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**Supporting the Contribution of Higher Education Institutions to
Regional Development**

Peer Review Report:

Twente in the Netherlands

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The views expressed are those of the authors and not necessarily those of the OECD or its
Member Countries.

This report is based on the review visit to the Twente Region in November-December 2005, the regional Self-Evaluation Report as well as other background material. As a result, the report is based on the situation up to that period. The preparation and completion of this report would not have been possible without the support of very many people and organisations. OECD/IMHE and the Peer Review Team for Twente wish to acknowledge the substantial contribution of the region, particularly through its Coordinator, the authors of the Self-Evaluation Report, and its Regional Steering Committee.

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PREFACE

This report has been written with three main readers in mind. The first, the higher education institutions and the representatives of the public, private and community sectors who are working together to enhance the development of the Twente region through various networks and platforms such as the Innovation Platform Twente. We hope that the report will help them in this partnership building process for the benefit of the development of the region. We believe much can be achieved in Twente with its entrepreneurialism and innovation agenda by enhancing the endogenous human capital potential of the region through focussed and collaborative action by higher education institutions.

Second, the report is intended to have interest, relevance and benefit to other regions in the country: to those in the regional development agencies and higher education institutions across the Netherlands as well as to the central government in the Hague, particularly the Ministry of Education, Culture and Science and the Ministry of Economic Affairs. We hope that the thoughts and recommendations here will be given consideration in policy and practice development to enhance regional development outcomes more broadly throughout the nation through the engagement of higher education institutions.

Third, the Organisation for Economic Co-operation and Development which commissioned the study, along with the region, "owns" this review. Their interest is in learning internationally about the role of higher education in regional development across regions in the Member States taking part in the IMHE project. Its aim is to reach a wider international readership, and to provide added value to regions and nations that are not directly involved with this project.

We have attempted to present this peer review evaluation report in a way that is useful with a minimum of assumptions about local knowledge. We refer to and have drawn upon the region's Self-Evaluation Report (SER) which is available on the OECD website.¹ We make no attempt to reproduce or summarise that work. Readers requiring more background data should refer to that study.

We were grateful for the generous hospitality given to the Peer Review Team (PRT) during its week long stay in the Twente region. The PRT were also impressed by the sense of moving forward in a spirit of cooperation that characterised those with whom we met in the region in an intensive review week at the end of November and early December 2005. High expectations were generated by the region's own capacity building process within the Innovation Platform Twente, which for the first time had brought together not only the higher education institutions but also the communities, government agencies, business and non-government groups in the region.

We have departed from the initial draft OECD reporting template only insofar as the particular characteristics of the region seemed to require this, but not so far as to make inter-regional comparison problematic.

¹ See www.oecd.org/edu/higher/regionaldevelopment.

ABBREVIATIONS AND ACRONYMS

AOC	Middle professional education institution in agriculture
AKI	Visual Arts and Design Academy
BERD	Business expenditure on R&D
BSP	Business and science park
BTC	Business Technology Centre
GERD	Gross expenditure on R&D
GDP	Gross domestic product
HBO-Raad	The Netherlands Association of Professional Education
HE	Higher education
HEA	Higher education association
HEI	Higher education institution
HOOP	National Higher Education Development Plan
HOT	Hoger Onderwijs Twente, Twente Higher Education Association (proposed by the Peer Review Team)
ICT	Information and communication technology
IDC	Industrial Design Centre
IKT	Industrial Circle Twente
IMHE	OECD Programme on Institutional Management in Higher Education
ITC	International Institute for Geo-Information Science and Earth Observation
KEB	Rural Enterprise Initiative
KvK	Chamber of Commerce (statutory organisation, holds register)
LinX	Regional platform linking schools, vocational education institutions, universities of professional education (5) & the University of Twente
MBO	Middle professional education (further education colleges)
MINEZ	Ministry of Economic Affairs
MOCV	Ministry of Education, Culture and Science
NOW	Dutch Science & Research Council
OECD	Organisation for Economic Co-operation and Development
OOM	Overijssel regional development agency (to 2003)
OOST NV	East Netherlands regional development agency (from 2003)
PRT	Peer Review Team
R&D	Research and development
REOP	The regional economic development plan of Twente
ROC	Middle professional education institution (broad curricula)
SER	Self-Evaluation Report
SME	Small & medium-sized enterprise
SWOT	Strengths, weaknesses, opportunities and threats
SWOT	Foundation for Scientific Education Twente (post-experience)
Techniekweken	Edith Stein project bringing science to infant scholars
TIO	Middle professional education institution in tourism and hospitality
TKT	Twente Technology Circle
TNO	Dutch national technology transfer agency
TOP	Temporary Entrepreneurs' Scheme
TSM	Twente School of Management
UPE	University of Professional Education
UT	University of Twente
Volksuniversiteiten	Institutions providing adult education extension programmes

1. INTRODUCTION

1.1 Evaluation context and approach

This review of the Twente region is part of a 14-region evaluation across eleven OECD countries and Brazil through an OECD/IMHE project entitled *Supporting the Contribution of Higher Education Institutions to Regional Development*.

The IMHE launched the project in spring 2004 as an initiative to mobilise higher education in support of regional development. The project involved:

(a) evaluating the current contribution of higher education to regional development and identifying the strengths, opportunities, weaknesses and threats to creating a stronger role for higher education institutions (HEIs) in contributing to better regional development outcomes;

(b) stimulating dialogue between HEIs and regional stakeholders;

(c) assisting with identification of roles and responsibilities of stakeholders;

(d) providing advice at a national policy level; and

(e) laying the foundations of an international network for further exchange of ideas and good practice.

The first stage in the review process involved each region undertaking a self-review of the contribution of higher education institutions to the region's development objectives. Participating regions have designated Regional Co-ordinators and Regional Steering Groups to oversee this process of self-evaluation, culminating in the preparation of an agreed Self-Evaluation Report (SER). It is hoped the Regional Steering Group in each region will continue its leadership work beyond the present project.

In the second stage of the review, an International Peer Review Team with two International Experts, one being the Lead Evaluator, as well as a National Expert and Team Co-ordinator, carry out a complimentary but independent review of the region and its HEIs in the context of the conclusions reached by the region itself through the SER.

The entire project is coordinated and led through project management at the OECD secretariat and a Project Task Group which is also charged with nominating the members of the Peer Review Teams. All reports will be published online on the OECD project website for the benefit of the participating regions and a wider audience. An international workshop to exchange individual regional experiences and a final OECD synthesis report, drawing on these experiences and a comprehensive review of the literature, will follow in 2007.

The focus of the IMHE project is on collaborative working between the higher education institutions and their regional partners. It seeks to establish an ongoing regional learning and capacity-building process.

Twente is the only Dutch region participating in this IMHE project. It is a region with a well founded international reputation for innovation and entrepreneurialism. The HEIs in Twente are at the

forefront of stimulating and partnering in the good practice initiatives that contribute to this reputation. This report seeks to find answers as to how the region and its HEIs can generate stronger outcomes from this approach to the region's human capital potential.

1.2 The conduct of the evaluation

Self-evaluation process and Self-Evaluation Report

The self-evaluation exercise of the Twente region was a project that was regionally initiated and coordinated within the Saxion University of Professional Education (Saxion UPE). Local funding for the project (EUR 250 000) was provided by the two biggest HEIs in the region (Saxion UPE and the University of Twente). There was no financial contribution from non-HEI regional stakeholders for the Twente evaluation project.

The process was supported by a Regional Steering Committee drawing on representatives of three higher education institutions, i.e. Saxion UPE, University of Twente, and Edith Stein, as well as local government in Enschede, the Netherlands Association of Professional Education (HBO-Raad), the regional Chamber of Commerce, and Industrial Circle Twente. The Committee was Enschede biased: thirteen non-Enschede municipalities in the region of Twente and the Province of Overijssel were not involved in the Steering Committee. The Steering Committee was chaired by Wim Boomkamp, a member of the Board of the Saxion UPE. The Committee discussed, monitored and approved the progress of the self-evaluation process, the structure and methodology of the evaluation, and finally endorsed the Self-Evaluation Report.

The review process coincided with the consolidation of the Innovation Platform Twente, established by the Province of Overijssel and Network City Twente in December 2004. The Innovation Platform involves representatives from industry, local government, and the major higher education institutions contributing to the development of the region.

The process of self-evaluation was carried out under the supervision of the Regional Coordinator who was supported by a working group of experts and a regional coordination team representing the higher education institutions in the region. The working group contributed to the process by interviewing 35 regional stakeholders from profit and non-profit sectors, many of them holding key positions in their organisations.

The Self-Evaluation Report was written by a group of writers, consisting of the faculty members of the Saxion UPE and the University of Twente. All higher education institutions contributed to the Self-Evaluation Report with information and comments to the text. Additional contributions came from the Innovation Platform Twente.

International peer review

The international Peer Review Team (PRT) was established in 2005. Professor Steve Garlick (Australia) was nominated the Lead Evaluator, Dr Paul Benneworth (United Kingdom) the International Expert, Dr Peter Vaessen (Netherlands) the Domestic Expert, and Jaana Puukka (OECD) the Team Co-ordinator.

The Lead Evaluator and the Team Coordinator visited Twente in September 2005 to agree on the procedures for the review with the region and to give feedback on the draft of the Self-Evaluation Report:

It was agreed that the Self-Evaluation Report should have hard evidence supporting the arguments put forward, a focus on the issues associated with the key regional question for Twente, and Higher Education Institutions' collective response to regional needs. The report should provide a single integrated regional response to OECD instead of a list of institution-specific responses to the questions in the guidelines. It was also agreed that different views of stakeholders and the views of the Steering Committee should be clearly articulated.

In October 2005 a revised draft of the Self-Evaluation Report was submitted to the Peer Review Team along with additional information such as the National Government's "Peaks in the Delta" report on its approach to regional economic development. The OECD review visit took place between 27 November and 2 December 2005. During the visit the Review Team received additional material about various initiatives being undertaken by the higher education institutions and other organisations in Twente.

The Peer Review Team met the Regional Steering Committee of the review, leadership of the Saxion UPE, University of Twente, Edith Stein, AKI, SWOT and ITC as well as national, provincial, regional and local government representatives, intermediaries, and representatives of key business and public sector agencies including primary and secondary education. Meetings with students were an important element of the review. The Team visited the cities of Enschede and Hengelo and met with a number of groups representing interests in these communities, including design and technology, health and technology, entrepreneurship, and social-cultural sectors. The meetings provided valuable insights that supplemented the written report. The Team was accompanied by the Regional Coordinator in all of its discussions.

The Peer Review Team commends the Regional Steering committee of the project for bringing the higher education institutions together for the first time to carry out a collective dialogue on regional matters of Twente. While the Self-Evaluation Report was a major effort led by the Saxion UPE we recommend that the region creates mechanisms to ensure that the learning process bringing together the higher education institutions and the regional stakeholders will not be a one-off activity but will continue and grow. We recommend that the OECD regional review undertaken in Twente be followed by a collaborative region-wide process led by the Innovation Platform Twente to build on the region's strengths, address its weaknesses, counter threats and exploit opportunities. To ensure the progress of shared efforts we recommend that the review be followed by closer cooperation between the region and its higher education institutions.

