ACCELERATION AGENDA FOR 2008 – 2011

SHIFTING UP INTO A HIGHER GEAR

Maastricht, September 2008

ACCELERATION AGENDA ADVISORY BOARD

ACCELERATION AGENDA FOR

CONTENTS

FOREWORD

Herman Vrehen
Chairman, Limburg Acceleration Agenda Advisory Board

Limburg's economy is changing. From a province with a rather one-sided focus on industrial production, Limburg is becoming a dynamic, innovative, and enterprising knowledge-based economy. This process of transformation is closely associated with the *Limburg Acceleration Agenda*, which sets out the province's economic strategy for the coming years. The knowledge-based economy that we have in mind involves three basic elements:

- a distinctive fabric of associated *"power cluster"*;
- a vigorous, resilient, and innovative *small and medium-sized enterprises sector (SMEs)*;
- a highly developed *knowledge infrastructure*.

The power clusters – Healthcare, Chematerials & Energy, and Agro & Food – will continue to be the foundation of the Limburg economy. They will guide the economic positioning and profiling of the province in the national and European context and contribute to achieving its international ambitions. Reinforcing these clusters requires far-reaching investment in knowledge and innovation with a view to developing and producing new products, processes, and services. One challenging consideration is that Limburg is the geographical heart of an exceptional Technological Top Region which is *by definition* a cross-border one, and that can be seen – both geographically and functionally – as an economic unit within a setting of cultural diversity.

The second foundation for the process of economic transformation is the province's vigorous, varied, and innovative sector of small and medium-sized enterprises (SMEs). An SME is an excellent "jobs generator", giving the economy such vital features as versatility in both quality and quantity, resilience, and the ability to cope with change. A lot of effort is therefore going into providing broad support for innovation in the SME sector. That support goes to both the front-runners and the followers – in fact any small or medium-sized enterprise that aims to innovate can count on our support. With that in mind, a generic SME innovation programme has been set up, one that also focuses on knowledge-intensive start-up companies, the businesses that will be the innovative SMEs of tomorrow, and perhaps even future multinationals.
One special point of attention is to match the SME sector with the power clusters. An SME that keys into the strongest sectors of the economy can profit not only from the rapid growth and the extensive knowledge and expertise of those sectors but can also provide input for those sectors itself. To encourage that process, targeted support will be provided according to the open-innovation method. This involves big companies and knowledge institutions sharing and developing knowledge and expertise with SMEs so as to jointly create new product-market combinations.

Attention also needs to be paid to the problem of business continuity. In the next few years, a lot of SMEs will be confronted by the need to pass on the business to a successor. The relatively rapid ageing and "dejuvenation" of our region may cause problems in that respect; targeted support is therefore necessary in this area too.

The third and final pillar supporting the transformation process is a well-developed, high-quality knowledge infrastructure. Top-class education and research form the basis for the present and future generations of knowledge workers. Whether the province of Limburg succeeds in developing an advanced knowledge-based economy depends entirely on its having a strong research infrastructure. Limburg has a lot to gain specifically in the area of publicly financed research and the associated infrastructure.

The Acceleration Agenda took effect in 2005 and looks ahead to 2012, so we are now about half-way along the road. It is therefore an appropriate moment to review our plans. The Acceleration Agenda for 2008–2011 presented in this document is the concrete product of that review. In contrast to the first Acceleration Agenda, we have decided this time to be much more focussed. The new Acceleration Agenda therefore targets not the clusters as such but selected priority areas – "engines of growth" – within the clusters. Basically, the underlying spirit of this new approach can be summarised as focus, ambition, and commitment. Those three concepts will really shift the economy into high gear!

A NEW ACCELERATION AGENDA

Henk Hoogervorst
Director, Limburg Acceleration Agenda Programme Office

The Annual Report for 2007 already announced a new Acceleration Agenda for the period from 2008 to 2011, one that would be much more focused. A restricted number of criteria have been used to carefully select the knowledge and technology areas in which Limburg can achieve a leading position on a European or global scale. The result is a limited number of priority areas within the power clusters identified in the first Acceleration Agenda. Those clusters will continue to be the foundation of the Limburg economy.

The Acceleration Agenda for 2008–2011 refers to these priority areas as “engines of growth”. But as section 1 explains, an engine of growth is more than merely a priority area. The Acceleration Agenda for 2008–2011 concentrates mainly on the four selected engines of growth and the specific preconditions. Taken together, the four engines of growth constitute our portfolio for the top economic and strategic projects to be implemented in the coming years.

The new Acceleration Agenda, which runs until 2012, assumes that there will be concentration on these four engines of growth. The advantage of such concentration is, for example, that it allows for targeted deployment of both financial and non-financial resources within a specific period of time. Development of the four clusters, together with the development of new clusters and engines of growth, will not cease in 2012, however. It is a continuous process that will continue long after that date.

INTRODUCTION

The awkward thing about opportunities is that you need to grasp them as and when they occur. If you don't, you may find yourself glumly watching as they pass you by – probably for good. You rarely get a second chance. There is in fact a good reason for this. In all areas where there is scarcity – including the economy – there is one hard and fast rule: what you don't take, somebody else will. If you fail to grasp an opportunity, somebody else will do so. That means that missed opportunities tend to become lost opportunities.

This document is about opportunities that we have identified and that we do not intend allowing just to pass us by. And it's about the urgency involved: there's good reason why this is an *Acceleration* Agenda. The successes achieved in recent years and the structural improvements in the economy should not blind us to the fact that we cannot allow ourselves to become complacent. If we don't keep working hard, we will miss out on a lot of opportunities.

That is all the more important because opportunities don't just fall into our collective lap. We – the cooperating entrepreneurs, knowledge institutions, and authorities of Limburg – have to a large extent created those opportunities for ourselves. In particular, a great deal has been invested in recent years in strengthening the regional knowledge-based economy. The previous version of the Acceleration Agenda played a crucial role in that process. A large number of investment projects received an additional boost. Networks were extended and co-operation was intensified.

All this produced tangible results. The total volume of investment exceeded expectations. Co-operation between knowledge institutions and businesses intensified. Innovation projects received a boost. Even though not every project went as well as had been hoped – how could they? – a large number of targets were achieved. We are therefore on the right track, although much still remains to be done and we cannot yet reap the fruits of all our efforts.

In fact, we are not yet even half-way along the road mapped out in the original Acceleration Agenda for 2005–2012. Three of the seven years have passed and we have had time to make progress. Nevertheless, even though we can look back with satisfaction, it is above all the period to come that requires our attention.

With a view to that period, the Acceleration Agenda urgently needs to be revised. There are two main reasons for this. One has to do with the dynamism of the process itself. When the first Acceleration Agenda appeared in October 2005, its authors realised that their ambitious programme would not be without results. The Acceleration Agenda Task Force gave dozens of presentations of the draft text to public authorities, industrial companies and service providers, knowledge institutions, and business intermediaries. In the light of those presentations, they realised that they were engaged in a process of creating genuine value. It became apparent that this was the kind of initiative that Limburg was waiting for. It was an initiative that entrepreneurs could really make use of – and they wanted to do so. No fewer than 400 companies and institutions visited the dozens of working breakfasts at which the plans were explained and discussed. Suggestions, additions, and proposals for changes were provided by a large number of entrepreneurs, administrators, and policymakers. The process was so dynamic that when the document, incorporating input from the region, was published in October 2005, it was emphasised that there could never be a "final" version of the Acceleration Agenda. That has turned out to be true. Change within complex systems is seldom linear. All the emphases of the first Acceleration Agenda, the choices made, the investments, and the flows of money, knowledge and expertise, and information that resulted all influenced one another, leading to evolution in the economic landscape. The relief of the "peaks in the delta" – at least some of them – is changing. For that reason alone, it has become necessary to revise the agenda.

In addition, we have become more ambitious in the course of time. The new provincial coalition agreement, for example, which takes the form of five policy programmes – each involving the Acceleration Agenda in its own way – have raised the bar to a very high level. The administrative climate is now ripe for shifting up into a higher gear, especially because the Minister of the Interior, Ms Ter Horst, recently expressed the government's view that Limburg and the surrounding Euroregion have enormous potential; she also promised support where national policy and regulations are concerned.[1] But the most important factor is of course that in the past few years industry and service providers – including knowledge and healthcare institutions – have become more ambitious. It is within this simultaneously demanding but promising context that the Acceleration Agenda Advisory Board considers it time to review the Agenda and shift up into a higher gear.

1 Horst, G. ter (2007b).

I
FOCUS AND INTEGRATION

To a significant extent, the acceleration pursued in this agenda will be achieved by focusing more intensively on development activities. What that actually means is that those activities will focus on four "engines of growth" and two "growth potentials" within three economic clusters:

Healthcare cluster

Engine of growth 1 **Top referral care**
Growth potential 1 **Toxicogenomics**
Growth potential 2 **High Field Brain Imaging**

Chematerials & Energy cluster

Engine of growth 2 **Solar energy systems**
Engine of growth 3 **Research & Business Campus**

Agro & Food cluster

Engine of growth 4 **Nutritional horticulture**

What is an engine of growth?

