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EVALUATION REPORT BY THE VINNVÄXT INTERNATIONAL REVIEW TEAM

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Evaluation report

The results from the Evaluation of VINNOVA's VINNVÄXT programme made by the International Review Team.

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1 Summary

The overall impression from this evaluation is that the three VINNVÄXT winners are performing well in general and that there is good potential for future growth from these initiatives. It is obvious that they all have their specific and different history and thereby have met different challenges and produced their own specific results so far.

In section 8 we give our feedback on the more specific issues that we believe the VINNVÄXT winners need to address in the future. However there is a general issue that needs to be addressed, with different measures for each region, as well as at the programme management level, and that issue is a further emphasis on **internationalisation**.

Citing the programme aim:

“To promote sustainable growth based on **international** competitiveness in regions, by steadily developing, or further developing, the innovation system’s functionality, dynamics and efficiency in functional regions to an **international** level.”

During the first three years the focus has been on building the platform on a regional basis, but the time has now come to shift focus and use those platforms as stepping-stones to enhanced international linkages.

Shifting to our impressions of the programme, it is the evaluation team’s firm conviction that the VINNVÄXT programme stands out as a world-class national programme. Elements that support this conclusion are:

- The long-term perspective of 10 years
- The use of competition as a project selection mechanism
- The overall openness to regional autonomy
- The process support offered to the projects
- The continuous bench-marking carried out which escalates VINNVÄXT’s ambitions
- The role that VINNOVA has taken as a dialogue partner

The evaluation team will not be able to give any “right” answers about what should be done in the future, but merely be able to raise issues that may be worth reflecting on. Some of them concern only the programme level but some also concerns the VINNVÄXT winners. The most important ones are as follows:

- VINNOVA may be even more proactive in identifying and cross-fertilising best practices.
- Involvement by local or regional public bodies in the projects will often be vital. VINNOVA can enlarge the agency's responsibility in identifying good practices regarding integration of local or regional government and other public bodies at a project level.
- VINNOVA has a role to play in avoiding regional lock-in situations in VINNVÄXT projects. VINNOVA's international network may help to establish cooperation concerning project management and business-to-business relations to be extended to operative cluster projects outside Sweden.
- A more clearly articulated research strategy as part of each regional project should probably be made "compulsory".

VINNOVA has so far decided not to differentiate the financial support between projects. This has probably been a wise decision. VINNOVA should nevertheless decide at what stage it may be relevant to start differentiating the support – to underline the expectation regarding performance.

Finally, the evaluation team wishes to turn to the more practical issues related to the running of the programme:

- The programme needs to establish common baseline data for each of the projects supported.
- The programme plan should be revised regularly, according to the insights gained during the last period. In addition, each of the projects should regularly revise its operative goals and indicators of success – according to the progress achieved and the expected future potential.

2 Background

In 2003 VINNOVA appointed the first three “winners” in its VINNVÄXT programme. As a part of the overall learning strategy for the programme a “mid-term” evaluation should be conducted after three years, by an international panel of experts.

According to the original programme document the aim of VINNOVA’s programme “VINNVÄXT – Regional growth through dynamic innovation systems” is:

- to promote sustainable growth based on international competitiveness in regions, by steadily developing, or further developing, the innovation system’s functionality, dynamics and efficiency in functional regions to an international level.

The programme presupposes the active participation of players in business, research organisations, politics and public administration.

In the same document VINNOVA also states that:

“Effects in the form of growth can only be expected after a relatively long time. For that reason the programme’s success must be tracked by measurements and indicators that describe the process, as well as structural and institutional changes regarded as vital preconditions for future growth.”

This has led to an evaluation strategy where the programme will be examined basically every third year. The expected progress of the regional ventures financed by VINNOVA is described as follows in the programme document:

“Objective 1 year

The ventures that VINNOVA chooses to support should in the short term be able to demonstrate that they have established effective management, control and coordination of the venture, that the key players in the system are involved and committed, that the necessary resources have been mobilised, that the programme is capable of influencing the priorities in the three Triple Helix spheres in ways that coordinate and mobilise resources for the objective of this specific venture, and that a process leading to actual development and regeneration has been established.

Objective 3 years

The ventures that VINNOVA chooses to support shall, after three years, over and above the short-term objectives, also show clear and positive changes in a number of indicators of innovative capacity and international competitiveness.

Objective 6 years

After six years, the 3-year objectives shall demonstrate further clear improvements. It should also be possible to perceive certain growth effects from the regional ventures.

Objective 12 years

Over the long term, the programme as a whole shall have made a manifest contribution to sustainable growth in the functional regions that VINNOVA has supported, and have established innovation systems with international competitiveness.

Furthermore, the regional ventures together with the support processes that are also being run in the scope of the programme, shall have manifestly contributed to national learning that has contributed to stimulating growth in other regions.”

