistance when it comes to market access. There is an expectation to the industrial actors to open up their own networks of customers and suppliers, and to act as first costumers themselves. This is important to speed up the development of incubatees by testing new products and services on demanding customers. It also creates a firs income for the new companies.

Stakeholders: Also leveraging the operation of the incubator with the commitment of other stakeholders as financial actors, knowledge and policymakers is important to secure the position of the incubator in the local environment, and access to the right competence and to sources of finance.

Continuous activities

Laying the ground for establishing industrial incubators through the alignment process is crucial, but still only part of the job. SIVA continues to work close together with the incubators both as owners and funders throughout the lifespan of the company. Three continuous activities has been described; Networking, education and evaluation. These are important because they assist in the work of always keeping the pressure up, focusing on production and professionalizing the operation of the incubators.

Networking and education supports the will to always be on top when it comes to best practices of incubation, and evaluations makes possible for both SIVA and the incubators to see how the incubators perform.

A last point worth mentioning is legitimacy. SIVA has had a close cooperation with Norwegian industry for more than four decades. This long term cooperation combined with the way SIVA conducts its active ownership has given SIVA legitimacy both with industrial owners and managers, unions, industrial interest groups and politicians.

Being close to the industry, and knowing where the shoe pinches has been very important when establishing the two way commitment that characterize the joint engagement in the Industrial Incubator Program.