An engine of growth in the most literal sense is a driver of innovation and economic development: a large scale, long-term project or combination of projects relating to new knowledge within which one or more parties – businesses and/or institutions – combine their aims and not only reinforce their own market position but also provide opportunities for other businesses and organisations so that new economic activity and knowledge can be attracted and developed. An engine of growth combines:

- production and/or services (horticultural products, healthcare, biomaterials);
- knowledge generation and innovation;
- attraction of related innovative production and services (for example energy for greenhouses, imaging for hospitals, etc.).

The impact of all activities associated with an engine of growth is significant for the domestic product of Limburg. Engines of growth display above-average qualitative economic growth. A large-scale "campus" for knowledge-driven companies, laboratories, and advanced niche companies can provide an example. But so can all the various agribusinesses operating within the fruit and vegetable auctions system (ZON) in North Limburg. The establishment of a university in Maastricht is an excellent example from the past. These examples show, by the way, that the key thing is not simply to erect a building but to work long-term from that building and interactively with the surroundings towards economic and social development.

What is a growth potential?

In addition to the four engines of growth, this Acceleration Agenda identifies two *growth potentials*. A growth potential is in many ways similar to an engine of growth; the difference is that it is not yet so extensive, "ripe", or concrete. But that does not mean it is less important. The Acceleration Agenda Advisory Board in fact considers the two growth potentials identified here, both of which form part of the *Healthcare* cluster, to be extremely promising.

Unity in diversity

It is striking that engines of growth and growth potentials display a great deal of mutual cohesion and complementarity. Each of the parties active in the three clusters recognises how it fits into an overarching theme. In fact, that theme expresses how things hang together, in other words the connection between the clusters, the four engines of growth, and the two growth potentials. After all, whether the players are in the healthcare cluster or involved in materials, sustainable energy, or agribusiness, they are all innovators and they all work on healthcare or healthy food, they all work on or with "bio-based" materials and processes or on clean energy. Given this complementarity, the essence of this Acceleration Agenda can be summed up in a single sentence:

Healthy, sustainable, bio-based innovation at a European crossroads.

This theme will guide the long-term development of the Limburg economy. It challenges participants to reinforce their activities in that direction or to develop new activities in line with this theme. From the point of view of positioning and profiling, it can serve as the unifying flag and point of recognition for more specific information campaigns for the separate clusters, engines of growth, growth potentials, businesses, or institutions.
Limburg is at the crossroads of one of Europe's most knowledge-intensive and therefore promising cross-border regions. Viewed from a European perspective, the engines of growth form a unique combination, one that offers the prospect of continuously creating intelligent and challenging innovations that can ultimately form the basis for sustainable growth in line with economic, financial, and social trends, developments, and interests.

Practical details

The new Acceleration Agenda provides for a small number of enterprises and institutions to do much of the work of organising and coordinating, with clear arrangements being made with the Province. This approach reflects the realisation that it is the enterprises and institutions themselves - driven as they are by market economics and social considerations - that determine the dynamics of the economy.[2] Economic development and innovation can only arise from the bottom up, i.e. from enterprises themselves. The authorities can provide encouragement and facilities by creating favourable social and economic conditions in line with provincial policy programmes, specifically the *Innovation in Limburg* programme. Those conditions concern education, infrastructure, housing, culture, spatial planning and landscape, and high quality leisure facilities. But ultimately of course, it is the companies themselves that have to actually do the work.
One advantage of the chosen approach is that the Acceleration Agenda will not become overloaded with an ever-increasing number of projects, all of which would require monitoring and reporting. Instead, we are focusing on the strengths - the participants and the organisational capacity within the clusters - that can maintain long-term dynamism.
In this way, the Acceleration Agenda can also provide a basis for the concentrated deployment of public funding. Political discussion will also focus on the real concern - not on reports about dozens of different projects but clear and concentrated responsibility on the part of the provincial government for providing strong support for the main drivers of economic development, i.e. the engines of growth that we have already referred to.

[2] Hermans *et al*. (2007)

Integration

This focus on only four engines of growth may perhaps suggest that other sectors and economic initiatives are considered to be less important. That is only so to a very limited extent. Let us take the automotive industry as an example. That sector is very highly developed in the southeast of the Netherlands and is of great importance. However, the strength and know-how in this branch of industry is concentrated mainly around Eindhoven and Helmond. For performance materials, on the other hand, the main focus is in and around Geleen. For that reason, it is not the automotive industry but the Research & Business Campus in Geleen that has been identified as an engine of growth for Limburg.
It is in general very important for Limburg and the surrounding regions to recognise and acknowledge one another's strengths. That applies not only as regards southeast Brabant but also the economic activity in Germany - i.e. North Rhine-Westphalia - and Belgium. Such mutual recognition can ensure better utilisation of the innovative capacity of the whole Technological Top Region, leading to more targeted investment.
After all, many of the ambitions of strong businesses (industry and services, including healthcare) and knowledge institutions can far more effectively be achieved in collaboration with partners from that larger Technological Top Region, and above all under "no borders" conditions.

National government also recognises this, as became apparent from the response of the Minister of the Interior to the recommendations made by the Hermans Committee. This recognises the potential of the cross-border region made up of Limburg and the adjoining areas of Belgium and Germany, and assigns it experimental status.

At the end of 2007, the Meuse-Rhine Euroregion also approved a document setting out thematic priorities, with co-operation between knowledge institutions and economic players being a major theme. The far-advanced plans, some of which have already been implemented, for campuses for knowledge generation, knowledge application, and economic activity - the Research & Business campus at Chemelot (featuring a production site), the open campus at AVANTIS (with a focus on innovative therapies and solar energy systems), but also the large-scale plans of RWTH Aachen University for a campus full of economic activity with a major university at the core - are all initiatives that show that our region not only possesses a great deal of knowledge and expertise but that more and more is constantly being done with that knowledge and expertise . Firm agreements will ensure that we provide maximum support for one another, because these complementary developments demand a great deal of synergy.

Technological Top Region

Limburg lies at the centre of the Technological Top (TTR), i.e. the cross-border region roughly comprised within the ring of cities made up of Eindhoven, Nijmegen, Düsseldorf, Aachen, Eupen, Liège, and Leuven. Few European regions have such a large concentration of private and public knowledge institutions. The TTR cuts through no fewer than four Euroregions: Benelux Central Area, Rhine-Waal, Meuse-Rhine, and Rhine-Meuse-North. Within the TTR, North Limburg has natural economic connections with southeast Brabant (industry and agro & food) and with the Ruhr (agro & food). For South Limburg too - perhaps to an even greater extent - the future lies in cross-border cooperation. That is the conclusion of the Hermans Committee,[3] and it is also the conviction of the authorities, enterprises, and institutions of Limburg, as their actions show. The future of Limburg does indeed lie “over the border”.

[3] Hermans *et al*. (2007)

D = Direct relation
S = Supportive relation

II
HEALTHCARE CLUSTER

There are numerous interesting activities within Limburg at the interface between healthcare, biomedical technology, and the life sciences. Those activities account for a large number of jobs. The growing demand for high-quality healthcare, new residential/healthcare combinations, and healthy food will further increase job opportunities. Demographic changes will also play a role.
Limburg's population is ageing faster than in other parts of the country. Ageing increases the demand for healthcare, particularly chronic care. The care provided also needs to fit in more specifically with the demands of the individual client, i.e. it needs to be tailor-made care. Government policy is aimed at enabling elderly people to live independently and retain their privacy for as long as possible, regardless of any physical or psychological restrictions. Increased concern regarding healthy living - for example giving up smoking or getting more exercise - and healthy eating - less fat in one's food - is already producing new initiatives in the area of preventive care. One particular area that has become more urgent in recent years is preventing and treating overweight and obesity.

The more assertive consumers become and the greater the range of choice open to them due to competition, the more they will be open to care provided from abroad. Geographical borders, particularly in the Euroregion, will become less and less important for clients. A lot of attention is therefore being paid in Limburg to promoting cross-border cooperation, both in the field of clinical care and in biomedical-technological research.
The challenge for many healthcare providers in the coming decades will be to provide high-quality care at competitive prices. At the same time, the coming changes will demand additional innovation, new medical knowledge and expertise, and the introduction of new technologies. Limburg - even more than other regions - will be able to profit from ongoing and future innovation in the field of healthcare and biomedical technology.
A lot of preparatory and pioneering work has in fact been done in the province in recent years. Examples are the Centre for Translational Molecular Medicine set up by Maastricht University (UM), University Hospital Maastricht (azM), Philips, and Eindhoven University of Technology. This research centre has acquired the status of a national programme, with the present Maastricht UMC+ - a combination made up of the Faculty of Health, Medicine and Life Sciences and University Hospital Maastricht - forming a highly promising basis for further knowledge development and cooperation with business and industry. The aim of that cooperation will be to bring new and improved products onto the market. Another example of the innovative upscaling of knowledge and expertise is the Centre for Biomedical Materials at the Chemelot Research & Business Campus in Geleen.
Maastricht and its surroundings are developing into a dynamic centre for biomedical life science applications.