The document also contains a list of what can be seen as important means and ends generated by the programme. Such as:

- The programme’s influence on other programmes, both our own and those of others
- Greater quality in regional ventures
- Greater collaboration among Triple Helix players
- Increased promotion of the region
- Increased access to R&D capacity in the growth area in these two ways:
 - Strengthening/promotion of the region’s own R&D capacity
 - International and/or national R&D capacity is made available and is used
- That companies have been stimulated to greater cooperation between themselves and with other key players
- That new companies have been attracted to the region
- That the creation of new businesses has increased in the growth area
- That the community representatives’ awareness of what they can contribute to achieve the vision has grown
- That incentives for regeneration have been created
- That action (not planning) is firmly established in the regional ventures

- That the scope and focus of the R&D expertise needed in an innovation environment at the international level have been identified
- That the programme has created favourable conditions for long-term and core training for a changed commercial policy in regions both at the policy level and the application level.
- To provide support and assistance towards growth-oriented development
- The programme will contribute to a more systemic view both in attitude and action.
- The programme should increase the motivation for a dialogue between new combinations of people in order to initiate unorthodox cooperation leading to regeneration and the more effective implementation of change.
- The programme's role at the "project level" is therefore to support the actual development of efficient innovation systems in defined functional regions. In these regions this also has an effect at the policy level, for example by influencing regional commercial policy, by changed development strategies for research and training organisations, and by new forms of cooperation between commerce, research/education and politics/public administration.
- At the programme level, the programme also contributes consciously towards developing skills in all regions and the creation of personal resources with operative skills to work with the leadership in regions and in the development of innovation systems.
- At the policy level, we should also mention the significance of:
 - Getting action (not planning) in the regional implementation (too many previous ventures have stopped at the planning stage).
 - Trying out and acquiring experience of this way of working ahead of future programmes, for example the new regional growth programme.

All these varying goals have served as a background and a framework for the evaluation panel during its work with reading, interviewing and analysing the material.

3 The objective of the three year “mid-term” evaluation

Following the evaluation strategy above, VINNOVA formulated the task for the evaluation panel as follows:

“The overall objective is to answer the question:

Have the winners had a good start, building the platform for future growth and international competitiveness in their respective growth area?

In more detail this means:

To investigate the performance of the three winner regions in relation to each of their action plans that were submitted as part of the contract signed between VINNOVA and each winner region.

To investigate the performance of the three winner regions in terms of developing regional governance and a platform for future growth.

To collect and analyse information on the outcomes and possible impact of the programme activities so far.

To make a recommendation to VINNOVA whether they should continue to support a winner region for another three years by signing a new contract. The evaluation team should also make suggestions for changes in the contracts as a means of increasing the efficiency of the programme activities and of strengthening aspects that have not received enough attention from the management of each winner region or by VINNOVA’s programme management.

To investigate the performance of the programme management at VINNOVA and suggest improvements.”

To achieve these objectives, VINNOVA rephrased the objective of the programme and also listed a number of “Specific issues to be evaluated” shown as bullet points below. Those correspond in many ways to the bullet points taken from the original programme document but formulated slightly differently.

Another way to express the objective of the VINNVÄXT programme is to say that the aim is to create internationally competitive regions by strengthening their attractiveness. Thus, in a 3-year perspective it is of great interest to study how the process of establishing and improving the “innovation infrastructure” has proceeded. Relevant aspects of such an infrastructure include:

- A well-known and common vision/strategic idea among key players
- The contribution of VINNVÄXT to developing a well-established (Triple Helix) management in the whole Regional Innovation System (knowledge spill-over)
- A sufficient (and growing) quantity of long-term resources allocated to the regional actions
- A research strategy focusing on key areas
- Well-functioning support systems for innovative and newly established business (e.g. Incubators) including access to venture capital
- The collaboration and impact on existing industry – the role of “locomotives”
- The “strategy for learning” – platforms or arenas to let different skills meet
- Strategies for “branding” the region and the profile
- Creation of new educational profiles, inflow of researchers and international students and other activities
- Investments made by national and international companies in the region
- The development of (new) Industry-Academia collaboration
- National and international linkages of strategic importance based on a good knowledge of competing knowledge clusters round the globe“

Since this was the “mission description” given to us by VINNOVA, this has been the focus of our investigation.

4 Description of the three VINNVÄXT initiatives under evaluation

In 2003 VINNOVA selected three winners after a call for proposals that attracted more than 150 applications:¹

- **Robotdalen (Robot Valley, www.robotdalen.se)** is a world-leading region in robotics. Universities, companies and regional government bodies in three local counties around Lake Mälaren in Sweden, have joined. They are cooperating to further develop a competitive region in the manufacture, research and development of robotics. Robotdalen focuses on different areas, industrial robotics, field robotics and health robotics. In each area a number of research and development projects are underway in a wide range of organisations such as local SMEs, hospitals, global companies like ABB, Volvo and Atlas Copco, as well as at Örebro University and Mälardalen University.
- **Innovation i Gränsland (Food Innovation at Interfaces, www.innovationigransland.se)** is a massive ten-year drive to strengthen the South of Sweden food industry by creating products with high added value. The aim of Food Innovation at Interfaces is to establish an open meeting place for ideas and fresh approaches, and to work actively for creating multi-disciplinary innovation projects at the interfaces among fields of knowledge. The programme, which is headed by the Skåne Food Innovation Network, is based on the participation of researchers, companies and organisations. One important, indeed fundamental, prerequisite is the existing networks for cooperation and their ability to develop cutting-edge skills for the food business.
- **Uppsala BIO (www.uppsalabio.se)** is an initiative from the local biotech industry, the two universities in Uppsala, and regional development bodies. Its aim is to contribute to the long-term growth of the biotech sector in the region. The Uppsala BIO Team draws on a background from the biotech industry, research and business development. A Steering Group comprising leading names from industry, academia and the region ensures that the Uppsala BIO initiative develops in line with the sector's needs and with other related ventures.

¹ Detailed information is available at the websites of each winning region: www.robotdalen.org, www.innovationigransland.se, www.uppsalabio.se.