1.3 Twente – key features of the region

Twente is located on the eastern border of the Netherlands and is part of the Euregio, a trans-regional cooperation between the bordering areas of Germany and the Netherlands. It is a region with clear boundaries, distinct symbols, high levels of social capital, and a strong sense of importance of its industrial heritage. Half of the population of 0.6 million live in urban areas, predominantly in the three major cities of Enschede, Hengelo and Almelo.

Administratively, Twente is the eastern part of the Province of Overijssel, and while recognized by many both within and outside the region as a distinct Twente region of its own, it is not designated as such by the Netherlands Government. This void has been problematic, producing an acknowledged gulf around the roles of regional leadership and influencing the strength of the necessary links between local, regional, provincial and national agencies. In the past forty years Twente has not been able to mobilise a strong regional political will to produce a collective response to the economic problems in the region. Past efforts have failed because of internal conflicts, which have undermined local and national efforts to enforce regional co-operation. In effect, the key challenge for Twente remains

bringing together an effective decision making structure for the whole region, and addressing the problems of fragmentation, opacity and informality. One latest effort to overcome the leadership vacuum is the Innovation Platform Twente. Initially established between firms and HEIs it now involves local government which has led to an agreement between the traditionally antipathetic cities of Hengelo and Enschede.

Between 1955 and 1980, the region experienced very rapid de-industrialisation with the disappearance of 80% of the jobs in the textile industry. In the 1980s and 1990s, a regional knowledge economy emerged through a series of steps, with a science park and high-tech spin off companies. In the late 1990s, the bursting of the IT bubble brought along a number of business closures. Today, the Twente economy lags behind the national average on a number of performance measures. We shall discuss this further in Chapter 3.

There is a clear dependence by Twente on national growth. There remains weakness in the region's endogenous capacity to generate economic growth. Although the level of R&D expenditure per capita in the region clearly exceeds the national average, it remains concentrated on a small group of knowledge intensive firms. As a whole, the region suffers from low productivity within the existing business base which is predominantly SMEs with low levels of R&D investments, although R&D expenditure is higher than in comparable peripheral regions elsewhere.

Twente has a slightly higher level of entrepreneurship than the rest of the country as measured by the rate of business starts. Twente has a diverse set of higher and further education institutions. While they all articulate – to a greater or lesser extent – and there is a desire among them to implement regional engagement strategies, there is significant inter-institutional diversity in focus and emphasis. The apparent commitment and action towards innovation and entrepreneurship in the region does not yet appear to have been reflected in regional economic development parameters.

Understanding the reasons behind this represented an important area of inquiry for this review exercise. At the conclusion of its review, the Review Team saw no mechanisms for coordination between universities for engaging with projects of strategic regional interest, and ensuring stakeholders can hold the HEIs to account for their delivery of the regional mission. The Review Team saw the absence of a coherent regional approach to human capital realisation a significant limitation to extracting greater outcome from its innovation and entrepreneurship strategies.

Recently, Twente has gained national recognition as one of the five R&D hot spots in the country identified by the Ministry of Economic Affairs. Still, the major economic weaknesses – worklessness in particular among the young, brain drain, low skills, and uneven development – remain. The Review Team was keen to discover in particular how a strategy of stronger HEI engagement with the region might overcome the apparent incongruity of why key innovation and entrepreneurship strategies over the past decade within the region of Twente have not been translated into regional outcome parameters that are above national aggregates, and more importantly what needs to be done to turn this situation around.

1.4 The structure of this report

In the next chapter we set the scene of the Dutch higher education and regional policy arena. In Chapter Three we focus on Twente's socio-economic conditions and key challenges and propose a strategy and the implementation regime for a Twente Human Capital Plan. In Chapter Four we highlight the present role of higher education in regional innovation while Chapter Five has a focus on the contribution of teaching and learning to the labour market and skills. In Chapter Six we discuss the wider approaches to development such as the social, cultural and environmental agenda. Chapter

Seven considers the HEIs' capacity building for regional cooperation in Twente. In the final chapter we provide a summary of recommendations.

Our report draws on interviews carried out during a week-long site visit at the end of 2005, on the findings of the Twente Self-Evaluation Report, also using additional information provided to the Review Team. Any review represents a snapshot of an evolving process of development. This is particularly true in the case of Twente whose own partnership building process in innovation is bringing together the HEIs and regional stakeholders in a more systematic way.

2. THE NATIONAL POLICY CONTEXT FOR REGIONAL ENGAGEMENT OF HEIS IN THE NETHERLANDS

2.1 Higher education policy

The Netherlands has a binary system of higher education with research universities and universities of professional education (UPEs). While research universities are based on a Humboldtian model of an independent professoriat with their own research groups, and the capacity to award higher degrees (PhDs), UPEs provide professional education. The consolidation of the UPE sector has produced a small number of large colleges and a number of specialist institutions.

Beneath the UPE level lies the middle professional education (MBO) – a more practical education for technical occupations – which does not fall into the category of higher education. Given the perspective we take of Twente's need to take a whole-of-region approach to upgrade its human capital, this tier is also important although it is not directly reviewed in this study.

Policy for the higher education sector as a whole is set by the Ministry of Education, Culture and Science (MOCW) through the National Higher Educational Development Plan (HOOP).

Higher education is funded on the basis of a quantum per student adjusted for teaching costs by discipline; the quantum is higher for research universities than UPEs. Universities also receive separate funds for research which provide a substantial amount of their income. As a result of fiscal tightening since 2002 there is little financial flexibility in the HE sector to undertake innovative left field activities. Consequently, research universities and UPEs receive specific state subsidies for special development activities which cannot be met out of the standard budget. Research universities and UPEs also receive tuition fees from all students, although they represent a much more important source of income to UPEs (20%) than to research universities (5%).

A second stream of funding available to research universities only is through the research system, operated by the Dutch Research Council (NWO) which provides grant-based funding to university professors on the basis of applications judged on the basis of scientific excellence through peer and user review.

Both research universities and UPEs are free to generate third-stream funding, including winning subsidies for innovation offered by the Ministry of Economic Affairs (MINEZ), but also including industrial consultancy, charity-funded fundamental research (mainly medical), as well as partnership work and trading activities. Given that education is subject to fiscal stringency, and the fact that the MINEZ innovation funds are actually increasing in volume (paid for in part by windfall gains from rising oil prices), third strand income represents a highly significant component of flexible income allowing research universities and UPEs to pursue their own innovative activities.

In the Dutch higher education system a majority of students will have some kind of work-experience period in which general employability skills are developed as well as grounding and applying abstract concepts. Practical learning is weaker in research universities than in UPEs. The

underlying notion is that completion of one level should unlock the next level, so 1/7 of students in research universities have some level of UPE education.

Effort has been taken in aligning the Dutch HE system with the Bachelor/Masters principles set out in the Bologna declaration. Until recently, cross-over between the two sectors of HE was hindered by the cultural difference between research universities and UPEs. This has recently been addressed by various bridging programmes as well as the introduction of the *Lectoraten* programme, in which UPEs have been funded by the Ministry of Education, Culture and Science (MOCW) to appoint applied research professors. This aims to build a research culture within UPEs, increasing the problem-solving content of the student experience, and easing the transitional experience for students progressing from UPEs to research universities (and also vice versa). However, the national ministries have been criticised for their reliance on small-scale and meagrely funded projects to address what clearly remains a cultural gulf hindering progression between the two sectors.

2.2 Regional higher education policy in the Netherlands

The Dutch higher education legislation has a requirement for regional engagement but no major incentives, funding streams or monitoring of outcomes to support this requirement. There is no direct regional educational or scientific policy in the Netherlands established in the National Higher Education Plan (HOOP) in the sense of a differentiated or regionally sensitive policy to meet different regional needs. There are some thirty references to “regions” in HOOP, but what these establish is the generic importance of HEIs to their respective regional economies, and the need to make sure that they align their interests with regional stakeholders, thereby to maximise the overall regional benefit they provide.

However, there are some instruments developed by the Ministry of Education, Culture and Science (MOCW) that support regional missions. The response of the UPEs to the *Lectoraten* programme was largely to hire applied professors with relevancy to the local surroundings. These are small discretionary resources available for HEIs for regional activity. Some seed corn funding has also been provided for knowledge innovation in UPEs (EUR 20 million in total by 2007), and a further EUR 4 million has been made available for innovative projects in knowledge circulation. The main stakeholder for HEIs remains MOCW (we were told that in future MOCW is likely to consult with regional as well as sectoral stakeholders in evaluating the success of HEIs in regional engagement). HOOP creates an enabling environment for regional engagement without providing significant (differentiated) resources for capacity building.

The Peer Review Team encourages greater use of a focussed Lectoraten programme for UPEs in Twente where these facilitate greater engagement with the achievement of regional development outcomes.

The Ministry of Economic Affairs (MINEZ) is shaping regional policy for higher education, particularly around research application and third-stream (innovation) activities. MINEZ believe that a failure to innovate is seeing the Netherlands lose ground to competitor nations. The Dutch Government has placed a great deal of emphasis on meeting the Lisbon target of 3% GERD in GDP. The policy framework for innovation involves concentrating scarce resources on helping the most excellent research to be applied into innovation, and removing barriers to this commercialisation process. There are a range of instruments developed by MINEZ which provide subsidies for innovators, including in the university sector. The Twente region emerges as one of the “hotspots” to which innovation subsidies flow, almost entirely based on the performance of the University of Twente.

The Peer Review Team supports the idea of the Twente region being a national pilot for new initiatives that seek to link business and community development more strongly to the innovation commercialisation process in higher education. This would involve some joined-up government policy and programme delivery initiative, particularly between the MOCW and the MINEZ but also involving other agencies with societal and environmental responsibilities that impact regionally. The Peer Review Team were concerned at the gap between numbers of commercialised innovation spin-offs and the business and community development outcomes that result from this approach (e.g. jobs, investment and trade) in the region.

The Regional Directorate of MINEZ has developed a policy to strengthen the Dutch economy based on supporting pockets of economic excellence. This strategy, *Pieken in de Delta*, (hereafter *Pieken*) targets relatively limited economic development resources into key measures to strengthen the overall national economy. Each region was invited to develop its own regional strategy based on supporting excellence, and *Pieken* was drafted having considered these regional strategies. HEIs are important to *Pieken*, in particularly in the east and the north, where there are relatively few other innovation stimulating institutions demonstrating research excellence.