A variety of businesses and spin-offs are helping upscale biomedical products, for example at the BioPartner Centre Maastricht, which again includes a number of small participants, for example the Pharmacell cell cultivation facility and BiomedBooster, which assists the commercial spin-offs of knowledge institutions start up their business.

Maastricht UMC+ has identified four priority areas:
- cardiovascular diseases
- oncology
- chronic diseases
- mental healthcare

There has been major investment in new centres in these areas that combine research with clinical care, and a high international standard has been achieved. A collaboration agreement was arranged in 2004 with the University Hospital in Aachen (UKA) with a view to achieving a position in "top referral care". Top referral care is highly specialised care for patients who can basically not be referred any further.

Maastricht UMC+ and the UKA share know-how and facilities - buildings, equipment, etc. - across the Dutch-German border, something unique in Europe. Other care organisations such as Orbis Medical & Care Group in Sittard-Geleen and Proteion Homecare in North Limburg are also engaged in pioneering innovative developments.
All this forms the basis for engines of growth in which innovative top-class care is combined with the development of such things as biomedical materials, molecular medicines, and molecular devices. Targeted acquisition also offers the prospect of favourable financial returns, which can lead to investment in new research and new economic activity. The Innovation in Limburg programme will continue to foster a fruitful environment for these engines of growth.

ENGINE OF GROWTH 1: TOP REFERRAL CARE

Maastricht UMC+ aims to become an internationally recognised player in the area of top referral care. This expresses itself in a specific focus on cardiovascular diseases and the diagnosis and treatment of cancer, as well as chronic care. The main emphasis is on developing and providing innovative treatment methods for these conditions.

1.1 European Cardiovascular Centre

Maastricht UMC+ and the UKA in Aachen have plans for setting up a Cardiovascular Centre based at the Science and Business Park AVANTIS. The basis at the Maastricht end will consist of the Cardiovascular Centre and the Cardiovascular Research Institute Maastricht (CARIM), which jointly comprise a staff of about 450. Approximately the same number of staff will be involved in Aachen.
The Cardiovascular Centre at the Cleveland Clinic Foundation (Ohio, USA), with its worldwide reputation, is a shining example of what the Maastricht/Aachen research and treatment centre is meant to become: a facility providing the best possible surgical treatment, i.e. top referral care, for patients with cardiovascular diseases. At the same time, the Centre plays a leading role in research on new medical technologies, as well as the development and application of those technologies. April 2008 saw the signing of a letter of intent for collaboration between Philips, Maastricht UMC+, the UKA, and RWTH Aachen University. The intention is for the European Cardiovascular Centre (ECVC) to use advanced equipment to conduct research among risk-category patients. The aim will be to gain a better understanding of the initial stages of cardiovascular diseases. This will make it possible to develop and implement new methods of treatment and prevention.
The ECVC will also be established in a campus-style environment designed to generate new economic activity and to attract innovative enterprises that wish to carry out research on cardiovascular diseases and/or develop products or therapies and services.

As we have already seen, Maastricht UMC+ and the UKA in Aachen will set up the ECVC at AVANTIS, which is situated literally on the Dutch-German border. The Province intends promoting development of the AVANTIS campus and will do everything it can to maintain contacts and make arrangements - for example to harmonise regulations - with the Dutch national government in The Hague and the government of the German federal state of North Rhine-Westphalia.

Impact

Aims and opportunities
The European Cardiovascular Centre aims to build up an international reputation. A centre of excellence, a top centre for clinical treatment and research, will attract both scientists and patients from all over the world. A Eurore-

gional campus environment will give researchers, technical developers, and business professionals an excellent opportunity to share knowledge and expertise and to collaborate. The focus will be on biomedical applications of the life sciences for treating cardiovascular conditions.

Economic added value
Partly because of the campus-style environment, the economic spin-off may involve new economic activity in the area of cardiovascular diseases. A "care hotel" may also be set up. The ECVC will give Limburg the reputation of a top healthcare region, which will have a positive effect on the establishment of other enterprises.

Employment
New jobs will be created, both directly and indirectly, including for highly qualified staff who might otherwise wish to leave the region. At the moment, the collaboration arrangement between the Cardiovascular Centre, CARIM, and IMCAR (a partner institute in Aachen) involves about a thousand top-class jobs. Growth in the next few years is expected to be 75 direct and 150 indirect jobs.

Status

A business plan will be drawn up for the ECVC. Campus development is expected to start in 2009, and will involve gaining support by participating in the *Peaks in the Delta [Pieken in de Delta]* programme. *Peaks in the Delta* is the area-specific agenda of the Ministry of Economic Affairs. One of the programmes it includes is *Peaks in the Southeast of the Netherlands*, which aims to make this part of the country a leading European region for innovation and entrepreneurship by 2010.

Measures and roles

The Acceleration Agenda can promote the development of the ECVC by means of political support and by lobbying to remove obstacles to patient mobility. Other options will involve financial support for campus development and fundraising.

Schedule

Setting up the ECVC will be linked to the business plan already mentioned.

1.2 Diagnosis and treatment of cancer

The second main focus for Maastricht UMC+ is on the diagnosis and treatment of cancer according to a multidisciplinary approach. The intention is for the organisation to be on the lines of one of the "Comprehensive Cancer Centres" in the United States. These meet high standards for integrated cooperation between researchers and clinical carers.

An integral part of the setup will be a radiation therapy centre, the *Centre for Particle Therapy*, at the AVANTIS cross-border business park. This will involve cooperation between Maastricht UMC+, the MAASTRO Clinic, the UKA, and RWTH Aachen University, with an investment of some 150 million euros.

The intention is for cancer patients to be treated using protons and ions. This advanced technology makes it possible to irradiate cancer cells very precisely without damaging the underlying healthy tissue. The Centre for Particle Therapy will also involve setting up a multi-parametric database and constant feedback and validation to a large number of patients. The centre is expected to be able to treat some 1500 patients annually, from Germany, Belgium, and the Netherlands. It will also cooperate with other leading cancer centres in the Netherlands and elsewhere.
The software for the radiation therapy has already been developed and a commercial spin-off has been set up in this connection. The oncological imaging system at Maastricht UMC+ will also operate as a test centre for PACS software (Picture Archiving and Communication Systems).
The existing cooperation with producers of medical technology shows that companies are very interested in research in an environment in which patients are examined and receive radiation therapy. Pharmaceutical companies and producers of contrast media are also interested. Depending on how the Centre for Particle Therapy develops, there will therefore also be an emphasis on arranging commercial contacts and creating new products.

Impact

Aims and opportunities
Maastricht-Aachen and the surrounding area present themselves as a centre of excellence in the field of multidisciplinary oncological care, employee training, the development of medical technology for diagnosis and therapy, and the design of software and pharmaceutical innovations for cancer patients. The developments in the area of cardiovascular diseases will set an example.
The catchment area for MAASTRO comprises 850,000 people, 50% of whom are older than 45. In most cases, cancer is only diagnosed when the patient is middle-aged or elderly.
Complementary research partners such as the technical universities in Aachen and Eindhoven and the Jülich research centre can give an additional innovative boost to the diagnosis and treatment of cancer.

Economic added value
The top-quality expertise in the area of oncological diagnosis and treatment not only brings in a large number of patients but also new economic activity in the form of

suppliers and product developers. In that respect, the Cardiovascular Campus can set an example.

Employment
Setting up the Particle Therapy Centre will generate some 90 fulltime jobs.

Measures and roles
The Acceleration Agenda can promote development by means of political support and lobbying with the aim of making it easier for foreign patients to undergo treatment here. It can also help find investors and provide financial support for projects that are necessary to develop the centre.

1.3 Chronic care

The Centre for Integrated Rehabilitation of Organ Failure (CIRO) in Hornerheide is part of the Proteion healthcare organisation. It works closely with Maastricht UMC+'s Chronic Diseases Care Centre, offering patients with chronic lung problems treatment and care based on the latest scientific insights, from prevention to top referral care and palliative care. This is a unique centre, one which is attracting a great deal of European interest.
CIRO is associated with Innovative Medicines in Europe, one of the Joint Technology Initiatives (JTIs). JTIs are major European industrial research programmes and receive funding from the European Commission.
CIRO and its strategic partner Maastricht UMC+ also intend focussing on applied research and the treatment of other chronic conditions in addition to pulmonary and asthma complaints. The aim is to expand into a campus plus centre of expertise with close links to other disciplines, top centres and organisations in the field of chronic diseases, and companies specialising in such things as the life sciences. This can produce new approaches to care, nutrition, exercise, therapy, and treatment techniques. Businesses and other organisations will be encouraged to establish themselves at the campus in order to develop a niche or a broader range of products and services in the area of chronic care.