5 How the evaluation was done

Due to the complex nature of innovation systems as well as the long-term and capability building character of the VINNVÄXT programme, VINNOVA decided to use a peer review method when conducting the mid term evaluations. The work has been done in four main steps:

- Planning meeting in October 2006
- Preparatory reading of written material
- Interviews at sites and report writing, November 20-24, 2006
- Feedback meeting at Arlanda, December 20

At the planning meeting in October, VINNOVA and the panel members agreed on a design where the panel during one week would do interviews at the location of the VINNVÄXT winners and at the end of the week write up a short report on impressions, comments and issues for improvements. At the end there was also a feedback meeting with the winners and VINNOVA's programme management, where the results were presented by the evaluation team. The representatives of the three regions also had a chance to sit down and discuss the "results" with a member of the team. The evaluation team will strongly emphasise that the focus of this evaluation has been learning, not control.

It is also important to remember that the programme management and the support activities to the regional partners were considered in the evaluation.

6 Presentation of the Evaluation team

The panel consisted of four members. The members of the panel provided a mix of complementary skills, representing for example experience from management of, or participation in, initiatives to promote regional innovation systems through collaboration between the business sector, academia and policy makers and also “system experts”, researchers or practitioners with documented experience of addressing and understanding processes and/or governance in Regional Innovation Systems.

Jørn Rangnes

Jørn Rangnes was Programme Manager for the first regional innovation programme in Norway – REGINN, which started in 1997. He has worked with innovation, regional development and inter-organisational learning for the last 25 years – in different roles and from different positions: as a researcher, as Assistant Director in the Norwegian Ministry for Regional Development, as a consultant and Managing Director of two different consultancy firms, and as Director for Strategic Initiatives in one of the Norwegian county councils.

Phil Cooke

Philip Cooke is University Research Professor in regional economic development, and founding Director (1993) of the Centre for Advanced Studies, University of Wales, Cardiff. In 2002 the UK Economic & Social Research Council awarded core-funded UK Research Centre status to CESAGen, a partnership initiative on the Social and Economic Analysis of Genomics in which Prof. Cooke’s Centre has ‘flagship project’ (Economics of Biotechnology Innovation) status. His research interests lie in studies of Biotechnology, Regional Innovation Systems, Knowledge Economies, Entrepreneurship, Clusters and Networks.

Alexander Eickelpasch

Alexander Eickelpasch is Senior Economist at the Deutsches Institut für Wirtschaftsforschung (DIW), Berlin. The main interest in recent time has been innovation policy, regional economics (esp. Eastern Germany) and service industries.

He was the Project Coordinator of the Evaluation of the Initiative “InnoRegio” on behalf of the German Ministry of Education and Research in Bonn.

Ifor Ffowcs-Williams

Ifor Ffowcs-Williams is CEO of Cluster Navigators Ltd. Ifor is also Chairman, Cluster Navigators Australia Pty Ltd. Cluster Navigators Ltd is a niche economic development consultancy, taking a cluster approach to the nurturing and upgrading of competitiveness agendas. Cluster Navigators support economic development agencies in developing the competitiveness of their regions.

Prior to establishing Cluster Navigators in 1997, Ifor was General Manager, Strategic Development Unit of Trade NZ. Under the umbrella theme of "Cooperating to Compete" Ifor introduced the Joint Action Group (JAG) and the Hard Business Network (HBN) Programmes and the New Zealand cluster development initiative.

7 A short description of written documentation used in evaluation

VINNOVA supplied the most relevant documents and reports necessary for the evaluation. Those were:

- a. A three-year report from each of the winners, describing achievements and activities for the first three-year period.
- b. The original plan of action that each region wrote as a part of the contract with VINNOVA. Each document described the goals, activities and milestones to be performed and delivered during the first 3-year period.
- c. The justifications from the Programme Committee for each winner, describing the main reasons why these regions were selected as winners in VINNVÄXT.
- d. VINNOVA's two reports (for years one and two) from the yearly follow-up interviews with process managers and representatives of the regional steering committees in each winning region.
- e. The original Programme Document for VINNVÄXT, describing the goals, strategies and operational measures in the programme.
- f. A report from Dan Sjögren at the Dahmén Institute about the process support activities that have been performed in order to strengthen the regional processes during the period.

8 The Results of the Evaluation

8.1 Comments on Robotics Valley (Robotdalen)

The initial project plan from 2003 read today inevitably gives the impression of a plan full of good intentions, but with a low level of specification when it comes to planned actions and activities. The main areas of actions and involvement are nevertheless pointed out, and strategies are to a certain degree defined. As an example the need for some limited but viable and fast results is expressed.

On this basis it is quite impressive to see what the Robotdalen initiative has achieved during the first three and a half years. The main priorities have been pursued, all with satisfactory degrees of success.

The organisation built around the Robotdalen project involves all the major players in the Triple Helix: a large number of companies of different size and skills, the two universities in the region – with relationships with relevant universities outside the core region, industrial associations, public bodies at both municipal and county level, and development agencies. The evaluation team met strongly committed representatives from all the different cooperative parties.

In the three core areas of industrial development – industrial robotics, field robotics and health robotics – a number of R&D projects have been initiated, most of them as cooperative efforts involving both private companies and academic institutions. The management team demonstrates that they are aware of the fact that these three areas presently are at quite different stages concerning technological sophistication, market size and structure etc. In more than a few of these R&D projects one seems to have been able to involve users, clients, potential costumers and needs definers. A number of highly focused technological projects will almost certainly also produce results and experience of a generic character. About 80 percent of the annual spending supports cooperative R&D projects.