Figure 2.1 *Pieken in de Delta*, showing the role of the East as “Making use of knowledge concentrations”



Source: *Pieken in de Delta*

The Ministry of Education, Culture and Science and the Ministry of Economic Affairs do not have an explicit regionally-differentiated policy for higher education. Both acknowledge that HEIs can make contributions to their territories, and in some cases are doing so in a very impressive manner. However, the general framework is to seek to generalise this performance across all HEIs, which could potentially undermine the special nature of HEIs regional performance in regions such as Twente. It was also clear to the Peer Review Team that there is a need for a more joined up government approach to policy design and implementation in order to enhance the regional agenda. The Peer Review Team were also concerned that a narrow innovation commercialisation strategy would only be partially successful if it did not embrace the supporting influence of wider regional attributes of a social, cultural, environmental and economic nature in an integrated and strategic way. In this way the now traditional “triple helix” model, based on the research and innovation facilitation roles of industry, HE, and public sector cooperation, needs to focus more on the driver of regional growth – human capital (i.e. the enterprising ideas and actions of people in the region) – rather than focus entirely on a structural entity (institution or firm) in its approach.

Pieken is a national sectoral policy plan that is going to be delivered regionally.

The Peer Review Team believes that in order to facilitate the different regions of the Netherlands to unlock their potential there is a need to create a real vision, understanding, and appreciation for the diversity of Dutch regions within national government. To strengthen the regional contribution to national growth and make the government policies more regionally relevant and effective in engaging with diverse regional communities, the Review Team recommends that the government introduces discretionary funds to support HEIs’ regional engagement.

If the Dutch government wishes to be globally competitive, there is a need to develop regional innovation systems through mobilising all resources. The risk of a strong focus on solely clusters and academic excellence is that it not only reduces the sense of belonging of people in remote areas and in the fringes of the society, but will also enhance the likelihood of concentration and under-optimal use of resources in the periphery.

For the government to be able to introduce discretionary funds to support HEIs’ regional engagement instead of a series of one-off ad hoc programmes, the Peer Review Team recommends a creation of strong evaluation framework in Twente that can show progress on HEI contributions to regional outcomes and partnerships.

3. THE SOCIO-ECONOMIC CONDITION OF THE REGION OF TWENTE

3.1 Regional question – balancing the uneven development

Twente occupies a particular and interesting position within the Dutch economy. It is clearly peripheral, but neither as peripheral nor as problematic as the northern provinces of Drenthe, Friesland and Groningen. Although there are economic and social problems, recent positive developments in innovation and entrepreneurship suggest that Twente is creating a successful place for itself in the knowledge economy. This success has been characterised in a number of programmes and activities, such as the TOP programme, the Industrial Design Centre and attracting a number of flagship inwards investors. These successes all hinted that Twente is reinventing itself as a European “knowledge region”.

The critical question for Twente, and implicitly for the HEIs, is the extent to which these one-off successes in innovation and entrepreneurship are having a broader regional impact. The PRT is of the view that the region is currently running the risk of developing a strongly growing knowledge peak, in line with central policies, whilst ignoring the problems faced by more excluded communities and human capital in adjusting to the changed economic situation over the last three decades.

This is a problem for national policy as it relates to the competitive development of regions as well as it relates to the ongoing viability of the regional community as a whole. The PRT are keen that National Governments and regional stakeholders see the region as much more than a collection of “atomised firms and institutions” and that their policies and facilitating programme initiatives connote a broad spectrum of regional resource attributes that are all part of the viability and competitiveness equation in a changing global environment.

3.2 The socio-economic background of Twente

The current state of the Twente economy was strongly influenced by its economic history as an old industrial region. From the 1830s, a textile processing complex grew up across the urban areas, with Hengelo specialising in textiles machinery and other towns (Goor, Enschede, Almelo) in weaving and tailoring. This textiles agglomeration began a period of secular decline from the 1940s onwards, (80% jobs lost 1955-1980) although even as late as the 1960s, industrial analysts believed that the decline was not terminal. The machinery sector was more successful in revitalising itself in the post war period, and today accounts for around 10% of regional employment, compared with 1.5% for textiles today.

The legacy for this has been a strongly manufacturing-oriented economy, something further stimulated with the creation of a regional development agency, OOM, in 1975. OOM took as its initial focus the attraction of inwards investment, and achieved several notable successes with such companies as Polaroid, Cannondale and Timberland. By the 1990s, it was evident that manufacturing branch plants in mature sectors had limited life-spans, and indeed there was limited future in strategies predicated on attracting inward investment through cost advantages. At this time, OOM relocated from the provincial capital, Zwolle, to Enschede, because it wished to reorient its economic development

strategy towards high-technology development, and in particular to develop stronger links with its natural partner in this regard, the university.

There was significant progress in creating an Information & Communications Technology sector in the region in the late 1990s with the attraction of such companies as Ericsson R&D, Lucent, CMG Logica and the industry research centre the Telematics Research Centre, later Telematica. However, much of the gains in ICTs were lost with the bursting of the high-technology bubble in 2001.

Twente to this day remains a far more industrial (manufacturing) region than the rest of the Netherlands, and there has not been the development of a strong private knowledge-based service sector. In part this is because of the continued importance of manufacturing to the region, accounting for some 26% of employment (18% nationally), whilst business services account for only 15% employment (20% nationally). The poor development of business services is in part a function of the absence of strong headquarters functions in the region. Moreover, poor business service provision also acts as a drag on the wider economy. This means that the majority of knowledge-based services in Twente are in the public sector, in particular in higher education and the medical sector, but also in public administration (including planning, strategy and economic development).

Low skills, brain drain, and uneven development

The private sector in the region appears to be, to some extent, trapped in a low-skills equilibrium. In the absence of creative, knowledge-intensive sectors, firms are not attracted, and skilled personnel are encouraged to leave. Although it was not possible to gain precise figures during the review visit, many of the interviewees presented the impression that there was a strong brain drain from Twente to the west of the Netherlands which compounded these structural problems. The graduate unemployment rate in the region is greater than national aggregates in this area.

Although the Self-Evaluation Report notes that Twente is a relatively cohesive region in terms of having regional authorities, symbols and shared consciousness, there are a number of sharp fractures within the region, some of which reflect more general tensions at Dutch and European scales. Perhaps the most pronounced is the split between rural and urban municipalities; rural municipalities, politically and socially conservative, with low unemployment levels, have long resisted the development of regional institutions which could potentially channel their resources towards more high-unemployment, ethnically mixed problem urban areas.

There are also a number of multiply deprived and excluded communities within urban areas who have failed to benefit from the knowledge-based growth in the last twenty years. These communities are typically characterised by high proportions of non-native Dutch speakers, relatively low schooling, graduation and employment levels, low levels of environmental quality and higher levels of crime. Finally, there remains a split between the “peaks” of scientific and innovative excellence acknowledged by the Government and promoted by regional partners, and the majority of firms (and their employees) which have not yet realised their potential for innovation.

The Review Team believes that these disconnections within the region from the specialised and concentrated approach to HEI innovation and entrepreneurialism that has occurred significantly detract from the full outflow of benefits reaching all regional actors. The Review Team therefore suggests that the traditional triple helix model be modified to focus on the region’s human capital inputs and wider regional attributes of a supportive nature, rather than take a more exclusive entity-focussed approach to regional growth.

3.3 The higher education system in Twente

There are five HEIs in Twente, all providing education grounded in conceptual practises. One of those, the University of Twente (UT) is a scientific institution, undertaking research. The four remaining HEIs are at the higher professional education (UPE) level. Saxion is a large teaching institution covering a broad range of disciplines, with 18 000 students, formed from a merger of three smaller *Hogeschole*n, located in Enschede, Appeldoorn and Deventer. Edith Stein and AKI are highly specialised in primary education and art education respectively. There is also one international development education institution, the ITC, which specialises in geomatics research and education for developing countries.

MBO level education is delivered in Twente by the ROC (offering broad curricula) and the AOC (purely agricultural). There are also private institutions in Twente offering both higher education and middle higher courses, e.g. one limited to the field of tourism and hospitality (TIO).

While small, there is also some continuing education and lifelong learning provided by the Twente Foundation for Scientific Education (SWOT) and the Twente School of Management (TSM), both of which have roots to UT, and indeed still work closely with UT and Saxion in providing their courses.

The Open University for the Netherlands provide distance learning at the higher and higher professional levels, and their presence in Twente comes through Saxion hosting a regional study centre. There are also four *Volksuniversiteiten* in Twente which provide adult education extension programmes not always leading to formal qualifications.

The Peer Review Team, while it did not consult directly with the primary and secondary school system in Twente, are aware of the segmented nature of the Dutch education system, thereby making effective pathways to the HEIs in the region difficult. Facilitating greater connectivity across all elements of the education system will be something that will need to be addressed nationally to fully realise the region's human capital potential.

Research universities and UPEs are diverse institutions with distinctly different history, missions, and funding systems. In terms of regional engagement UPEs have closer links with the community. The Twente Self-Evaluation Report refers to the tension within the UT between national and international excellence in teaching and research and regional engagement. Academic excellence and regional engagement can be complementary activities, with the one reinforcing the other. There are numerous cases across OECD regions of world class departments which are imbedded in the region. Similarly, working with SMEs and the community from within UPEs can be based on internationally high standards in terms of business processes for knowledge transfer without there being a drift into second rate academic research.

Opportunities for progression between these various levels are an important element of the new Dutch HE system. *The Peer Review Team commends the University of Twente and Saxion for their close cooperation to ensure that there are well defined progression pathways between the institutions. This has mainly been helping with Saxion bachelor graduates progress to UT masters courses (1/7 of UT graduates have an UPE background), but more recently, consideration has been given to providing pathways for UT students into practical management courses in which UPE institutions specialise. The Peer Review Team further recommends that the HEIs give consideration to systematising the links and pathways between the HEIs and also between HEIs and lower level institutions. In this regard, the PRT recommends that the Dutch secondary school system work to maximise connections with HEIs for students in the Twente region.*

The *Lectoraten* programme has also been effectively taken up in the region: in Saxion, AKI and Edith Stein, the lecturers have been oriented towards meeting specific regional needs, promoting innovation (Saxion), increasing regional engagement (Edith Stein) and promoting arts enterprise (AKI). Initiatives like Fast Forward, while small in reach at present, offer a potential model to strengthen the connections between the HEIs and regional needs.

Against this dense institutional background, there are significant human capital problems in Twente in comparison with the national situation. There are a much higher proportion of middle professional workers, and a lower percentage of university educated workers in Twente in comparison with the national average. This has translated into higher levels of unemployment, and lower levels of productivity than the national average. In particular, youth unemployment in Twente is a serious problem for the region, as is the existence of pockets of urban unemployment, particularly in the three main cities of Almelo, Enschede and Hengelo. This suggests that Twente suffers from a number of structural human capital barriers which the universities could potentially play a role in addressing. The most significant is that successful higher education is not creating a demonstration effect and encouraging greater participation in education at lower levels, particularly amongst excluded communities.

The Peer Review Team recommends that the region and its HEIs – as a matter of urgency – address the widening participation issue through raising aspirations of young people. This can be done through engaging educational institutions with the community and reaching out to schools through pathway programmes that are innovative and captivating. This will be most effective if engagement is channelled through visible projects which demonstrate their relevance to regional communities.