Impact

Aims and opportunities
Limburg is ageing rapidly and the number of elderly people in the province is increasing. This trend means that there will be an ever-greater number of people in the province suffering from chronic conditions such as diabetes and COPD, but also from conditions associated with cancer, cardiovascular diseases, obesity, and sleep disorders. All these people will need effective "evidence-based" treatment.
The Innovation Centre for Chronic Care and businesses and knowledge institutions associated with it can make a major contribution to developing new services and care concepts for chronic conditions. Public-private partnerships and economic activity on the campus can put the Innovation Centre on the map both nationally and in a European context.

Economic added value
The Innovation Centre for Chronic Care can open up the growing market by adopting a client-focussed approach within a modern working environment. The actual development of products and services will not of course take place solely in Limburg, but the economic spin-off for the province from patient care and a certain amount of output will be significant.

Employment
New jobs will be created, although just how many is as yet unknown.

Aim of engine of growth

An innovative rehabilitation centre, which joins with partners in providing integrated treatment for people with a chronic condition. The aim of treatment is to increase patients' autonomy and ability to manage for themselves, so that they can continue to participate fully in society.

Status

A business plan is being drawn up.

Measures and roles

The Acceleration Agenda can foster the development process by supporting components and/or partners of the new innovation centre.

Schedule

The schedule for development depends on approval of the business plan.

GROWTH POTENTIAL 1: TOXICOGENOMICS

The Netherlands Toxicogenomics Centre (NTC) was set up in 2004, with Maastricht University acting as the coordinator. The aim of the Centre is to utilise innovative genomics technologies to develop faster, more reliable and cheaper tests to determine the safety of chemical substances such as drugs, industrial chemicals, cosmetics, and nutritional ingredients. The use of toxicogenomics can contribute to a significant reduction in experiments on animals.
The NTC consists of a consortium of eight public research institutions and five businesses, most of them SMEs.
The Centre operates under the auspices of the National Genomic Initiative (NGI) and enjoys significant financial support in the form of grants from national (NGI, STW) and international (EU FP6) bodies. Funding has also been received on the basis of the Acceleration Agenda for the development of a screening facility for testing the carcinogenic properties of chemicals.
For the purposes of the NTC business plan, Cambridge HealthTech Associates (CHA) have evaluated the European private/public market for toxicogenomics research. Their analysis shows that the market will increase from an annual total of EUR 70 million in 2007 to EUR 235 million in 2012. The main market parties are pharmaceutical industries and REACH-related parties.[4] So that the NTC can successfully access this market, CHA recommended that the NTC partners should set up a spin-off company. The European Investment Bank - which has the specific aim of providing funds for private-public joint ventures - is prepared, under certain conditions, to invest EUR 25 million in such a spin-off company.
This development has now been reinforced by the arrival - under the terms of EU FP7 - of the Innovative Medicine Initiative (IMI), a collaborative venture involving the European Commission and the combined European pharmaceutical industries, with a project volume of EUR 2 billion. The pharmaceutical industries find themselves confronted by the fact that much new medication is abandoned at a late stage of development. In about a third of cases this is due to unforeseen toxic effects on humans being discovered (animal experiments sometimes indicate an inaccurate level of human safety). IMI therefore foresees the setting up of a European Centre for Drug Safety Research (ECDSR), which will develop improved toxicology tests on the basis of genomics technologies. To a large extent, the tests will not involve animals. The research programme will take ten years and require annual funding of EUR 165 million. It will be managed by a "core unit" with an annual budget of EUR 6.5 million. Consideration is naturally being given to the possibility of the proposed NTC spin-off company becoming a research partner within ECDSR, or itself forming the setting for the core unit. These options will be explored in the business plan.

[4] REACH is the abbreviation for Registration, Evaluation and Authorisation of Chemicals. It is an EU Regulation that has been phased in since 1 June 2007 with the intention of protecting people and the environment from the risks posed by chemicals.

GROWTH POTENTIAL 2: HIGH FIELD BRAIN IMAGING

Maastricht University, the Jülich Research Centre, and Siemens Medical Solutions are engaged in setting up the European Centre for High Field Imaging (ECHFI) at Maastricht University. The ECHFI will carry out basic and applied research on ultra-high field brain imaging. Maastricht will provide expertise in the field of image analysis from the Faculty of Psychology and Neurosciences.
The Jülich Research Centre will provide the complex expertise necessary for imaging, with Siemens delivering the most advanced human MRI scanners.

The ECHFI will be located in Maastricht's Randwijck district, opposite Biopartner. The new laboratory will comprise three separate functions. In the first place, there will be the experimental facilities, including the most advanced scanning equipment currently available (two very advanced MRI scanners for basic research and for use, for example, in diagnostics). There will also be premises for start-up companies in the field of neuro-business; these premises are referred to as the "neuro-partner incubator" (comparable to the Biopartner incubator). Finally, all the neuro-imaging expertise within Maastricht University, including the Marie Curie networks for young scientists and the MRI Siemens training centre for technicians and specialists will be housed in the new building.
As a leading international institute, the ECHFI is expected to have a major effect in attracting young knowledge workers to the region. It is expected to generate high-quality jobs for about 100 members of staff, PhD students, and technicians. Start-up companies are also expected to account for 150 jobs. Partly because of its close links with major innovative multinationals (Siemens) and with the biomedical expertise already present in the region, the ECHFI will be very attractive for students and guest researchers, and will generate new training facilities for MRI technicians and specialists.

III
CHEMATERIALS & ENERGY CLUSTER

Energy and materials are the basis of virtually everything humans produce. The Netherlands is getting very serious about saving energy and generating energy by sustainable means. The present government envisages 20% of the country's energy being sustainably produced by 2020. Environmental requirements, scarcity of raw materials, and consumer demand also mean that materials are increasingly the object of sustainability criteria.
Materials must display a whole range of specific qualities, certainly when they are used in "smart" products and applications. Moreover, when they are finished with they should not simply be dumped in landfills but should be recycled to produce new raw materials.

Sustainable energy-efficient production with respect for natural raw materials - which are often finite - is the major challenge facing industry. Production and process technology must be adapted to meet sustainability requirements, a shift that will frequently lead to entirely new production processes, technologies, and innovative energy sources. The production of energy and materials has therefore become a very knowledge-intensive matter. As a sustainable and infinite source of energy, solar energy is making rapid advances. Solar energy can be converted into heat (using solar boilers) or electricity (using solar cells) without any release of harmful emissions into the atmosphere. This technology can also bring about a truly revolutionary change in our dependence on polluting fossil fuels.

A great deal of money is now being poured into research into "smart" and efficient applications of solar energy. In California's Silicon Valley, the cradle of the ICT industry, but also in Taiwan, Korea, and Singapore, the big trend in recent years has been the provision of venture capital for solar energy applications.
In the Netherlands too, an increasing number of companies are entering the market for solar energy, and not without success. Pioneers such as Solland Solar, a solar cell producer based at AVANTIS, and Scheuten Solar (Venlo), a spin-off exploiting the glass expertise of Scheuten, expect to be jointly generating production turnover of more than a billion euros in Limburg within two or three years, and further increases are also expected. That is a major achievement when one considers that the "gross domestic product" of Limburg is EUR 30 billion.

Let us now move from solar energy to bio-based materials. "White biotechnology" is a type of sustainable chemistry and has become a speciality of DSM. White biotechnology usually starts with renewable agricultural raw materials, for example sugars or vegetable oils, and uses living cells and their enzymes to convert those raw materials into the required final result. This bioprocess is in many cases more effective than traditional processes because it consumes less water, raw materials or energy, or combines all these advantages. It also reduces the quantity of hazardous waste that needs to be disposed of and/or makes it more biodegradable.
The materials sciences and life sciences group in Geleen is energetically and innovatively pursuing the expansion of white biotechnology. In fact, the strategy in this respect has been tightened up. This is partly due to the successful policy of attracting businesses to the Chemelot Research & Business Campus. At Chemelot, it is DSM that is the biggest party involved in research and development.
For some time now, the site has been opened up to start-up companies, giving them access to relevant sources of knowledge and expertise, an infrastructure for R&D, and support services.
DSM decided some years ago to make material sciences and life sciences into new priority areas for business segments that meet the needs of society for such things as cleaner production, lighter and stronger materials, and more health food, but that also offer the prospect of healthy yields.
The Programme for Biomedical Materials (BMM), which has its head office at the Chemelot R&B Campus in Geleen, is concrete proof of the fruitful cooperation between Maastricht University and DSM in this field. A number of the Emerging Business Areas and Pre-Emerging Business Areas that DSM is currently examining are directly related to bio-based materials or interface with them in various ways.

SABIC produces materials and raw materials (bulk chemicals) at Chemelot without many specific properties for the end user. However, the production technology expertise involved is valuable to other companies. After all, one feature of the Chemelot R&B Campus is the presence of production facilities for upscaling the laboratory-tested production of new products. This aspect is also interesting - and will remain so - for DSM's activities in materials sciences and life sciences.
Where life sciences are concerned, DSM is piloting much of its R&D and production in Limburg. A related field such as white biotechnology therefore does not need to remain outside the scope of development plans for the R&B Campus. Up to now, plans for the R&B Campus have been relatively modest, but that is set to change.