Among the tangible results, 14 new products have been developed, and 12 new companies or new production in existing companies can be registered as effects of the Robotdalen initiative. Forty SMEs involved in the major project in the core area of industrial robotics have been supported in the struggle to lower the “robot threshold”, and will presumably robotise their production, with higher productivity and probability of survival as result.

The core area of innovation support through coaching and idea generation seems to have been put slightly in the shadow of the other priorities during

the initial phase of the Robotdalen initiative. A broader effort was nevertheless carried out in 2006. This effort produced 110 ideas, of which ten were considered interesting enough to be pursued as realistic business concepts.

The initial plan also presented an ambition concerning long-term recruitment to the robotics industry. So far, more than 2,000 children and young people have been reached through a number of activities initiated by Robotdalen: visits to universities, competitions in robot construction (The First Lego League), courses tailor-made for teachers, support for the development of a new senior high school, and university programmes in robotics.

Confronted with all these different efforts and results, the evaluation team could easily conclude that not only has the Robotdalen initiative pursued the initial ambitions and core areas defined back in 2003. It has also more than fulfilled the expectations regarding building a platform — in a broad sense — for “future growth and international competitiveness”.

Three final aspects or challenges for the Robotdalen project are worth mentioning. These aspects were not easily detectable in the initial plan and at the time when the plan was written, but have surfaced during the first three years and have been highlighted by the project management through specific actions:

- The total Robotdalen project involves a large number of players within a wide geographical area. Thus, the project is not easily manageable without any kind of geographically distributed representation. A “node-organisation” has been established as a response, with each “node manager” responsible for relations and local networks of players within different geographical parts of the project region.
- The geographical area of Robotdalen may at first sight seem to be too large to be covered by one — although multifaceted and complex — project. The management team’s response on this issue was that it was necessary for the project to include all parts of the present project area to ensure that the project is open to participants from all key parts of the value chain/cluster of robotics.
- While “branding” was a nearly non-existent concept in the initial project plan, the ambitions related to branding and profiling have been raised through the project period. An emerging communication strategy includes today a wide range of tasks, among which can be found running an effective website, distribution of regular press releases, production of articles and reports presenting the achievements of the project, etc. The evaluation team welcomes these initiatives, and sees them as very valuable supplements to the core activities of the project.

- Among the players within Robotdalen can also be found a limited number of large, globally competing companies with strong market positions and a unique skills base. Large, well-established companies can play vital roles in cluster initiatives – not least as powerful engines in development networks. But their multifaceted strength may also lead to dysfunctional dominance – from the project or the societal point of view. The evaluation team has set up a minor warning site for this issue. In the long term, it will be vital for the Robotdalen initiative to be able to bring other market-leading companies in robotics into the region, even if they may be perceived as a challenge to firms already located in Robotdalen.

8.2 Comments on Uppsala Bio

Based on the revision tour and the feedback meeting with representatives of Uppsala Bio, the following aspects of endorsement are worthwhile mentioning:

STUNS as an “economic booster organisation”

STUNS was founded in 1985 by the County Administration in the municipality of Uppsala, the Chamber of Commerce, the Uppsala University (UU) and the University of Agricultural Sciences (SLU). Thus STUNS is a good example of the idea of Triple Helix, where universities, the business sector and the public sector collaborate in order to strengthen regional innovativeness. STUNS functions as a well-established and accepted organisation which supports projects of public interest.

STUNS is responsible for the administration and the finances of “Uppsala BIO” and, as it is anchored in the regional innovation system, is an excellent precondition for boosting Uppsala Bio.

BIO-X ... a successful catalyst in bridging academic research and applications and for learning

One of the four spheres of activity in “Uppsala BIO” is called BIO-X. The aim is to bridge the gap between academia and the business sector. Normally, basic academic research ends with the publication of the research. Explorative research or product development in the business sector cannot use the results of their research immediately. BIO-X offers a platform for scientists and business people for active research projects and/or offers advice to researchers in commercialisation rather than in generating scientific results. Also, a small number of research projects are co-financed by BIO-X. One precondition is commercialising through local companies or start-ups.

“CAMDIA – Cancer marker diagnostics” as one of the three ongoing projects was presented to the group. It is a good example of the learning process of researchers. The project was initiated in 2004 in collaboration with Olink AB, a company based in Uppsala. It became evident that the aim of the project was much too broad and too much focused on scientific aims. In the course of time and with the support of BIO-X the researchers learned to focus their resources on realistic aims with the needs of the market.

One general problem is the question of intellectual property rights (IP). It was emphasised that academics retain their IP rights.

As viewed by the expert team, BIO-X is obviously a successful catalyst for bridging from academic research to applied research. The idea to act rather as a process leader than a project leader and to make scientists change their way of thinking on market orientation seems to be well realised. This impression was also confirmed by the members of the steering committee.

Value of UIC as a “virtual” incubator

The Uppsala Innovation Centre (UIC) functions as a “virtual” incubator. “Virtual” means that the companies do not have to be resident in the UIC building. Thus some companies which are located somewhere else in the region or outside (such as “Rotundus”) can also use UIC services (consulting, coaching, exchange of views etc.).