3.4 Strategic opportunities for Twente HEIs to address key regional problems

From the previous discussion, there appears to be a number of key problems facing the regional economy in terms of the skill levels and employment opportunities for residents. There are problems of multiple deprivation in which people are prevented from realising their real potential. There are insufficient firms engaged in any form of innovation, not merely high-technology R&D. There are general skills shortages in the region and a problem with brain drain from the region to the west of the Netherlands. There is more to be done in strengthening pathways between education systems and institutions, and there is more to be done in focussing on the broad spectrum of human capital in the region's innovation processes. From one perspective, these problems are not specifically the concern of the regional HEI sector. However, it is possible to take a more strategic perspective on the role of the HEI sector within Twente.

The Review Team feels that the regional innovation system, as it relates to HEIs, fails in two significant ways to add region-wide value of significance to the Twente economy, society and environment. These are:

(a) an inability to progress HEI-based innovation spin-off beyond the research emphasise and into growing business and community development activity of a sustainable nature; and

(b) a failure to spread the process of innovation beyond the narrow and science-based high technology arena to also include low and medium tech innovation.

These are problems of depth and width in innovation within the region that need to be more strongly connected with the region's human capital capacity. They are problems associated with the

enterprising ability of the region to turn innovative ideas into outcomes of meaningful regional significance.

In Figure 3.1 below we show how we believe these various elements are connected and how the regional economic development problems in the region are the consequence of poorly functioning regional human capital development.

Figure 3.1 shows both causes and consequences. There are a number of problems revealed through Figure 3.1. First, although HEIs have successfully created a high-technology knowledge economy, what is not being fully realised is using this to pull other people up through this development process. At each stage, barriers exist which prevent many people from progressing upwards, creating disconnected doldrums where many of these regional problems manifest themselves. A particular case in point are the socially excluded communities where there is an alienation effect from high unemployment levels which discourage many able students from exploring and realising their potential, thereby perpetuating low skill and employment levels. A second problem is the failure to prevent brain drain from the region. In the absence of high quality employment opportunities in the region, the highest quality graduates are leaving to take employment in the west of the Netherlands. A third problem is that while Twente is judged well against national aggregates in relation to the number of science-based business spin-offs, it does not rate highly against national aggregates in relation to the regional outputs that such spin-offs should generate (e.g. jobs, investment, trade, etc.).

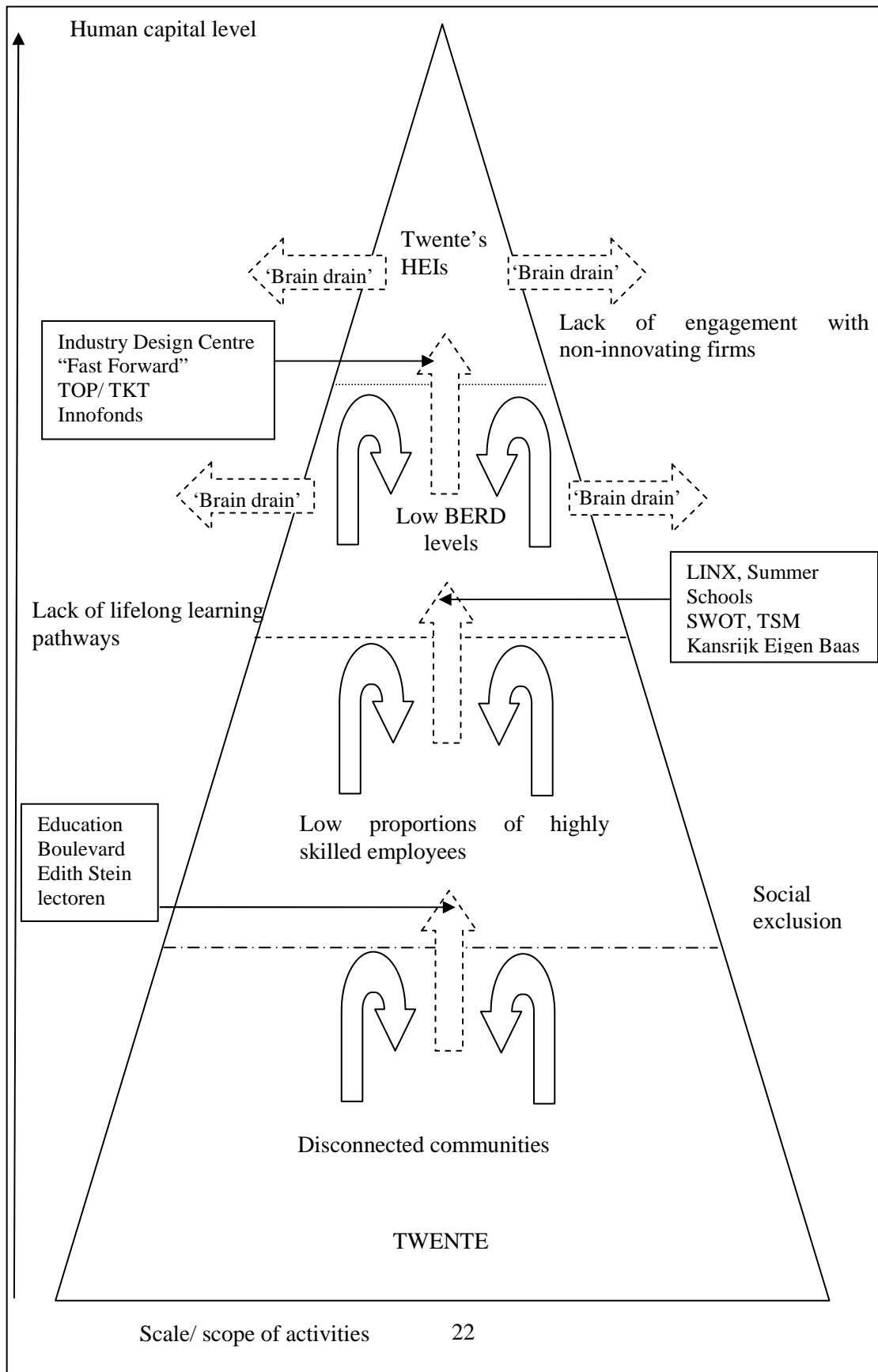
The Self-Evaluation Report made it clear that higher education in Twente has many positive initiatives and strengths, leading to Twente being recognised as a peak of excellence at the national and European levels. In figure 3.1 there are some examples of good practice which help to promote the development of human capital. What was less clear in the report was the extent to which HEIs were contributing to breaking down the barriers within the human capital development pyramid, and helping to systematically solve some of the problems arising in the region because of this lack of upward skill development.

The Peer Review Team recommends that HEIs, as autonomous bodies with a commitment to their location, actively seek ways to contribute to helping with the general upwards movement of individuals through the human capital pyramid, by seeking ways to widen the appeal of their courses and services, and working with regional businesses and residents action plans to help them begin to be enterprising and learning. The Peer Review Team also recommends that the National Government, through the region's leadership, take note of the strategic initiatives that can be undertaken by the region's HEIs and provide the facilitative support required to assist to bring the regional plans to fruition. This will involve assistance with bringing about the necessary structural and behavioural change within the HEIs themselves and in their relations with wider regional stakeholders.

We see the greatest strategic opportunity for the region's HEIs in identifying where there are pockets of best practice in terms of this peak scientific excellence, and extending that practise more generally to ensure that all communities benefit from a rising tide associated with that excellence. The key challenge for Twente is systematically joining these activities together to produce a seamless human capital engine that drives brain gain and social inclusion in parallel. The nature of our analysis and recommendations are therefore on identifying sensible and practical next steps to strategically managing Twente's HEI sector to solve a deep-seated and intractable set of regional socio-economic problems.

The Peer Review Team recommends that Twente formalises the co-operation between regional HEIs into a structural mechanism producing a strategy and implementation plan for a full “Human Capital Plan for Twente”.

Figure 3.1. The relationship between Twente's HEIs and the human capital process



4. THE CONTRIBUTION OF HIGHER EDUCATION TO REGIONAL INNOVATION

4.1 Entrepreneurship instead of enterprising

Since the 1970s, the University at Twente has been active in promoting regional entrepreneurship and innovation in an attempt to strengthen the local economy, and since the 1990s, most of the regional HEIs have likewise taken a regional focus on promoting economic change. This has been done against a background of industrial decline and restructuring, meaning that there have been few industrial partners with whom the various HEIs have been able to work.

There have been two main consequences from this. The first is that much effort has been placed on creating new business entities within the region; the TOP programme is rightly acknowledged as a world-leader in promoting entrepreneurship. One of the regional strengths is that since the advent of greater inter-institutional co-operation in the 1990s, the expertise built up in UT around entrepreneurship has been diffused into other HEIs.

The second is that there has been a focus on scientific excellence and expertise in technology-intensive fields, in part in response to the Balkenende Cabinet prioritising innovation at the national scale. Although the regional HEIs are very focused on promoting innovation and entrepreneurship, in Twente, these activities are limited in scope to the most productive and successful actors, weakening the generality of contributions that the HEIs are making to the wider regional economy.

4.2 Greater institutional co-operation in promoting innovation

The region of Twente and its HEIs have been effective at developing a capacity to promote innovation in regional companies. What is most noteworthy about this capacity is that it has been built up and extended to encompass a greater section of the business community than before. The situation in the 1970s was desperate for the region; although forecasts in the 1960s anticipated that textiles employment would stabilise to around 40 000 jobs by 1980, in reality, the industry had almost disappeared by that time. A series of activities were undertaken by the UT and (what was then) *Enschede Hogeschool*, to help promote new innovation and economic growth. During the review visit the Peer Review Team noted a large number of these activities, and the fact that they seemed to be evolving organically to increase the scope of what was achieved in the region.

In 1983, both *Enschede Hogeschool* and UT invested in a new Business Technology Centre (BTC) adjacent to the university. In 1985, the university created a fund to invest in new spin-offs to be created by graduates, which still operates successfully today. In 1987, the Chamber of Commerce (KvK) relocated to Enschede to be next to this BTC site, to provide services near to the companies springing up around the BTC site, and in 1989, the university's technology transfer office was moved by government order into the KvK building. In 1990, UT created the Twente Technology Circle (TKT) as a partnership organisation to bring high-technology entrepreneurs together to help them win contracts from large partners. In 1996, the regional development agency created a special investment fund, Innofonds, co-financed by the province, municipality, UT and Enschede Hogeschool, to invest in high tech SMEs. In 1998, the Twente Initiative for Medical Products emerged out of TKT and the Chamber of Commerce as a network of local spin-off firms active in medical technology, all with close links to regional HEIs.

From the mid to late 1990s, other HEIs became more closely involved in these entrepreneurship and innovation activities, aligning their existing engagement activities with this orientation towards high-technology development. From 2002, Saxion (incorporating *Hogeschool Enschede*) in particular worked with UT in developing entrepreneurship promotion activities for the universities of professional education. Saxion placed a great deal of emphasis in using their students, all of whom undertake work placements in their education, as a knowledge transfer bridge.

One of the most successful initiatives undertaken by Saxion is the “Fast Forward” programme which tackles the problem of brain drain in an innovative way (see text box 4.1 below).