ENGINE OF GROWTH 2: SOLAR ENERGY SYSTEMS

Based at the cross-border AVANTIS European Science and Business Park, Solland Solar is working on a functional link to the Chemelot site in Geleen. The company's management has therefore taken the initiative for designing and constructing *The Silicon Mine* (TSM), a silicon production facility at Chemelot; this is due to begin operating in 2010. Silicon is the basic material used in silicon solar cells. It will be possible to make use of the umbrella permit that is already in place for Chemelot so that TSM can start operations without too many delays due to the need to acquire the necessary permits.
Thanks to the presence of a catalyst such as Solland Solar, AVANTIS can become a European centre of expertise in the field of solar cells and the modules and systems based on them. A number of initiatives are being developed in collaboration with the Energy Research Centre of the Netherlands (ECN). One is the Solar Academy, an educational and training facility, to be set up with German partners, for operators, managers, and technicians. Solland's present research group consists of 25 people, but the aim is to increase that figure to 100 by 2010.

In North Limburg, a specialised campus for glass and energy technologies is taking shape. The initiator is Scheuten Solar, which intends establishing a factory at the campus to produce "thin-film" solar cells. These differ from traditional solar cells in that they are extremely thin and thus require less material.
The campus is meant to offer a challenging climate for companies that wish to profit from one another's closeness and know-how in the field of glass and energy technology. The R&D department of Scheuten Solar is in Venlo but at the moment it gets most of its knowledge and expertise input from German providers. Plans are for the Venlo department to expand to about 100 employees within two or three years.
Supplies of materials, machines, chemical products, and other aids to developing and producing solar cells will come from regional companies both large and small, for example DSM and Sabic. Scheuten's business network in North Rhine-Westphalia will help put the region on the map as international area of innovation.

Impact

Aims and opportunities
Photovoltaic solar cells convert energy from the sun into electricity without emitting carbon dioxide, and so without contributing to the greenhouse effect. For that reason alone, solar energy is better for the environment than using fossil fuels such as natural gas and coal. Solar energy can also be generated anywhere in the world, including in areas where there is no oil or gas.
At the moment, though, solar energy systems account for only one percent of all the energy produced worldwide. The constantly increasing demand for energy therefore means that there are enormous opportunities available to producers of solar power systems. The problem at the moment is that solar panels are relatively expensive; the Dutch government therefore has a grants programme to encourage people to install them. Production costs for solar power systems will fall by some 20% if the size of the market doubles. This will also make installing solar power systems more attractive for industry.

Economic added value
Solland Solar and Scheuten Solar expect to have a joint annual turnover of more than a billion euros within two or three years.

Strengthening market position
Expectations are that - if all the planned projects and initiatives are actually carried out - the engine of growth made up of solar energy systems can generate some 2000 new jobs in Limburg. At Solland Solar - the fastest-growing company in the whole country - the number of jobs will rise from the present 350 to 1000 in 2011. Scheuten Solar expects that it will eventually require more than 500 people for production of thin-film solar cells. The silicon factory will provide more than 400 jobs.

Aims for engine of growth

The aim for this engine of growth is twofold. In the first place, the idea is for Limburg to become the location for a complete supply chain for silicon-based solar cells, i.e. all the way from the production of the silicon itself via production of the cells to assembly and distribution of modules and mounting systems.
The second aim is for Solland's and Scheuten's research and production sites to make Limburg a leading centre of expertise for both silicon technology and thin-film technology. This will form an excellent basis for spin-off and start-up companies, allowing the technological component of this cluster to be reinforced even further.
Educational institutions such as Zuyd University, Fontys, and a number of Regional Education Centres (ROCs) can act as major suppliers of highly trained staff for all types of position.
This sector specifically involves such interesting pilot projects as a CO_2-free greenhouse, but a solar power station as a demonstration project can perhaps also offer excellent links to other engines of growth. Finally, the knowledge infrastructure for this cluster needs to be reinforced. It is extremely important to construct a high-quality R&D infrastructure for silicon-based solar cells and related applications.

Status

Development and implementation phase.

Measures and roles

The Province of Limburg, in association with the Limburg Development Company (LIOF), is investigating ways of making venture capital available for developing this cluster. Active support from central government, whatever form that may take, can also give a boost to this sector. The Province will press for such support. The action that is already being taken in neighbouring countries to promote promising sectors can act as an example.

Schedule

2008-2010

ENGINE OF GROWTH 3: RESEARCH & BUSINESS CAMPUS

Chemelot is a major player in Western Europe as regards investment in chemical, biological, and high-performance materials and activities. Chemelot comprises an Industrial Park and a Research & Business Campus. It is centrally located from a northwest-European perspective, and has an excellent infrastructure and access connections. Chemelot offers raw materials, utilities, facilities, and an innovative campus. Originating as an industrial site with DSM as the sole user, Chemelot is now becoming a multi-user site with an especially dynamic Industrial Park and Research & Business Campus. In the case of the Industrial Park, the synergy is primarily to be found in utilisation of the infrastructure, shared utilities, and integrated permits; in the case of the Research & Business campus the added value is in bringing together top knowledge workers from public and private organisations and creating a highly innovative environment for companies that work openly with one another (open innovation). In this way, Chemelot promotes not only new investment in research activities but also innovative start-ups and chemical installations. But Chemelot is more than just the sum of these parts. It is a “chemical innovation community” where people and companies share knowledge and expertise, working together creatively towards improved innovations and accelerated business growth.

The Province of Limburg, DSM, the municipality of Sittard-Geleen, and the unions concluded an agreement for the period from 2005 to 2007 with a view to further development of the Chemelot community. Besides setting up a number of infrastructure improvement projects, the main focus was on attracting new businesses. During that three-year period, 27 new companies were established at Chemelot, with a total of 325 direct jobs. Of those 27 companies, 18 are based at the campus and account for a total of 190 direct jobs.
The key to this successful development is mainly the co-operation between Chemelot’s Industrial Park and the Chemelot R&B Campus and the innovative programmes implemented by DSM at the campus. Start-up companies and SMEs can significantly increase their speed of innovation by working together and with a company like DSM. The secret is sharing knowledge and expertise and accessing the market via DSM’s global networks. The collaboration between DSM and Maastricht University has also greatly accelerated these developments. The tangible initial results have been the setting up of public-private co-operation programmes such as the Biomedical Materials Programme and the Maastricht Forensics Institute, both of which are based at the Chemelot R&B Campus.

The Acceleration Agenda for 2008-2011 has the ambitious aim of further upscaling and acceleration of this successful development at the Chemelot R&B Campus. DSM, Maastricht University, and the Province are discussing major investments - if possible with the aid of the Euro-

pean Investment Bank - to develop the R&B Campus in Geleen into an internationally renowned research location. Zuyd University, which has programmes in fields including nanotechnology, also intends intensifying its collaboration with the businesses at the R&B Campus.

With national and provincial support, Chemelot and Zuyd University will collaborate to promote new economic activity, to better coordinate education and industry, and to raise awareness of the possibilities offered by new materials. Such plans demand long-term commitment from all the parties involved. Setting up a public-private organisation to operate the campus is in line with the concept of open innovation. DSM, Maastricht University, and the Province of Limburg are currently working to design such an organisation.
Its unique character will, for one thing, be in the area on which the campus will focus, namely businesses and institutes that approach the subject of materials from the points of contact between chemistry and the other clusters in Limburg.
At the same time, the campus will also take account of similar clusters in adjoining Dutch and foreign regions; these include medical technology and life sciences, energy, high-tech systems, agro-food, automotive, and printing. These clusters in turn can enter into collaborative alliances with businesses at the campus. For DSM itself, this will fit in well with its chosen emphases on biomedical materials, specialty packaging, functional coatings, intermediates for pharmaceutical products, and white biotechnology.

As we have seen, the R&B Campus is a physical component of the Chemelot industrial complex, which holds an umbrella permit. This makes it much quicker and simpler to acquire any new permits. Waste disposal facilities are also available on the campus, as are buildings, roads, sports and other recreational facilities, company restaurants, and security and fire services.
Needless to say, simulation, engineering, and small-scale production will also require high-quality technical facilities and laboratories. DSM, Corus, and Philips have collaborated with FEI Company and the Telematica Institute to develop “virtual lab technology”. This gives businesses at the campus and in the region online access to advanced analytical facilities at DSM Resolve and other businesses and institutes.
There are also plans to establish a state-of-the-art, top-safety laboratory for use by third parties. Chemelot and Zuyd University are jointly undertaking the “High Chem & New Materials” project, a “walk-in laboratory” at the R&B Campus that can be used as a training centre and for professional research and development. It can be used by students and SMEs, for example, groups for whom hardly any such facilities are available. The CHEMaterials Campus project gives concrete form to the principle of open innovation. With that principle in mind, the campus is intended to become the European centre for the development of innovative materials and materials applications.
Finally, discussions are taking place regarding intellectual property rights and the conditions under which businesses and other organisations at the R&B Campus can make use of DSM patents, as well as expertise in the area of venture capital and business development.