Success factors are in the view of Per Bengtsson (CEO):

- Each company has a business coach, a professional from another company who is experienced in running a company as well as the market in which the start-up is active. The business coaches are freelancers and paid per hour. Currently 50 business coaches are listed.
- UIC does not take ownership or risk of rent.
- There are clear and distinct mutual demands for the start-ups (e. g. they are asked to take part in five meetings, where their business aims are discussed).
- The contributions offered by UIC are not free of charge.

The members of the review panel think that the “virtual” aspects as well as the fact that the start-ups are offered very substantial support for forming a business are points which should be mentioned as success factors.

“Science is Magic” initiative

There are a lot of activities in order to improve the awareness and visibility of “Uppsala BIO” in the public, in the scientific and the business sector, in the region as well as internationally.

To the review panel some activities were in a way unique, as they focus on the public in the city of Uppsala in order to get the public interested in biotechnology and more generally in higher education and research. First, the “science is magic” activity, in which the companies and research institutes involved in the initiative presented themselves in the streets of Uppsala, second, the BIO-pub events.

The local authorities also seem to becoming more and more aware of “Uppsala BIO” and take into account that their investments and activities to improve the living conditions in Uppsala are also advantageous for the marketing of “Uppsala BIO”.

In addition, it should be mentioned that there are some promising activities in order to strengthen the international awareness. “Uppsala BIO” is partner in the Council of European Biotech Regions (CEBR) and presented on the INNOVA conference at Valencia in 2006.

Finally, there are some aspects for reflection which might stimulate the further development of Uppsala Bio:

Can ‘Diagnostics’ in it self provide a sustainable future?

The aim of “Uppsala BIO” is to contribute to the long-term growth of the life sciences sector in the region. In fact, this goal is much too broad and too vague and needs to be broken down into clear, attainable and measurable goals.

The fact that it took three years to make the vision much more concrete give some hints how difficult it must have been to find a goal that all the regional partners agreed with.

It may be true that “diagnostics” and “discovery methods and tools” are the strengths of the Uppsala region. On the other hand it is not quite clear if in the rather academically driven initiative there is a critical mass of strong and internationally competitive companies. One of the main results of the CIND investigation from 2004 was that the region is characterised by a large number of small and under-financed biotech companies. There is no global player in “drug discovery”. Thus it can be assumed that

some links of the “value chain”, especially those concerning commercialisation, are missing.

As discussed in the feedback meeting, in the next action plan 2007 – 2010 the “Uppsala BIO” initiative will continue to develop and specify what “Diagnostics” means.

Connection to Stockholm (Karolinska etc.) yet to be fully used

Taking into account the scientific and economic expertise in the greater area of Stockholm (including Uppsala and Strängnäs) it is surprising that the initiative is restricted only to the city of Uppsala. In the course of the discussion it became clear that there is no visible official collaboration between the regions, for reasons which do not seem rational. Nevertheless, at the level of concrete research projects (e.g. in CAMDIA) collaborations have already taken place for years.

In the feedback meeting it was mentioned that the council of the City of Stockholm asked “Uppsala BIO” for collaboration in the field of marketing of the whole region including Uppsala, Stockholm and Strängnäs (“BioTech Valley”) as one of the world leading regions in biotechnology. The idea is that “Uppsala BIO” takes the lead to put on the market the three regions.

Danger of acquired firms and star scientists relocating

The Uppsala region has undergone a rapid change in its economic development as one of the most important companies for the region as well as for “Uppsala BIO” – Pharmacia – was dismantled. This led to numerous financially weak start-ups and seasoned entrepreneurs. For the time being there is no lack of scientists – rather an oversupply.

In the long run there is a danger that scientists might leave the region when they have no possibility of getting a new job or of forming a company. To retain the regional knowledge base, the VINNVINN programme was established in order to give some time-limited financial support.

Danger of GE Healthcare dominance of the initiative

GE Healthcare is an international player in medical technology and part of the U.S.-based General Electric. Lars Hagel, director of GE Healthcare is the chairman of the steering group of “Uppsala BIO”. In general, the participation of strong local players is like a two-sided coin. On the one hand, there is a

danger that they use regional resources only for their own purposes and dominate the initiative. On the other hand, there are chances for the initiative to use the international expertise and ease the entry into the internal market.

When this issue was discussed at the feedback meeting it was emphasised that GE Healthcare is permanently competing internally with other companies of the Group. The fact that GE Healthcare is part of “Uppsala BIO” and has access to the scientific expertise of the region is seen as a strong advantage over the other competitors.

Veterinarians insufficiently connected

One goal of “Uppsala BIO” is to integrate the two universities in Uppsala into the initiative. Formally they are, as both of them are members of the steering committee. But the review team could not find any examples for the integration of the SLU on the operative level, i.e. at the level of research projects.

This issue was also discussed at the feedback meeting. It seems that a learning process across disciplines and faculties has started and that the disciplines of agriculture of the SLU will get more involved in the next action plan of “Uppsala BIO”.

Long-term, independent traditions may lead to “self-sufficiency” of academics

Uppsala University has a long tradition in research. For example, it is the home of some Nobel Laureates. The research included – to mention only some - the development of the ultracentrifuge (1926), research on serum proteins (1948) and the discovery of immunoglobulin E used in allergy diagnosis.

The review team had the impression that academia in Uppsala seems to be orientated too much towards their widely recognised successes in academic research. The point was raised that academia has to realise the rapid changes also in the scientific community.

Local SMEs unattractive for internationals as English is not a working language

Local SME may not be very attractive for students who come from abroad because English is not being used as a lingua franca. In the feedback meeting that point was not confirmed by the “Uppsala BIO” team.