Box 4.1. Fast Forward

Fast Forward is a separate post-graduate programme provided by Saxion to high potential graduates living in the region. Over a two-year programme the Fast Forward trainees receive tailored management training and undergo three eight-month work assignments in different local or regional companies and organisations. The idea is to match high potential graduates with organisations which need innovative staff who are able to contribute from day one. For a graduate Fast Forward provides a personal development project with self-awareness training, peer development, continuous assessment and feedback from peers and coaches.

In five years nearly 140 Fast Forward apprenticeships have been completed with 67 different employers. The programme is successful in retaining graduates in the region: 95% of Fast Forward graduates – now highly qualified – have stayed in the region and work there. The programme has also encouraged new graduates to move to Twente from other regions in the Netherlands.

“Fast Forward” is praised by both employers and student participants. Although some UT graduates have already joined the programme it could be upgraded by better promotion to make it accessible to all HEI graduates in the region. Through systematisation, a Fast Forward Alumni organisation could be used as a change agent in the region and its members could act as regional ambassadors. We recommend that a “Foundation Fast Forward” is established to institutionalise the programme.

Saxion has also become directly involved in innovation promotion activity with the appointment of 14 associate professors for commercial engagement in 2003, and the creation of a degree in Entrepreneurship. They also became directly involved with a number of innovation reach-out activities in partnership with the university and TNO, the Dutch national technology transfer agency, including the Industrial Design Centre and the Expertex textiles design centre.

The Industrial Design Centre exemplifies the sequential nature of the way activities have built up around the HEIs in Twente. At first glance, the Industrial Design Centre looks unremarkable (*cf.* Appendix G6 in SER). The Centre offers industrial design services to companies. The service is provided by regional design companies, the universities, and through student placements. In recognition of the relatively low experience level of many regional companies, a key part of what has made the project successful is the fact that a business development manager exists who contacts potential customers and works with them to develop ways they can benefit from IDC services. Unpacking the black box of the project, it is clear that the IDC would not have succeeded in Twente without a considerable prior effort from regional partners, including the HEIs (see text box 4.2 below).

Box 4.2. The Industrial Design Centre

Industrial Design Centre is a **multi-agent project** bringing together a network of designers, manufacturers, and higher education institutions in a mutually reinforcing way, facilitating innovation in the region. IDC aims at increasing the number of students in design studies and enhancing the creativity and product innovation in industrial design. It works through matching the demand for and supply of design expertise, know-how, and facilities, organising design meetings, and coaching design projects. Since its establishment in 2003 ca. 120 student projects, 15 partner projects, and 10 facility projects have been completed, and 15 design meeting have been organised. In addition, more than 30 products have been (re) designed.

HEIs' contribution to IDC has been to create and support separate assets which have later been combined to build a "knowledge bridge" mechanism. IDC is an example of the strength of the networks in Twente: It emerged at the initiative of one individual, who contacted several other design companies that he knew. Three of these companies were led by graduates of the TOP programme with links back to the Industrial Design research group at the University of Twente; one of the companies was established by a graduate of the AKI, and they had all met each other through being active in the TKT, which had brought them together already to co-operate in other projects. One company had been supported in its growth through the Innofonds seed capital fund, and some of the companies had been located at the BTC, and later the Business Science Park, during their history.

Without the presence of the HEIs, it is unlikely that the idea of an IDC would have been a viable concept, attracting the support of the HEIs and the RDA. Given Twente's relatively weak environment for innovation, it would not have been possible to make the IDC function successfully, although it would have been possible to create the shell of an activity with a building and an executive; the Twente advantage given by the HEIs is in effectively joining these activities up into things which businesses value.

This constructive approach to innovation support for the region has been extended in a number of directions by regional partners. In the visit, the Peer Review Team saw many pockets of good practice and initiatives, often "joining up" and integrating many partners and existing projects, but there were equally many examples, particularly those cited in Appendix G of the SER, that were isolated, and had not been strategically joined to other activities. The RDA has itself attempted to map all the support services offered for high-technology entrepreneurs in Twente, and so to make entrepreneurship activities less directly dependent on the HEIs (Technostarters). There appears to be emerging potential literally everywhere, but there is no real structure to this activity.

4.3 Less success in promoting social and community enterprise

What has been achieved so far in promoting innovation in local high-technology enterprises is impressive, as far as it extends. The main economic weakness in Twente is the discrepancy between its position as the second Dutch R&D hotspot and the persistently poor overall regional performance in terms of key indicators like GRP, productivity, household incomes, employment and unemployment. In the visit, we identified that there is apparently a belief that concentrating on excellence will eventually trickle down into the ordinary economy. Although some trickle-down has happened, there is no recognition of the need to address these poor performance figures through promoting social and community innovation, and in ensuring HEIs are actively engaged with "ordinary" low and medium technology SMEs and micro-businesses.

The Peer Review Team recommends that the next strategic step in improving Twente's performance is in extending successful modes of engagement from high-technology communities into promoting economic, social and environmental development in inner-city and rural communities –

traditionally excluded from the high-tech absorption process, and by having an increased focus on the enterprising human capital requirements of regional growth with less of an emphasis on the resulting structures and entities.

There are already some successful demonstration projects of what might be possible. The *Kansrijk Eigen Baas* (or KEB, see Chapter 6, box 6.1) project, although in Gelderland, is an admirable attempt to transfer entrepreneurship teaching out of the urban setting into a deprived rural community. Likewise, the ©*Campus* incubator in Hengelo extends the experience in entrepreneurship promotion from HEIs in Twente to the middle professional level. The SWOT was founded in 1968 by the university and regional companies to provide open-access higher professional education, and helps to promote genuinely lifelong learning. The *Studium Generale* organises lectures and study visits for local people, using students on placements to develop interesting programmes opening up the university. HEIs have become involved in the Roombeek urban redevelopment project, with the BTC managing entrepreneurial workspace and the AKI potentially relocating there (see Chapter 6, box 6.3). Edith Stein, along with UT and Saxion, are developing the Education Boulevard in Enschede, to provide stimulating and attractive education to high-school students who might otherwise fail to progress into appropriate education and employment opportunities through integrating sports and voluntary activities to curriculum.

The Peer Review Team commends the region and its HEIs for their entrepreneurial activities, and in particular their record of producing spin off companies. We however believe that delivering the high level message of entrepreneurship is not a completed task and has not been fully carried out across the region and the whole human capital chain. We recommend the region brand itself as the entrepreneurial or enterprising region, as “a place where people get things done”. However, in order for the reality of an Enterprising Twente to match the brand, there is a need for a more systematic approach in disseminating good practices in regional engagement between institutions, and ensuring HEIs work with communities at all levels.

During the time of the review visit, Twente Innovation Platform was publishing a delivery plan for its vision for an innovative Twente region. It has identified key innovative actors in the region and projects which could be harnessed to boost innovation in the region in five key domain clusters (Materials & Mechatronics, Construction, Technology & Safety, Food, Technology & Health). This delivery plan aligned funding from municipalities, the province and the RDA behind existing activities and should help to deliver more of these integrated multi-agent projects across the five cluster areas in the future.

The Innovation Platform has joined up disparate high-technology innovation activities, and provided a means for a strategic and systematic response by HEIs and their knowledge base to the needs of the region. What is missing in this regard is a strategic mechanism for responding, through innovation, to the wider needs of “ordinary” communities in Twente. While some of the activities are reaching down into excluded groups and communities, in rural areas, in inner city areas, and with low achieving groups, the issue appears to be the lack of clear progression pathways for communities to articulate their own interests.

The Peer Review Team commends the region for the progress it made in consolidating leadership through the establishment of the Innovation Platform Twente. We recognise that the five clusters identified by the platform are consistent with the national policy framework as set up in Pieken. While the platform serves the five sectoral thematic areas well, we recommend a more inclusive approach by introducing a link to connect the five themes i.e. the addition of the 6th theme: addressing the question of human capital.

What also appeared to the PRT to be absent from the Twente regional strategy were mechanisms to support social entrepreneurship as a means for upgrading human capital in socially excluded communities. By comparison, through high-technology entrepreneurship programmes, graduates may enter with an idea to be an entrepreneur, and emerge with a degree and experience. However, there are no similar programmes for social entrepreneurs, who may have the desire to change their own community and become a community leader. *The Peer Review Team therefore recommends that consideration be given to developing education programmes within HEIs which support social enterprise and community administration.*

The second issue is that the HEIs appear to be doing little to publicise the opportunities they offer for people with lower human capital levels. Consequently there is relatively little expressed demand amongst such communities for the HEIs to address their particular needs.

The Peer Review Team recommends highlighting the profile of the HEIs within the region as places to which all people can aspire, and where all people can learn the skills and make the connections to take more control over and responsibility for their local environments. There is a need to explain how the particular sectors within the Innovation Platform will transform the lives of local people. We recommend that HEIs create physical locations across the region where locals can begin to better understand what HEIs are all about and begin to feel more comfortable about making purposeful connections with them.

The Peer Review Team believes that more needs to be done to insert HEIs strategically into the key social and economic development projects in the region. The Netwerkstad has identified a number of key regional development projects located in particular places. A number of them already overlap with HEIs interests (for *Muziekkwartier* and *Kennispark*, see boxes 6.2 and 7.1), and others resonate with existing institutional interests (*Gezondheidspark* and *Zorg en Technologie*). However, there is little direct involvement with primarily economic development projects such as *Hart van Zuid* and *Waterrijk*, although the ROC is involved in these projects. There would need to be a series of adult education activities embedded within these to help individuals meet their own potential.

The Peer Review Team believes however that institutional responsiveness needs to be strengthened through engagement with a wide spectrum of regional human capital with the potential to be at the cutting edge of change. In this regard, because of their autonomous nature, HEIs have the potential, on behalf of regional leadership like the Innovation Platform, to reach out to bring the rest of the community with it using various strategies. An example of what could be done here is for Twente education institutions to collaborate and run a week-long festival of innovation and discovery with a captivating programme of demonstration, information provision, and involvement.

The Peer Review Team recommends systematic identification where communities are mobilising themselves in the region to enable the HEIs to build partnerships, that enhance their human capital and knowledge capacity. It is important that it is not just flagship projects as defined through the regional economic development plan, the plan for the reconstruction of the airbase site, and the Innovation Platform, but initiatives that will transform the scope of what those projects will achieve on the ground, and inject extra vitality on social enterprising (through credit earning and/or voluntary student work, internships, etc.). The Peer Review Team further recommends that ongoing demonstration programmes are introduced to highlight how innovative products and processes can be adopted in all levels and spheres of society. This can be manifested in the form of annual knowledge festivals, product and process demonstrations in public spaces, etc.

The Peer Review Team further recommends that a formal mechanism be created so that when flagship projects are announced, the HEIs automatically produce a collective response. This response

will focus on ensuring that individuals and teams within the HEIs who have something to offer to particular projects have the physical, organisational and financial opportunity and encouragement to co-develop these projects.