At Chemelot R&B Campus, start-up companies can develop their ideas in accelerated form to arrive at an initial prototype and product by setting up in an incubator – to be created in the short term – in combination with the factors already referred to. Expanding companies can increase their turnover rapidly and up-scale business operations substantially by subsequently setting up in a Center for Open Chemical Innovation (COCI). The COCI concept offers vital facilities for this purpose, including premises, a fund, services, coaching and access to networks.

Impact

Opportunities and aims
The opportunities for the R&B Campus are primarily in the following fields:

- performance materials: biomedical materials, specialty packaging, functional coatings, automotive polymer-based systems, electrical & electronics polymer based systems;
- life sciences: intermediates for pharmaceuticals, intermediates for nutraceuticals, red biotechnology;
- white biotechnology.

The aim is for the R&B Campus to become one of the top three in Europe.

Economic added value
Particularly in the field of performance materials and coatings and intermediates for pharmaceuticals.

Employment
An increase from 1000 FTEs at present to more than 2000 FTEs (knowledge workers) after 2015.

Status

Development phase.

Measures and roles

A development company with a restricted number of shareholders will be set up to manage the campus. DSM and the Province of Limburg will in any case be among the shareholders.

Schedule

2008-2015

IV
AGRO & FOOD CLUSTER

North and Central Limburg have traditionally been regions of agriculture and horticulture. As part of a national trend, the importance of such agricultural sectors as livestock and arable farming (wheat, maize) is gradually declining. By contrast, however, there is a great deal of growth in nutritional horticulture (fruit and vegetables), and greenhouse production is now already a significant engine of growth.
With Eastern Brabant and the adjoining Lower Rhine Agribusiness Region in the German state of North Rhine-Westphalia, North Limburg forms part of the largest continuous horticultural area in Europe. In its Fifth National Policy Document on Spatial Planning, the Dutch government designated "Greenport Venlo" as a horticultural cluster of national importance (this includes the agrilogistics sector).
Greenport Venlo comprises the greenhouse horticulture complex running from Roermond to Nijmegen. It accounts for almost a quarter of the total yield of Dutch nutritional horticulture. The latest forecasts envisage an increase in greenhouse horticulture in Limburg from 920 hectares in 2008 to 1500 hectares in 2015.
Wageningen University and Research Centre (WUR) and Maastricht University - in particular the NUTRIM institute - are collaborating in the field of "healthy food". NUTRIM is researching the role of nutrition in the development, treatment, and prevention of chronic diseases such as cancer, obesity, and diabetes.

KnowHouse and the Healthy Food Innovation Centre (ICGV) aim to link the right knowledge providers to specific research questions posed by individual entrepreneurs or organisations. This will again boost regional innovation.
The region has a large number of institutions for preparatory secondary vocational education (VMBO), secondary vocational education (MBO), and higher vocational education (HBO). Maastricht University is also currently setting up the first two university masters degree programmes in Venlo.

East Brabant has many businesses active in food processing. One of the world's largest horticultural seed producers, Nunhems, is based in Central Limburg. Many of the region's market gardeners are involved in developing and testing new varieties. Two major auction centres, ZON and FloraHolland, form the link between the supply and demand for horticultural products. Teams of growers and pilot projects supported by scientists generate innovations, ranging from actual growing to packaging and promoting products. Industrial SMEs in the region act as suppliers.

Venlo is the main logistical centre along the route from Rotterdam/Antwerp to the Ruhr. That fact adds a unique dimension to a sector which - perhaps more than any other - requires advanced logistical support so as to deliver fresh products in time to the customer.
The fresh products sector in the Dutch part of the region already provides 30,000 jobs and a turnover of EUR 1 billion a year. The aim, however, is to double that turnover. That will be possible, but it will involve joining forces and taking advantage of market opportunities and the wishes of customers both at home and abroad.

The focus needs to be on cross-fertilisation between such areas as nutrition and health, energy-efficiency in horticulture, and agrilogistics. All those involved will need to invest so that this cross-border region can gain the reputation of being Europe's leading and most innovative horticultural area. "Greenport Venlo" will become "Greenport Food Garden of Europe".

ENGINE OF GROWTH 4: NUTRITIONAL HORTICULTURE

Greenport Venlo is the platform and showcase for a large number of activities, initiatives and collaborations.
The aim is for Greenport Venlo to become "Greenport Venlo, a flourishing region". This aim will become the guiding principle for future development. The trends and challenges for the primary sector and the fresh produce cluster are very varied.
The essential thing is to take account of trends and demands on the part of the market and the consumer as regards such aspects as healthy food, freshness, convenience, pleasure, and safety. The main focuses will be product innovation, internal product quality (the raw materials used), added value, processing, and marketing. Producers will need to respond to developments in the trade (for example the requirements of supermarkets) and logistics. Changes in the consumer's "point of use" - see, for example, the growing demand for ready-made meals and the trend towards dining out more frequently - will lead to changes in the trade and in logistical processes. The future market position will in part depend on quickly and cleverly keying into these developments.
Another significant factor is sustainability, involving such things as water consumption, efficient use of energy, and responsible use of minerals. The transition at which the sector aims will concentrate above all on developing CO_2-neutral greenhouses and energy-generating greenhouses (which will supply residual heat to local businesses and homes).

There will also need to be a focus on applications of new materials and on information technology. Technical innovations will provide opportunities for further computerisation, mechanisation, advanced process control, and precise management and control of production conditions. This will result in certified production, optimised cultivation, and traceable, guaranteed food-safe products.
Entrepreneurship in the sector needs to be further professionalised. Businesses are growing and there is increasing upscaling. Businesses are also becoming more complex to manage. This creates a dilemma because many market gardeners are basically practical people with green fingers. Modern entrepreneurship and running a sustainable business operation - whether that operation is big or small - demands new competencies.
Businesses will also need to learn how to respond to changes in the labour market, for example a major demand for workers as opposed to insufficient supply.
Efforts must be made to prevent other sectors attracting people who could otherwise work in horticulture, whether on the management side or in actual cultivation. The level of dependence on seasonal workers from abroad might otherwise become unsustainable.

Given all this, it is crucial to the development of the Greenport for major efforts to be made regarding recruitment, education, and training. It is therefore vital that the Greenport Academy expands to become a formal joint venture involving HAS, Fontys, Maastricht University, and WUR, so that the region can offer education and training at all levels, from hands-on cultivation to logistics and from personnel policy to product promotion.
KnowHouse and the Healthy Food Innovation Centre (ICGV) will see to an effective match within the "knowledge exchange" between the programmes offered by universities and other education institutions and the know-how required by businesses. This will increase the innovative capacity of these businesses.

Coordination between the various authorities will need to ensure that the "Klavertje 4" plans for area-specific development create the best possible conditions for innovation and economic activity. This applies not least to the "Innovation Tower" that is soon to be built at Greenpark Venlo. That building is intended to enable knowledge institutions and innovative companies to utilise opportunities at the interface between horticulture and energy, logistics, and technology. An incentive fund will be set up for projects with this kind of focus.

The Floriade horticultural exhibition in 2012 will take place at Greenpark Venlo and will be used as an opportunity for putting "Greenport Garden of Europe" on the map. Floriade will be an excellent opportunity to get stakeholders and SMEs interested in the region. They will be able to create spin-offs at Greenport Park.

There will be a special incentive programme for agrilogistics, focusing on innovative opportunities and solutions. Needless to say, account will also be taken of developments in the logistics sector in general, for example environmentally friendly transport and transport avoidance. Nevertheless, agrilogistics involves special requirements, for example because of the small-scale nature of many enterprises in the nutritional horticulture sector.
Key concepts in the future of agrilogistics will be clustering, connecting, and organising/coordinating. Where clustering is concerned, the accent will be on agribusiness parks. Connecting will involve optimising co-operation between water, road, and rail transport so as to create efficient and less environmentally detrimental methods of transport. Where organising/coordinating is concerned, the emphasis will be on expanding that role.
The prevailing situation will need to give enterprises the physical and virtual space that they need in order to do business. This will involve such things as careful zoning of activities, but also a modern infrastructure for data transfer and on-line communication.
For specific support to producers in the greenhouse horticulture sector, it will be possible to call on the Expertise Centre for Glass, which was set up by glass suppliers in 2005. The Centre plays a key role in education, training, and technical consultancy on topics specific to glass.

Projects will be implemented in the area of value creation for the agro & food sector. The projects that make up the programme are based on a document setting out priorities that was produced by the Greenport Venlo Entrepreneurs Initiative in 2006.[5] The main focus in that document is on the “Greenport Service Point” and the “Fresh Centres of Excellence”, which generate ideas for creating added value for horticultural products.