8.3 Comments on Innovation at Interfaces (Innovation I Gränsland)

Sweden's Agro-food Biotechnology Cluster in Skåne

Some 50% of Sweden's agricultural output derives from its southernmost region of Skåne, centred on the port city of Malmö, the university city of Lund, and numerous smaller towns in the region. The Skåne Food Innovation Network stood behind the *Food Innovation at Interfaces* proposal. This association has been in existence since 1998 and represents about 33% of all food companies in the region. The two main categories of agro-food represented in the cluster are conventional foods, notably meat and fruit packaging and other food preparation, chilling, packaging and transportation companies, and of special food innovation interest, the *functional food* industry. The latter is represented by a whole panoply of research interests from Lund University and Lund Technical University (now merged), the IDEON science park, and social and natural science researchers ranging from management to nutrition and food technologies. The organic food sector, Europe's fastest growing, albeit from a low base, was excluded from the winning *Food Innovation at Interfaces* proposal.

The cases of the products Proviva, Oatly and *Mona Carota* illustrate the somewhat internally-focused perspective of the Skåne networking 'culture' highlighted by a neglect of common-sense traditional knowledge in the pursuit of scientific and technologically-driven agendas. They act as a neat supplement to the more quantitative data necessarily employed in accounting for the biotechnology platform worldwide today. The Skåne food cluster is not alone, as Table 1 testifies, but international linkages concerning research are only in their infancy.² They indicate the difficulties and setbacks experienced by researchers and businesses in trying to generate market activity, even in the relatively benign conditions of an increasingly health-conscious consumer market. That the functional foods industry remains relatively small is testimony to the obstacles that surround the evolution of innovative activity. It is also a relatively understudied field at this time.

² This is demonstrated by Coenen, L. (2006) *Faraway, So Close! The Changing Geographies of Regional Innovation*, Lund, Lund University Press

Table 1: Selected Agro-food Bioregions

Countries	Bioregion	Brand	Players*	%Ag-Bio	Market Focus
Canada	Saskatoon (Sk.)	Innovation Place	115	29	Canola, Flax
	Guelph (Ont.)	Agrifood Quality	41	49	Corn
USA	Connecticut	Bioscience Cluster	110	1	Corn, fruit
	Raleigh-Durham	Rsch.Triangle Park.	145	3	Corn, soybean
	St. Louis	BioBelt	1183	24	Corn, soybean
	San Diego	Biotech Beach	700	3	Forestry, fruit, veg.
Europe	Scotland	Innovation Triangle	428	2	Transgenics, potato
	Sweden	Food Innov. at Interfaces	60	25	Functional foods
	Fr-Ger-Switz.	BioValley	459	6	Cereals, cotton, livestock
	Clermont-Ferrand	Cereals Valley	44	10	Cereals
	Seinajöki, Finland	Foodwest	25	5	Diagnostics
	Netherlands	Food Valley	48	60	Food genomics
	Australia	Brisbane (QL.)	QBio	43	5
	Sydney (NSW)	BioHub	28	18	Livestock, cereal
	Melbourne (V)	Bio21	24	4	Plant/an.genomics
	Adelaide (SA)	NA	25	44	Wine, plant/an.gen.
	Perth (WA)	NA	27	20	Wheat, lupins

Source: Ryan & Philips (2004); Svensson-Henning (2003); Invest Skåne (2004); Tulkki et al., (2001); www.plant.wageningen; www.cereales-vallee.org/

*NB: Food producers; R&D institutes; raw materials & ingredients suppliers; packaging firms; industry institutes; government agencies; food organisations and associations.

In short the evaluation team found some aspects for endorsement from investigating Innovation I Gränsland. Those are:

- There are large companies present, but they do not dominate the activities going on. They seem to be able to interact with the research base in the region at a level they need.
- There is a strong focus on the potential growth markets in healthy (functional) foods. This means that if Innovation I Gränsland manages to successfully develop products and companies utilising the knowledge created in the region.
- The players showed great consciousness of future skills and knowledge needs. The supply of well-trained people is a basic requirement for growth. Innovation I Gränsland has initiated and participated in measures to improve the supply of well-educated and skilled people to both industry and research. There are technician training models available, even though they as yet seem to be a bit under-utilised. There is also a growing Ph.D. research programme in functional food technology that in time will provide both industry and the universities with research capacity.

The evaluation team also found some aspects for reflection:

- The Academia-biotechnology push is very pronounced in the case of Innovation I Gränsland. This tends to create a situation where the initiative gives the impression of being rather inwardly focused, not yet focusing enough on measures for research knowledge to reach out to the relevant industry. Besides what is said about the large companies above, there seems to be a gap between research and industry, which by the way not is unusual for the food-related industry. In many foodproducing companies the average level of education is rather low. Only a small percentage of firms have employees with higher education. This of course affects both the demand for research knowledge as well as the ability to utilise research knowledge.
- The Triple Helix seems rather unbalanced since the commitment and participation of the local authorities of the region is weak and still needs to be fully integrated. At first the impression was also that the level of committed companies were rather low but at the feedback meeting it was made clear that Innovation I Gränsland is well aware which companies it needs to address.
- The Exclusion of Organic Food Interests so far in the process despite its fast market growth and interaction with aspects of Science and Technology, e.g. breeding and genetic selection. At the feedback meeting the evaluation panel understood that this is under consideration in the work plan for future years. That is something we strongly support.
- So far there has been a rather slow opening out internationally. There have been activities in this field that are commendable, e.g. the International Food & Health Conference initiative that seems to have been quite successful, and making it a regular event is a tool for branding and the attractiveness for the region. The process managers also participated at the TCI conference in Canada and presented Innovation I Gränsland. Even so the general impression is that there is a need to intensify the future work with the strategy for internationalisation.
Connected to that is a need for better external branding. Being visible and showing the assets you have and that you build in a region is crucial to attracting people and companies.