5. CONTRIBUTION OF TEACHING AND LEARNING TO LABOUR MARKET AND SKILLS

5.1 Structure of the chapter

Labour market problems lie at the heart of social and economic problems of the Twente region. These problems can be traced to some of the labour market imbalances we have outlined in the previous chapters. With that, social and economic problems are basically within the reach of the way higher education institutions respond to building the human capital capacity of the region.

In this chapter we give recommendations on how HEIs can contribute to enhancing regional development outcomes in Twente via the labour market through their teaching and learning responsibilities. First, we list structural weaknesses of the Twente labour market and economy insofar as education and skills are involved. Second, these structural weaknesses in the labour market are translated into needs to adapt or introduce changes into education. Finally, some adaptations to education programmes provided by the HEIs in the region are suggested to enhance their impact on regional economic development.

5.2 Structural weaknesses within the reach of HEIs

From the interviews, together with the Self-Evaluation Report, the Peer Review Team identified the following imbalances in the Twente region labour market that are within the domain of education and training institutions.

Brain drain and low education participation

It is generally acknowledged that highly educated people tend to leave Twente to find employment in other parts of the Netherlands. Similarly, many promising secondary school graduates choose to advance their professional or scientific education elsewhere in the Netherlands. This might partly explain why the number of highly educated people in Twente, despite the strength of its HEIs, is lagging behind the national average by more than 5%.

This brain drain from Twente was mainly attributed to (a) the unfavourable image of the region from a cultural, artistic and entertainment point of view; (b) a lack of large, internationally operating companies (such as Philips Eindhoven) contributing to the lack of challenging and profitable employment opportunities for ambitious young people; and (c) the focus of the University of Twente on high technology, resulting in the top segment of secondary school graduates leaving the region to study for example medical sciences, or social sciences and liberal arts.

A parallel problem is that the education participation rate is relatively lower in Twente than for the Netherlands as a whole. The *Trouw* newspaper of 14 December 2005 in its listing of secondary school performances, for example, indicates that the Twente region has 4% more lower-secondary schools (leerwegen) than the Netherlands as a whole. The problem in Twente is raising the aspiration levels for those from lower socio-economic groups and for those whose family does not have a history of tertiary education participation.

Low and medium technology SMEs' limited access to higher education

We heard convincing evidence that the cooperation between HEIs and industries has increased significantly in the last few years. Consequently, industry and education are now better geared to each other than before, although it will always be difficult for the former to keep pace with innovations in the latter (Etil 2005). Nevertheless, the Self-Evaluation Report identifies barriers, particularly between SMEs and HEIs. In particular medium and low technology SMEs appear to be excluded from HEIs' networks.

Small and slow-growing innovation spin-off companies

Although both the University of Twente and Saxion UPE generate many spin-off firms there are very few high growth companies among them. The average size of spin-off companies is 7.7 employees (Karnebeek 2001). During the visit we heard evidence from NIKOS representatives that two out of three spin-off companies generate second generation spin-offs, indicating that growth takes place externally rather than internally. It is also evident that spin-off entrepreneurs from HEIs lack certain abilities in growing business beyond the spin-off stage.

Spin-off phenomenon confined to Enschede and to those at the top of the Human Capital Pyramid

Business start-ups are concentrated within the city of Enschede (Twente index 2005). There is a need for more entrepreneurship throughout the entire region. Furthermore, within the city of Enschede the higher education spin-off phenomenon is highly uniquely linked with UT and Saxion, while other professional education institutions, like AKI or Edith Stein do not stand out in this respect.

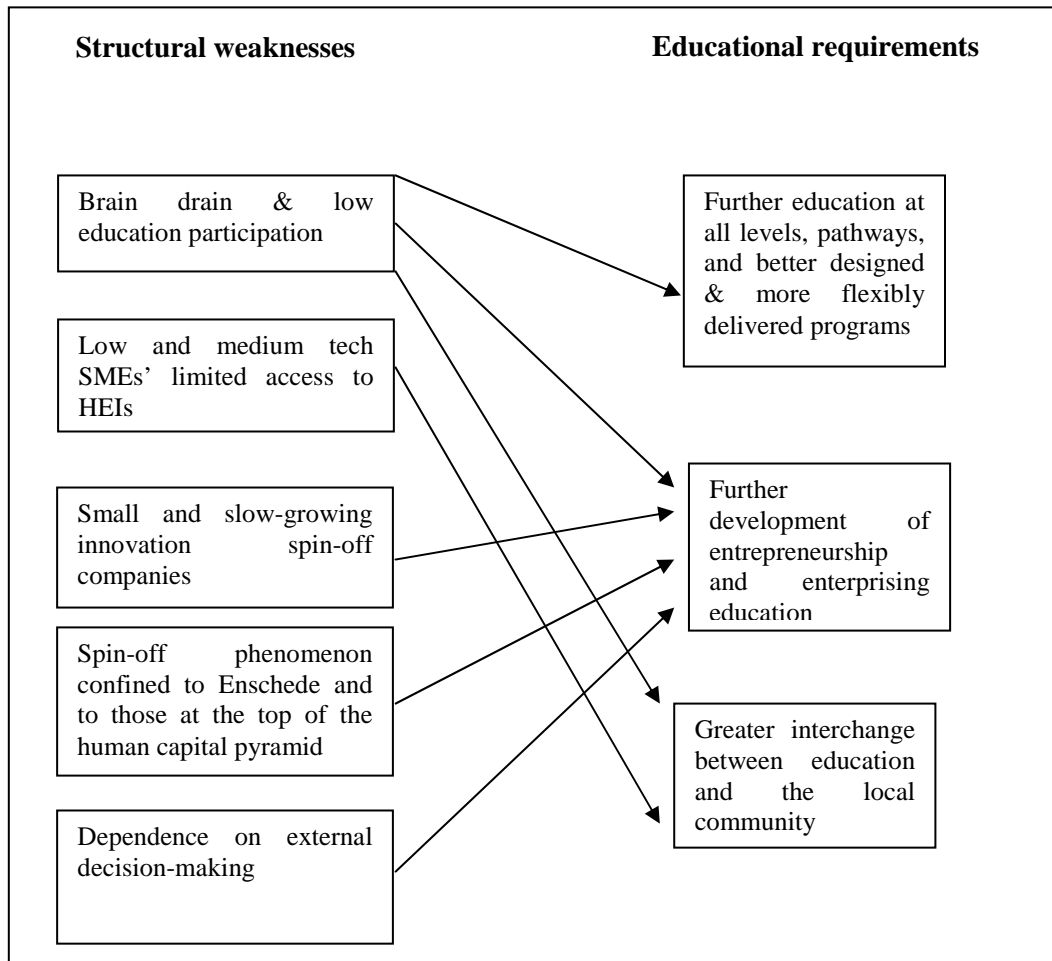
Dependence on external decision-making

Apart from Grolsch Brewery large businesses in Twente have their headquarters elsewhere, e.g. Texas Instruments, Thales, Ericsson, Lucent, CMG Logica, Urenco, Akzo Nobel, SASOL, Eaton-Holec, Philips, Polaroid, Cannondale, and Uniq. As a consequence, employment development in Twente is vulnerable to external decision-making. For example, since Thales bought Philips Signaal, the company lost no less than 2 500 employees. There is a need to effectively respond to the long run labour market requirements of these externally-owned companies through the design and delivery of relevant HEI programmes to ensure the Twente labour market is highly valued in the global corporate decision making of these companies. It is possible for global corporations to be influenced in their location decision making by the quality of the human capital that is on offer.

5.3 From structural weaknesses to needs to adapt education

The regional labour market issues above call for counteracting initiatives on the part of the education system. In this section, the five regional labour market difficulties highlighted above are translated into three regional higher education needs for Twente. These are: intensified further education, further development of entrepreneurship education, and expansion of community education interaction. In discussing these initiatives we portray a "regionally engaged" approach in so far as we emphasise the need for collaboration across HEIs in course/programme design and delivery (in terms of flexibility, targeting, pathways, modules, practical work, internships, and partnerships) that best fit with each institution's strengths and core business.

Figure. 5.1. Educational requirements in response to structural weaknesses



Intensified further education

Further education is important to Twente in order to repair educational deficits resulting from brain drain and low education participation among the Twente population. The Peer Review Team was exposed to four good practice initiatives that offer the potential, with wider application, to tackle the issue of enhancing further education: Fast Forward, TSM Business School, SWOT and ITC.

Fast Forward is a post-graduate programme aimed at turning young promising graduates to ready-made managers that need no lengthy initial internal training period when employed in management functions (See Chapter 4, box 4.1). *TSM Business School* provides part-time MBA and management education to technology-oriented professionals with HE background and at least 5 years of management experience. It has no particular regional focus in its activities. Participants are recruited from all over the country and also from abroad. *SWOT* is a business school directed at higher and middle management in Twente. In contrast to TSM Business School, SWOT provides education to MBO-graduates (middle professional education). *ITC* is an international education institution for geo-

information and earth observation. It provides education not only at master's, and doctoral level, but also at the UPE level.

The Peer Review Team was impressed by the qualitative ambitions and innovativeness of the further education programmes in the Twente region. In particular Fast Forward, SWOT Business School and to a lesser extent TSM Business School seem to meet certain adult education needs in the region. However, the Peer Review Team feels that the scale of the operation is not large enough to have impact on the overall performance of Twente industry. For example, in five years nearly 140 Fast Forward apprenticeships have been completed with 67 different employers. This is but a small fraction of all employees and organizations in the region.

The Peer Review Team also believes that there is a need for greater reach out to upgrade the skills of the existing industry. Furthermore, most of the further education programmes appear to serve the top of the human capital pyramid without being linked to adult education programmes directed at lower levels, i.e. the middle and the lower part of this pyramid. This is illustrated in Figure 5.2, where the regional labour market is pictured as a human capital pyramid. The regular education system at all levels prepares newcomers to enter into the labour market. In the Twente region, in spite of its well developed higher education infrastructure, the delivery of the regular education system to the regional labour market is comparatively strongly biased towards the lower layers of the pyramid. What the Peer Review Team felt is missing in the Twente case is a post graduation education system, directed at people already in the labour market, to facilitate upward mobility in the pyramid. This is necessary, in order to compensate for the brain drain of highly educated school leavers and to repair the low intrinsic education level of the regional labour supply. What is needed is a system of further education programmes at all levels geared to one another so as to create a "highway" upward the human capital pyramid.

The Peer Review Team feel that through a review of the goals and objectives and delivery arrangements for these initiatives as to their regional reach, there may be improvements that could be made through collaboration in their targeting and in their delivery arrangements. For example, there may be scope for stronger connections to be made between Fast Forward at Saxion UPE and the education programmes of SWOT, the TSM and AKI.

Further development of entrepreneurship and enterprising education

UT and Saxion UPE run bachelor's and recently also master programmes for entrepreneurship. These programmes develop and improve students' entrepreneurial attitudes and practical skills for starting small businesses, they enhance networking with other entrepreneurs and support and advise new entrepreneurs (e.g. KEB programme of Nikos in Chapter 6, box 6.1). Students are offered work space on the campus and receive advice from tutors, lecturers, entrepreneurs and other experts. We also came across an innovative initiative *Virtual Business Incubator* which is bringing students out of the campus (see box 5.1. below).