Impact

Aims and opportunities
Cooperation within the Greenport Venlo “knowledge exchange”. But also: a focus on international developments and on keying into such areas as nutrition and health, energy and horticulture, and agrilogistics. If all those with responsibility within the sector look for and arrange such connections - and are also prepared to invest money in them - there will be abundant opportunities for making Greenport Venlo into a real leader in the agribusiness sector. “Greenport Venlo” will become “Greenport Food Garden of Europe”.

Economic added value
The fresh products sector in the Dutch part of the region already provides 30,000 jobs and a turnover of EUR 1 billion a year. The aim is to make that figure EUR 2 billion.

Employment
Greenpark Venlo is expected to generate two to three thousand new jobs.

Status

Projects for Greenport Venlo are currently in the preparation phase. Construction of the “Innovation Tower” - as the indispensable core of Greenport - is about to commence. Major knowledge-intensive parties are currently joining up. The Agro & Food cluster is in full-scale development.

Measures and roles

The Province of Limburg plays an important role within Greenport Venlo. Area-specific development within Klavertje 4 is a spatial-planning task for the provincial authorities. The Province also views itself as the organiser/coordinator for the knowledge infrastructure. Bringing together knowledge-intensive parties may greatly accelerate developments at Greenport Venlo. Finally, the Province will play a role in implementing the Value Creation programme by lobbying other public authorities but also by providing financial support.

Schedule

The Agro & Food cluster will continue to develop, even after Floriade 2012.

[5] Greenport Venlo Entrepeneurs Initiative. (2006).

V
CRITICAL SUCCESS FACTORS

Engines of growth can only drive innovation and growth if the social and economic environment is in order. In this Acceleration Agenda, we will look at the most critical success factors. One of these is government that encourages and facilitates. The presence of an effective network of knowledge institutions is also crucial for a number of reasons. But by far the most important success factor is for the engines of growth to be embedded in a high-quality SME sector that is varied and innovative.

SMEs without boundaries: breeding ground and safety net

SMEs are the backbone of every economy. Within the economic landscape, they act as a breeding ground and safety net, as an incubator and reservoir. SMEs supply the seeds and building blocks from which major economic drivers, the engines of growth and the multinationals, can grow. When major companies and specific sectors find themselves in difficulty because of an unfavourable economic situation or because the market has shifted, it is SMEs that absorb and cope with the shock. Even though the relationship between an engine of growth and the regional SME sector may sometimes be only indirect, without that sector the engine cannot run. In fact, without the SME sector, the engine of growth cannot be developed in the first place.
The opposite is also true. Without engines of growth, without big companies, without multinational drivers, there can be no SME sector. The vitality of an economy is derived from the relief in the economic landscape. It is that relief that ensures dynamism, flows of goods, services and information, and thus the multiplier effect.
An Acceleration Agenda, even if it concentrates primarily on identifying and developing engines of growth, can therefore not ignore the need for innovation, resilience, and diversity in the SME sector. This is the reason for the major efforts that are going into innovation in the SME sector, the support for knowledge-intensive start-up companies, and the maintenance of existing SMEs. With this in view, a generic programme has been developed in cooperation with the SME sector to support SMEs in industry and services. Open innovation is a key concept in this regard. Knowledge-intensive start-up companies deserve to be supported because they are the source of innovation in the SME sector. Syntens and LIOF play a crucial role in this context.

Front-runners and followers

Support for the SME sector in this Acceleration Agenda focuses on the extent to which the sector itself can innovate and wishes to do so, if necessary in cooperation with big companies.
For the front-runners - SMEs that can innovate and want to do so - there are three schemes to provide advice or manpower (up to a maximum of EUR 30,000 and a 35% contribution), or which allow a company's new products (or those developed jointly with other companies) to be financed (up to a maximum of EUR 1,000,000 and a 45% contribution). These are incentive schemes which require a substantial contribution from the SME sector.
For the followers - the SMEs that want to innovate but that cannot tackle innovation systematically - a number of incentive schemes are available. These involve such things as "advice and knowledge cheques", and programmes for strategic innovation focusing on drawing up innovation agendas. There is also LIOF's Project I Zone, an "innovation zone" that brings together companies with a view to fostering the creation of new product-market combinations based on technological and social developments.
Deployment of this package of support measures is generic, in other words it is open to all sectors. The efforts of Syntens and LIOF will focus specifically on allowing industry and services to make use of these support schemes and where possible - for example in the case of the I zone - to link up with developments within the engines of growth as suppliers and co-developers. Generic support is also available for knowledge-intensive start-up companies and business transfers within the SME sector, promoted by such things as the special *SME TakeOver* programme.

Borders that just fade away?

The SMEs support package provided by LIOF and Syntens would therefore seem to be in order. However, the measures involved focus primarily on the "domestic" SME sector whereas the recommendations of the Hermans Committee (and the response to those ecommendations by the Minister of the Interior) specifically encourage concrete steps towards promoting cross-border entrepreneurship.
In that context, there is still a great deal of work to be done. At the moment, national borders still constitute barriers to such collaboration. Some examples:

- cross-border workers too often face negative consequences as regards their pension accrual;
- the level of child support that a family receives is determined by the country where the breadwinner works rather than where the family lives; this can lead to undesirable situations;
- a lack of harmonisation between VAT rates and systems can make it difficult for companies to establish themselves in the country they prefer;
- someone who wishes to set up a company or a one-man business in Belgium will find himself

confronted by a large number of administrative obligations (LIMOSA, E111);
- there is not enough reciprocal recognition of diplomas, certificates, etc. by the various countries.

These barriers cannot all be removed within the short term. In many cases, intervention by national government will be necessary, sometimes because countries need to conclude the necessary agreements at European level. But the way to start is to actually get these problems on the agenda.

Social and economic valorisation of knowledge

In positioning Limburg as a European Technological Top Region, the life sciences play a crucial role. That is not really surprising. After all, no other area of science is developing so rapidly. Countless breakthroughs have linked previously separate disciplines in a way that was inconceivable even just a short time ago. The impact of this on our way of living, and on our welfare and prosperity can hardly be overestimated. That is all the more so given that the breakthroughs are not limited just to basic research. That kind of research is naturally extremely important, but it is primarily the "valorisation" of research that gives rise to social and economic benefits. New methods of diagnosis and treatment in the fields of oncology, cell therapy, cardiovascular diseases, and the neurosciences contribute to our health and welfare. They can also contribute to our prosperity, at least if we succeed in retaining the economic activity associated with the life sciences for our region.

Triple helix

Knowledge institutions such as universities and colleges of further education are essential in this connection. They have long had a major influence on innovation processes but in the past that influence mainly concerned the initial phases of those processes, i.e. the generation of knowledge. To an increasing extent, however, knowledge institutions are becoming partners for the whole range of activities involved, from knowledge generation through knowledge transfer to knowledge exploitation. The linear innovation model is giving way to a "triple helix" model based on a creative spiral in which public knowledge institutions, business and industry, and government reinforce one another so as to contribute to capitalising knowledge in every phase (creation, diffusion, exploitation).
In many respects, therefore, knowledge institutions can play a crucial role in strengthening regional innovativeness. Research has shown that that is in fact the case; there is a clear relationship between the presence of (public) scientific knowledge institutions and the innovative output of a region. It has also been shown that the positive impact on a region's development is greater the more such centres of expertise themselves display entrepreneurship. In addition, university research within a region only has a positive effect on the region's innovation output if there is sufficient interaction between that research on the one hand and high-tech economic activity on the other. We are talking here not only about multinationals but also about a network of high-tech start-up companies. Their origin - as spin-offs from regional knowledge institutions or life sciences businesses - means that these start-up companies have strong ties with the region. They offer career prospects for highly qualified staff and thus help prevent a "brain drain".
The areas surrounding universities and colleges of further education can rightly expect a significant contribution to the development of the knowledge-based economy. Commercialising intellectual property (IP), promoting entrepreneurship (retaining students for the region), and developing knowledge-intensive spin-off companies based on university know-how are seen as the most important tools in this regard.

Fostering and retaining talent

The availability of enough knowledge workers is vital to achieving the innovation aims set out in this Acceleration Agenda. But the demographic trend constitutes a problem. Limburg is ageing faster and sooner than the other Dutch provinces and is also the first of them to be confronted by a fall in population. If we allow that trend to continue, we will have an acute shortage of knowledge workers. The influx of talented young people from other regions, countries, and continents - an influx largely due to the attractive nature of our knowledge institutions - will not, however, cover that shortage if we are unable to keep those people here. It is of course gratifying to see that our graduates are real "citizens of the world" and so well-qualified that they can find work anywhere. But it would be much more gratifying if those citizens of the world were to find themselves a world-class job here in Limburg! Up to now, though, the region has unfortunately been unable to ensure that they stay. Active programmes are necessary to "upgrade" the current workforce (social innovation), to attract knowledge workers from elsewhere, to improve the match between supply and demand for those knowledge workers, and to retain talented people in the region.