8.4 Comments on the programme management and VINNOVA's role

It is a firm conviction within the evaluation team that the VINNVÄXT programme stands out as a world class national programme. Factors that support this conclusion are:

- The relatively long-term perspective during which support may be given to each of the chosen projects (10 years)

- The consistent, fair and thorough use of competition as a project selection mechanism
- The overall openness to regional autonomy when it comes to design of, and priorities within, each project
- The different forms of process support offered to the projects
- The continuous bench-marking carried out in relation to similar programme initiatives taken elsewhere, which inevitably escalates the ambitions of VINNVÄXT
- The essential role that VINNOVA has taken as a dialogue partner – in addition to and more strongly emphasised than the role of controller or auditor

The last point deserves a brief elaboration – mutual trust is vital to obtain an honest exchange of views, knowledge and experience between both individuals and organisations. Communications between controller and controlled tend however to be unbalanced and heavily influenced by tactics and semi-honesty. If the overall goal for communications between two parties is learning and self performance improvement, both parties should abdicate from any position or role that supports establishing a superior-subordinate relation. The impression held by the evaluation team is that VINNOVA – and the agency’s representatives fronting the VINNVÄXT programme – have had the courage to abstain from the role of superior, in exchange for a much more open and valuable dialogue with players at the project level.

Two positive side effects of the VINNVÄXT programme have also been noted:

- In Western countries, with a more or less clear functional division between the public and private sector, a general recognition of the need for public-private partnership is emerging. At a regional level each of the VINNVÄXT projects seems to function as a catalyst to leverage broader Triple Helix cooperation. Thus the projects may have a positive impact far beyond the specific cluster or industrial branch which is perceived as the prime beneficiary.
- The VINNVÄXT programme also tends to challenge the structure of the innovation support system in Sweden. Each of the regional (umbrella) projects supports highly focused and relevant R&D sub-projects which otherwise would have encountered great difficulties in finding public financial support. In this regard, the VINNVÄXT programme represents a necessary supplement to the other presently running innovation initiatives.

A complex and experimental programme like VINNVÄXT will always have a potential for improvements. On the other hand, the most important improvements will probably be defined through dialogue between players

on the programme and the project level respectively. Obviously, the evaluation team will not be able to give the “right” answers, but merely be able to raise issues that may be worth reflecting on. The most important ones are as follows:

- VINNOVA may – in general – be even more proactive in identifying and cross-fertilising best practices, and communicating such insights to the project leaders, both process leaders and the boards.
- Involvement by local or regional public bodies in the projects will often be vital. Large parts of the development potential may nevertheless be lost because the public sector is too narrowly or too weakly involved. Public involvement should normally be extended far beyond mere financial support. VINNOVA can enlarge the agency’s responsibility in identifying good practices regarding integration of local or regional government and other public bodies on project level.
- As a national agency, with its own professional network and at the same time access to relevant project experience both on the regional, the national and the international level, VINNOVA has a role to play to avoid regional lock-in situations in the VINNVÄXT projects. Cooperation between players from the supported projects has already laid the basis for the exchange of experience related to project management. Such cooperation may also be utilised for establishing business-to-business relations. VINNOVA’s international network may help such relations to be extended to operative cluster projects outside Sweden.
- A more clearly articulated research strategy as part of each regional project should probably be made “compulsory”. An explicit demand for such an element will not only benefit each single project strategically, but may also turn out to be very valuable input in the national debate about policies for R&D and higher education.
- VINNOVA has so far decided not to differentiate the financial support between projects. This has probably been a wise decision. The level of support has signalled high ambitions and enabled each of the winners to get a good start. VINNOVA should nevertheless decide at what stage it may be relevant to start differentiating the support – to underline the expectation regarding performance.

Finally, the evaluation team wishes to turn to the more practical issues related to the running of the programme:

- The programme needs to establish common baseline data for each of the projects supported, for instance including the industrial structure of the region, the importance of the industrial branch in focus, number of firms and employees, export revenues etc. A report formula may well be worked out, which can present a summary of this key data together with the project vision, aims, changes in direction, progress to date, performance indicators etc.

- On the revision and the robustness of text: the programme plan should be revised regularly, according to the insights gained during the last period (three years?). In addition, each of the projects should regularly revise their operative goals and indicators of success – according to the progress achieved and the expected future potential.

9 Some additional general reflections about the Cluster perspective being too narrow

By the feedback stage of the first evaluation of performance of this and the other two *VINNVÄXT* clusters, some interesting responses to lessons learned were absorbed and changes in the direction of the strategy of each were reported. For the Skåne *Food Innovation at Interfaces* initiative, as for *Uppsala Bio* and *Robot Valley*, there was a clear recognition that the cluster perspective had been too narrow and that, for the future, the leadership teams wished to broaden their perspective to recognise the reality that each was more involved with a platform of related industries than a specialised cluster.