Box 5.1. Virtual business incubator

The Virtual Business Incubator of the Saxion Centre for Innovation and Entrepreneurship has developed a new incubator concept. Instead of placing student entrepreneurs in an on-campus incubator site, student entrepreneurs are placed with existing companies off-site for a period of one or two years. The arrangements benefit both parties. The student entrepreneur gains easy access to an authentic entrepreneurship experience at the early stages of the start-up process while the tutor-entrepreneur gains access to new ideas, know-how and other incentives for innovation. The incubator manages the matching arrangements between the mentor firm and the student firm.

The Peer Review Team was impressed by the entrepreneurial vigour that exists in the region, particularly through the efforts of UT and Saxion UPE. However we see structural weaknesses that are preventing the region to fulfil its potential. Based on the interviews with student entrepreneurs as well as with representatives from NIKOS we concluded that the entrepreneurial education programme is not perfectly balanced. There appears to be inadequate focus on enterprising, skills (e.g. accessing business finance, risk assessment, business planning, marketing, product development, etc) which correlates with the limited business growth performance that was evidenced in many spin-off companies. There is a need to bridge the gap between the large number of innovation spin-off companies that are established in Twente and the longer run growth levels they can achieve.

A further example of entrepreneurial initiative being fostered through the HEI system in the region relates to the operation of the University of Twente Student's Union. The Student's Union contributes in two ways to entrepreneurship training in the region. First, it operates as an enterprise in its own right. It is provided with funding from the University, as well as raising its own funding from activities, and manages a range of student services such as sports and culture, student accommodation requirements, including accommodation and activities for international students, and a number of commercial activities such as the Union Bar, Union retail shop and the Atrium area where performances and events are put on for students. The Union officers report to the executive of the University on progress against their business plan. The second way it contributes is by stimulating student entrepreneurship through the provision of incubation space for young entrepreneurs and the provision of skill training and information via the *Fase* initiative and internet portal (see Box 5.2 below). Both these areas of activity demonstrate how management of the University are keen to stimulate entrepreneurialism and delegate responsibility among young students.

Box 5.2. University of Twente Student's Union

The University of Twente Student's Union provides a range of services for 7 500 students and 100 student organisations. The Union has been in operation since 1999 and is the only one of its kind in the Netherlands. The University contracts out a number of University services for the Union to manage on its behalf within agreed budget guidelines. These services include student accommodation, including for international students, sports and cultural facilities and events, and commercial activities such as the Union Bar, Union retail outlet and the central Atrium where live performances are held. Interestingly, the Union is also responsible for managing a student entrepreneurship initiative. The *Fase* program provides incubator space, information and skill development for young student entrepreneurs, and is developing a web portal to link entrepreneurs into the University research centres.

The Peer Review Team is of the view that at the moment entrepreneurship education is concentrated in the top segment of the human capital pyramid in Twente: Edith Stein, AKI and primary and secondary schools have not yet embraced the enterprising spirit. The same problem exists on a spatial basis with a concentration of entrepreneurial activity around Enschede to the exclusion of other parts of the region. The Peer Review Team feels that the problems of the Twente economy call for intensified exploitation of UT's and Saxion's know-how, expertise and enthusiasm on entrepreneurship creation on a larger region-wide scale, throughout the entire education system. There is great potential to soak the whole community with an enterprising spirit including both communities in the lower spheres of the human capital pyramid and rural communities in the periphery of the Twente region. This will require a reconsideration of some of the innovative teaching and learning programmes mentioned earlier with a view to making them more attractive (through marketing and promotion, design and delivery) to those residents who may not traditionally have had a connection with a HEI.

Greater interchange between education and the local community

The Peer Review Team was impressed by a number of initiatives between HEIs and the local/regional community.

In the sphere of arts and culture The Peer Review Team heard about the *AKI Art Festival* in autumn 2005, when AKI moved to the old market place for several days for the benefit of the local people. We endorse the plans to make this an annual event as it would greatly enhance the cultural image of Enschede. We also heard about the plans of AKI, Saxion and the Enschede municipality to establish *Music Quarter* (see Box 6.2). Apart from building up a joint physical location for all musical activities in the city, it will bring together music students and their learning programmes and the community through several free public performances a week. These initiatives enhance students' learning experience by providing the local environment as a "playing ground" or "education laboratory". The challenge is how to make these one-off initiatives successful and to make them work as growth poles for Twente's cultural development. Cultural activities are discussed in greater detail in Chapter 6.

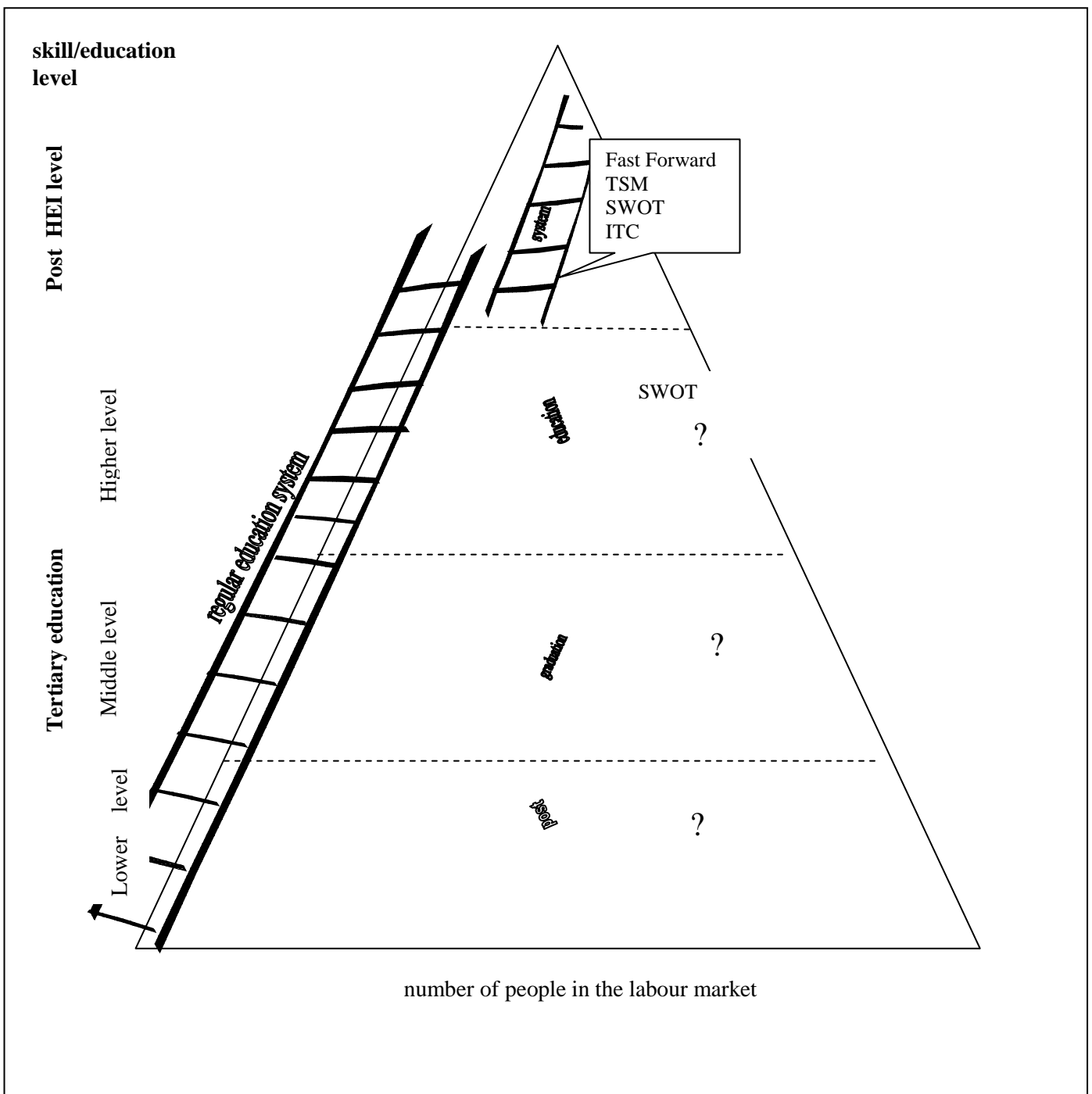
In the sphere of economic development Saxion works in close cooperation with the local region. This has positive impact on educational programmes as well innovative performance of organisations. For example all educational programmes at Saxion UPE have a committee of stakeholders (alumni, employers) to ensure that education is fine-tuned to labour market needs. As a consequence, employability of Saxion graduates has improved over the years.

We were impressed by the *Industrial Design Centre* which works to increase the number of students in design studies and to enhance creativity and product innovation by bringing together a network of designers, manufacturers and higher education institutes (see Chapter 4, Box 4.2). One fully employed business development manager searches and contacts potential customers. Students actually run the projects as part of their education, thus both learning from the field and channelling new university knowledge in the field of industrial design directly into local organizations.

However, on balance, the Peer Review Team feels that the interchange between HEIs and the local community is restricted to the upper segments of the human capital pyramid. What is missing are more vertical connections between the HEIs and low and medium tech SMEs, as well as more importantly, with education institutions delivering for the lower and middle layers of the human capital pyramid. The Peer Review Team did not observe any important channels linking the lower segments of the pyramid directly or indirectly with the higher education system. With that, know-how from the higher education institutions is equally absent in the peripheral and rural parts of Twente.

The Peer Review Team recommends the proposed regional higher education association (HOT, see 7.4) undertake a review of teaching and learning programmes and courses that currently exist within the region with a view to establishing stronger synergies and pathways to enable a greater reach throughout the community across the different local communities as well as the different socio-economic and demographic groups.

Figure 5.2 Twente's further education gap: The lack of integration between different levels



5.4 Recommendations

In this last section of this chapter the Peer Review Teams presents a number of recommendations to achieve the goals identified in the analysis.

The challenge is to create a vertically integrated further education system. This means that both the lower and the middle segments of the human capital pyramid should be provided with innovative further education programmes (Figure 5.2). Furthermore, these programmes should become linked up to each other so as to create a “highway” to facilitate upward mobility in the pyramid. Know-how and experience of current providers of adult education will be indispensable for realizing this.

The Peer Review Team recommends that HEIs (including TSM/SWOT and ITC) actively seek ways to extend and adapt their current adult education programmes for the benefit of lower and middle layers of the human capital pyramid.

Further development of entrepreneurship education with respect to content is necessary for two reasons:

- (a) to counteract the slow business growth resulting from innovation spin-off firms; and
- (b) to transfer entrepreneurial spirit to other HEIs and the lower levels of the education system, including secondary and primary education.