Social innovation

This brings us to the topic of social innovation. For the period from 2008 to 2011, the focus in that regard will be on fostering and retaining talent in the region and, where necessary, attracting knowledge workers from elsewhere (both nationally and internationally). Opportunities for personal and professional development within a Euroregional perspective will play an important role. Intensifying

student exchanges and encouraging people to study at top institutes within the Technological Top Region can make a contribution. It will also be vital to specifically promote this region so as to recruit knowledge workers internationally.
To ensure that social innovation is firmly anchored in the region, efforts will be made to set up a *Top Institute for Social Innovation* at Maastricht University. That institute will have not only a research and teaching function but also an interface function. The underlying idea will be not only to generate knowledge but also to implement sustainable socially innovative projects in close collaboration with government, business and industry, and other knowledge institutions.

Support from the authorities

Each of the engines of growth included in this Acceleration Agenda for 2008-2011 will require major investment over the coming years. The plans exist and so does the commitment. Our task is now to get down to work and systematically implement the plans. The various authorities involved - national government, the Province, and the municipalities - will play a major role.
Agreement has been reached between the Province of Limburg and the various parties involved in the engines of growth to set up a project team coordinated by a project manager. This will be given the funds and the mandate to implement the project according to the plans made.
The project managers will report to the management of the various organisations concerned and will be able to quickly deal with any problems that arise.
The Province will support and facilitate the creation of the engines of growth. The particular role of the Province will be defined for each engine. For their part, those responsible for each of the engines of growth will commit themselves to actual implementation.
As the link between the region and national government, the Province will draw up an agenda together with those responsible for the engines of growth, specifying what arrangements will need to be made with national government in the next few years in order to make this Acceleration Agenda a success. One significant point of concern involves the obstacles that impede cross-border co-operation and economic activity. A schedule will shortly be agreed with the Dutch government with a view to tackling this problem. The government can be expected to provide support in this regard. Not only has Limburg been promised that support in general terms, but providing it is very much in the interest of the country as a whole. After all, each of the engines of growth referred to in this Acceleration Agenda will have a major impact on the Dutch economy overall.

ACCELERATION AGENDA ADVISORY BOARD

The members of the Limburg Acceleration Agenda Advisory Board are:

Mr G. Boxhoorn (Solland Solar)
Mr G. Broos (Orbis)
Mr H. Hoogervorst (Limburg Acceleration Agenda Programme Office)
Mr B. Keulen (De Unie trade union)
Mr J. Lamkin (SBE)
Mr G. Peeters (University Hospital Maastricht)
Mr J. Ritzen (Maastricht University)
Mr J. Schneiders (DSM)
Mr J. Teelen
Mr J. Verhagen (LIOF)
Mr H. Vrehen (Province of Limburg), *chair*

Bibliography

Blind, K. & Grupp, H. (1999). *Interdependencies between the Science and Technology Infrastructure and Innovation Activities in German Regions: Empirical Findings and Policy Consequences*. Research Policy, vol. 28, pp. 451-468

Debackere, K. (2002). *Innovatiegedreven Regionale Ontwikkeling: de rol van kenniscentra*. In: Debackere, K. & De Bondt, R. (2002) Leuven Research & Development. Thirty years of breakthrough and innovation at an enterprising university

Derks, W., J. Hensgens & J. Nieuweboer (2003). *Bevolking Limburg 2004–2035*. Maastricht: ETIL. http://www.etil.nl

Derks, W., P. Hovens & L. Klinkers (2006). *Structurele bevolkingsdaling, een urgente nieuwe invalshoek voor beleidsmakers*. The Hague: Advisory Council for Transport, Public Works and Water Management/Council on Housing, Spatial Development and the Environment

EnergieTransitie Platform Duurzame Elektriciteitsvoorziening. (2007). *Naar een Duurzame Elektriciteitsvoorziening. Transitiepad fotovoltaïsche zonne-energie*. Utrecht: SenterNovem

Hermans, L. et al. (2007). *De toekomst van Limburg ligt over de grens*. Advisory Report by the Hermans Committee. Maastricht: Province of Limburg.

Horst, G. ter (2007a). *Binnenlandse bestuurskracht Europa*. Letter of 18 September 2007 from the Minister of the Interior and Kingdom Relations to the Lower House of Parliament. The Hague: Lower House, Session Year 2007–2008, 31 200 VII, no. 4, pp. 4–5

Horst, G. ter (2007b). *Reactie op het rapport van de commissie Hermans*. Letter of 6 November 2007 from the Minister of the Interior and Kingdom Relations to the Lower House of Parliament. The Hague: Lower House, Session Year 2007–2008

Innovation Platform (2006). *Kennisinvesteringsagenda 2006–2016*. The Hague: Innovation Platform.

Maastricht UMC+ (2007). *Focus en ketens. Onderzoek en topreferente zorg in Maastricht UMC+*. Maastricht: Maastricht UMC+.

Ministry of Economic Affairs (2004). *Pieken in de Delta. Gebiedsgerichte economische perspectieven*. The Hague: Ministry of Economic Affairs

Ministry of Economic Affairs (2006). *Pieken in Zuidoost-Nederland. Uitzicht op de top*. The Hague: Ministry of Economic Affairs

Greenport Venlo Private-Sector Initiative (2006). *Ambities in Fresh & Food*. Entrepreneurs' Report September 2006. Venlo: OGV

Porter, M. (1995). *The Competitive Advantage of Nations*. New York: The Free Press

Province of Limburg (2007). *Investeren en verbinden. Coalitieakkoord 2007–2011*. Maastricht: Provincial Executive

REA (2006). *Vergrijzing is een verborgen zegen*. Report by Council of Economic Advisers (REA) in the light of the Budget for 2007

Chemicals Management Group (2006). *Businessplan Sleutelgebied Chemie*. Leidschendam: Chemicals Management Group

Limburg Top Technological Region Management Group (2004). *Limburg, een toekomst met kennis*. Maastricht: Province of Limburg

Reichert, S. (2006). *The Rise of Knowledge Regions: Emerging Opportunities and Challenges for Universities*. Brussels: European University Association

Salter, J. & Martin, B. (2001). *The Economic Benefits of Publicly Funded Basic Research: a Critical Review*. Research Policy, vol. 30, pp. 509-532

Acceleration Agenda Steering Group/Programme Office (2007). *Jaarverslag 2006*. Maastricht: Province of Limburg

Acceleration Agenda Steering Group/Programme Office (2008). *Jaarverslag 2007*. Maastricht: Province of Limburg

Acceleration Agenda Taskforce (2005). *Versnellingsagenda 2005. Limburg op weg naar 2012*. Maastricht: Province of Limburg

Tindemans, P. (2004). *Een Innovatieregio EL(L)MA*. Den Haag: Global Knowledge Strategies & Partnerships

Maastricht University & Academic Hospital Maastricht. (2007). *Focus en ketens. Onderzoek en Topreferente Zorg in Maastricht UMC+*. Maastricht University & Academic Hospital Maastricht

Varga, A. (1998). *University Research and Regional Innovation*. Dordrecht: Kluwer Academic Publishers

About this publication

Published by the Limburg Acceleration Agenda organisation

Conceived by:

Limburg Acceleration Agenda Programme Office

Basic text:

Peter Tindemans

Edited by:

Derix*Hamerslag, Beek

Coordination and implementation:

Cindy Nieland-Cremers

Final editing:

Henk Hoogervorst

Photography:

Chemelot, Centre for Cardiovascular Diseases Maastricht UMC+/Studiopress, Greenport Venlo

Design:

Vermeulen/Total Identity, Landgraaf

Printing:

Van Hooren, Heerlen

Translation:

Balance Texts & Translations, Maastricht

The following people worked on this publication:

Raoul Bakkes
Gosse Boxhoorn
Guus Broos
Jan Cobbenhagen
Anouk Courage
Mat Daemen
Piet Daemen
Ermo Daniels
Harrie Deckers
Harrie Fekkers
Martin Fleuster
Ruud Geerlings
Leon Giesen
Ad Gordijn
Peter Hamerslag
Andrea Heide
Annemie Hermans
Henk Hoogervorst
Ilona Jahae
Michel Jacobs
Noud Janssen
Loes Klaasse
Bert Keulen
Jos Kleinjans
Loek Kusiak
Philippe Lambin
Jan Lamkin
Han Laumen
Frank van Lissum
Dries Lodewijks
Jan Maatjens
Cindy Macheels
Willem Mattens
Cindy Nieland
Ron Ogg
Tom Orval
Guy Peeters
Roger Peters
Bas Peusens
Jacqueline Pisters
Orlando de Ponti
André Postema
Roosmarije Reneman
Jo Ritzen
Frank Schaap
Jos Schneiders
Jan Smeelen
Jacques Teelen
Peter Tindemans
Jérôme Verhagen
Thomas Voncken
Herman Vrehen
Wim Weijnen
Pascalle Wetzels
Marcel Wijers
Bert de Wit
Emiel Wouters