All three realisations of the weakness of the cluster concept are interesting and worthy of summarisation at this point. VINNOVA expressly required a cluster approach from contestants in its cluster-building strategy. This encouraged proposals focusing on highly confined technical fields, such as the functional food products discussed in the Skåne case. But for the reasons discussed, these take lengthy periods of time to reach fruition, there is insufficient variety to enable risk-spreading if one line fails and, in the case of functional foods, markets are fragile because healthy food is a selling point but without scientific support.

Finally, and briefly, the kind of platform perspective evolved in Skåne through recognition that a politically inconvenient part of the regional customer base and the organics part of the regional food chain needed to be spotlighted to a greater extent in assisting the further construction of regional advantage was shared in different dimensions by the two other pioneer cluster building initiatives in Sweden. Robotdalen evolved its awareness that although a globally competitive lead manufacturer such as ABB headquartered in Västerås was an important anchor for the proposed cluster, the future lay in involving high-level engineering expertise in robotics alongside large firms in related industries like heavy earth-moving equipment from Örebro University and companies, with SME market-demand for new kinds of smaller, more flexible robots, for which they could act as a test-bed in and around Eskilstuna. This had become a more strongly-entrenched perspective on behalf of the firms and innovation intermediaries involved in this initiative as experience of the difficulties of cluster-building evolved in the first three years of the programme's existence. Similarly, *Uppsala Bio* had learnt that it was necessary to engage

with Stockholm's large firms like AstraZeneca and Pfizer, its therapeutic treatment and diagnostics DBFs, and world-famous medical research complex, the Karolinska Institutet. Already, it was asserted by the leadership team, the 'cluster' had come to be perceived as a broader regional platform of complementary expertise, also recognised as important by the Stockholm partners in what was evolving first into a possible joint-marketing venture combining the two geographically close but hitherto industrially and culturally distinctive, asymmetrically-scaled cities. The clustering approach thus performed a consciousness-raising service rather than a solution for intermediaries and key players that enabled them to perceive the need for a broader, more platform-based regional growth policy model in all three cases.

VINNOVA's publications

September 2007

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VINNOVA Analysis

VA 2007:

- 01 Nanoteknikens innovationssystem
- 02 Användningsdriven utveckling av IT i arbetslivet - Effektivvärdering av tjuugo års forskning och utveckling kring arbetslivets användning av IT. *For brief version in Swedish and English see VA 2007:03 and VA 2007:13*
- 03 Sammanfattning - Användningsdriven utveckling av IT i arbetslivet - Effektivvärdering av tjuugo års forskning och utveckling kring arbetslivets användning av IT. *Brief version of VA 2007:02, for brief version in English see VA 2007:13*
- 04 National and regional cluster profiles - Companies in biotechnology, pharmaceuticals and medical technology in Sweden 2004. *Only available as PDF. For Swedish version see VA 2005:02*
- 05 Nationella och regionala klusterprofiler - Företag inom fordonsindustrin i Sverige 2006
- 06 Behovsmotiverade forskningsprogram i sektoriella innovationssystem
- 07 Effekter av den svenske trafikksikkerhetsforakningen 1971-2004. *For brief version in Swedish and English see VA 2007:08 and VA 2007:09*
- 08 Sammanfattning - Effekter av den svenska trafikksikkerhetsforskningen 1971-2004. *Brief version of VA 2007:07, for brief version in English see VA 2007:09*
- 09 Summary - Effects of Swedish traffic safety research 1971-2004. *Brief version of VA 2007:10, for brief version in Swedish see VA 2007:07.*
- 10 Effects of Swedish traffic safety research 1971-2004. *For brief version in Swedish and English see VA 2007:08 and VA 2007:09*
- 11 Svenskt deltagande i sjätte ramprogrammet. *Only available as PDF*
- 12 The role of Industrial Research Institutes in the National Innovation System
- 13 Summary - User-driven development of IT in working life - Evaluating the effect of research and development on the use of information technology in working life. *Brief version of VA 2007:02, for brief version in Swedish see VA 2007:03*

VA 2006:

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- 02 Tillväxtgenvägen - affärsinnovation i svenska tjänsteföretag

VINNOVA Information

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- 02 MERA-programmet - Projektkatalog. *For English version see VI 2007:03*
- 03 The MERA-program - Projects. *For Swedish version see VI 2007:02*
- 04 DYNAMO 2 - Startkonferens & Projektbeskrivningar
- 05 IT för sjukvård i hemmet - Projektkatalog. *For English version see VI 2007:13*
- 06 VINNVÄXT - Ett program som sätter fart på Sverige! *For English version see VI 2007:09*
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- 08 Het forskning och innovationskraft - VINNOVA 2006. *For English version see VI 2007:10*
- 09 VINNVÄXT - A programme to get Sweden moving! *For Swedish version see VI 2007:06*
- 10 Red-hot research and innovation power - VINNOVA 2006. *For Swedish version see VI 2007:08*
- 11 Research and innovation for

sustainable growth. *For Swedish version see VI 2006:20*

- 12 Projektkatalog - Genusperspektiv på innovationssystem och jämställdhet. Forsknings- & utvecklingsprojekt för hållbar tillväxt
- 13 *Under production.* IT in Home Health Care. *For Swedish version see VI 2007:05*

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- 01 VINNOVA's verksamhet inom Transporter. *For English version see VI 2006:07*
- 02 Årsredovisning 2005
- 03 Paving the Road. For Transport Innovation and Research
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- 12 DYNAMO Arbetsgivarvringar för ökad rörlighet

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