The Peer Review Team recommends the HEIs, through the auspices of the proposed HOT, to review their entrepreneurship education programmes and examine whether marketing and commercialization aspects or any other issues (such as partnerships, pathways, flexibility in delivery arrangements, etc.) that are relevant could be further developed to enhance the reach and completeness of these teaching and learning initiatives for the benefit of the region as a whole. The PRT also recommends UT and Saxion seek to influence other education institutions in the region with their enterprising spirit and enthusiasm. In this way entrepreneurship education programmes could be more fully included in the learning programmes of lower and medium professional education institutions and even secondary and primary education schools².

In order to make entrepreneurship related education applicable for secondary and primary schools, the content of programmes should be adapted to include *enterprising* issues. While entrepreneurship is narrowly focused on risk taking when starting and managing a business company, enterprising education is more broadly defined. Enterprising education is engaged in developing skills for turning inputs into outputs and mobilizing resources in order to achieve this. Enterprising outcomes in the region may be manifested as social, cultural or environmental outcomes as much as they might be business outcomes. Enterprising education at a young age helps to create a community of outcome-oriented people that are better able to cope for themselves.

One of the most difficult tasks in the field of regional development policy is to stimulate and create direct links between low and medium technology companies with the higher education system. A frequently mentioned reason for this is that knowledge absorption capacity of these businesses is insufficient. Therefore communication between HEIs and these SMEs is often less effective. Hence we

² Saxion has taken initial steps to do this. It has developed a course in entrepreneurship for student teachers (i.e. the entrepreneurial teacher, see www.lerenondernemen.nl/) and has run a pilot programme in cooperation with a college in Enschede to introduce entrepreneurship into secondary education.

argue for the creation of new indirect links between HEIs and low and medium technology companies, using vocational institutions as intermediaries.

The Peer Review Team recommends that the HEIs cooperate with lower level educational institutions e.g. through the development of joint educational programmes. We also recommend cooperation (e.g. student placements) with companies that employ graduates from these institutions.

The Peer Review further recommends that the Ministry of Education compiles basic information on the geography of higher education within the national territory including identification, for the higher education system as a whole, which courses are taught where, the home origins of students and where graduates enter into the labour market. The analyses need to be benchmarked against regional data on participation in higher education and industrial and occupational structure to identify areas of under and over provision. The mapping task need to identify the steps between different levels of education system – schools, further/vocational education colleges, higher education, post graduate institutions – to assess how far the regional pattern of provision assists/inhibits access and progress of students. In short, geographical analysis should highlight the fact that lifelong learning is an agenda that should be responsive to the needs of people in places.

6. CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT

6.1 A balanced perspective

The OECD Guideline for Peer Review Reports suggests a section on the contribution of higher education institutions to social, cultural and environmental development. Society, culture and the environment provide an important supporting fabric for a sustainable regional community. HEIs, with other regional partners, can play a significant role in these areas. This can occur through the actions of students, through research and learning programmes and through infrastructure and service provision.

The Peer Review Team was not made aware of the full scope and extent to which the HEIs in the Twente region have been engaged in this type of region building. We believe that the Self-Evaluation Report could include more instances of regional activity in these areas and that there are opportunities to spread the higher education engagement agenda, and in particular the themes of innovation and entrepreneurship, in these areas throughout the region.

6.2 Social development

The HEIs in Twente portray their regional engagement as primarily economic and technical in nature. Certainly, there are no liberal arts faculties in any of the institutions which often help contribute to social and cultural development. However, in the visit the Peer Review Team found the scope of social engagement undertaken by the HEIs remarkable given their primarily technological focus. UT's *Studium Generale*, Saxion's faculty of social work, the AKI's Arts Week, the Conservatorium's music therapy in prisons and rehabilitation centres, Edith Stein's *Techniekweken* are types of best practice in social engagement. We were impressed with ITC's response to the Pakistan earthquake in producing detailed downloadable maps to support relief logistical efforts of agencies. Although not directly regional, the effort demonstrates to regional communities, particularly those with their roots in Pakistan, the relevance of HEIs to their everyday lives.

The Peer Review Team encountered several references to links between HEIs and health and welfare. We were made aware of the role of the *lectoraten* in areas of health care and welfare at Saxion and in the area of e-learning at Edith Stein. Saxion has also developed partnerships with local charitable groups such as Rotary for the provision of social services in the region. We heard about Carint, a large home care provider, which provides contact with thousands of the kinds of staff who could potentially benefit from upskilling through the region's HEIs. It was made clear during the visits that there are many potential opportunities for Saxion and the ROC to assist in uplifting the skills in home and institutional care programmes, as well as the application of informatics in the industry through the technological work of organisations like Telematica.

One of the most impressive initiatives was the KEB rural enterprise initiative (*Kansrijk Eigen Baas*) associated with NIKOS at the University of Twente. We believe the KEB is a useful model for extending innovation and entrepreneurship to other rural communities throughout Twente and elsewhere in the OECD countries. Higher Education Institutions could input through teaching and

placements programmes to build social enterprise in such places to build long lasting capacity (see box 6.1 below).

Box 6.1. Rural Enterprise Initiative KEB (Kansrijk Eigen Baas)

The KEB Rural Enterprise Initiative was launched in 2003 by Nikos to foster new levels of entrepreneurship in a declining agricultural area. In partnership with a major bank, Nikos has been working with potential entrepreneurs in the local community who lack the finance and the expertise, but yet have the enthusiasm and the ideas for new enterprise. With access to small loans, mentoring, teaching programmes, networking, business planning training and other enterprising skills, the results have been impressive and demonstrate the importance of enterprising human capital, in this case particularly for older sections in the rural labour market.

KEB has been successful in enterprise creation: At the end of 2004, 37 new enterprises were generating turnover, 36 were in the pre-start phase and 29 participants had a paid job.

The Peer Review Team found no reason to think that HEIs in Twente will be backward in responding to the challenges provided in this chapter. There appears to be commitment to social and welfare purposes and plentiful examples. However, this does not amount to an integrated strategy to sustainable region building.

The Peer Review Team recommends that Twente's HEIs place more effort in promoting their contribution to the social development of the region. A solid social foundation in the region will provide a basis for greater regional outcomes to occur from its innovation and entrepreneurial strategies. Moreover, the Review Team recommends that serious consideration be given to how these social initiatives, particularly those which engage with excluded and deprived communities, can be used to empower and upskill those groups, and help move them towards a position of sustainable lifelong learning. Because the economic pay-offs from this are long-term, we believe that it will require a significant commitment from HEIs and local, regional and provincial partners to achieve this. The long-term commitment is of vital importance if regional partners are serious about addressing many of the weaknesses identified in the Regional Human Capital Pyramid. (See Figure 3.1 in Chapter 3)

6.3 Culture

In the area of cultural development there are already innovative programmes in relation to music therapy, art and entertainment associated with the Conservatorium of Music, art and design programmes and a community art festival through AKI, on-campus cultural events such as those through the Vrijhof Cultural Department of the University of Twente, and the Studium Generale which organises public lectures debates and excursions of general cultural interest. While these are impressive initiatives in themselves, there is no strategic regional underpinning targeted at enhancing inclusiveness and viability in an integrated way.

Students themselves are an important stimulus for cultural development at the regional scale. During the visit the Peer Review Team heard about the positive cultural impact that German students for example have had in the Twente region.

The Peer Review Team sees a number of emerging opportunities for HEIs to build a more strategic regional focus to address specifically articulated gaps in the cultural underpinning of Twente society. These include the development of the Musicquarter and the Roombeek redevelopment.

The Music Quarter (see text box 6.2 below), which will open in 2008, will include Opera, Symphony Orchestra, Popular Music (ATTAK), the Music School, and the Conservatorium all under one roof in the central area of Enschede. The idea is that the music students (and their learning programmes) and the community will come together through free public performances and the use of music as the introductory piece to all regional events of significance. Music events will occur throughout the region. The music for therapy programme will also be extended to key areas of demand (hospitals, correctional centres, and for those with disabilities or with war trauma) throughout the region.

Box 6.2. Music Quarter (Muziekkwartier)

The AKI, Saxion UPE and the Enschede municipality are working together to create a new regional location for music activities, and streamlining the organisational setting for the HE provision of music learning, and moving the Conservatorium (higher professional education in music) over to the AKI. The significance of this shift from a governance perspective is that it has allowed a functional specialisation between the main cities of the region in terms of their respective cultural roles in the knowledge economy. Enschede is now specialising in music and culture, whilst Hengelo, lying at the intersection of two main railroads and motorways, sees itself as being at the international crossroads for the region, and Almelo will be a new canal city for the region, with compact shopping areas.

The Music Quarter has been a ten year vision to bring all elements of the region's music together under one roof. It will include Opera, the Orchestra of the East, Popular Music (ATTAK), the Music School and the Conservatorium of Music (Music Academy). The construction of the Music Quarter will begin in 2006 and be completed in 2008. Both Saxion and AKI will be involved in the initiative in partnership with the City of Enschede.

The Roombeek redevelopment provides the opportunity to trial new approaches to community living, recreation, transport, low cost housing design, environmental sustainable housing and other methods of building a cohesive and sustainable community. We understand that through the Kennis Instituut Stedelijke Samenleving (KISS), a partnership between Saxion, the University of Twente and the community sector is to provide research support to those involved in improving the quality of city life, students are also encouraged to undertake dissertation projects based around Roombeek (see box 6.3 below).

Box 6.3. Redevelopment of the Roombeek estate in Enschede

In May 2000, a firework factory exploded in Roombeek, a relatively poor suburb to the north of the inner ring road in Enschede, causing a number of fatalities and many casualties. The extent of the devastation following the disaster was such that the decision was taken to completely rebuild the Roombeek quarter, as a high quality and socially-mixed community, revitalising old textiles buildings and rebuilding the spirit of the old community. The then Mayor of Enschede, Jan Mans assembled a broad coalition of actors to provide the economic engine to drive urban regeneration. The Telematica Institute (a national R&D centre), AKI, several regional museums and the national touring opera were to be brought together as key nodes for a rebuilt urban space, the culture cluster, currently being developed. The success of the Roombeek project as "healing the scars of industrialisation" has led to the concept being applied to other similar physical redevelopment projects including the *Hart van Zuid* in Hengelo and *Waterrijk* in Almelo.

6.4 Environment

Higher education institutions can contribute to sustainable environmental development in their regions by being: (a) a source of regional expertise through research and demonstration; (b) as animateurs in bringing together diverse regional actors and elements of capacity to the sustainability process; (c) as generators of human capital in the region through their curricula teaching and learning programmes in areas of sustainable development; and (d) as demonstrations of good practice through their own on-campus management and development activities such as through strategic planning, building design, waste minimisation and water and energy efficiency practice.

In the area of environmental sustainability the Peer Review Team was not made aware of the initiatives of a regional nature that were being undertaken by the HEIs in Twente. The SER is brief in this area, although it does refer to some initiatives being managed by the facilities area of various HEIs in the region such as encouraging the use of bicycles rather than motor vehicles, separating waste products on campus and the use of energy efficient design principles in some new buildings. There are some good examples at the University of Twente, for example the AKI Building on the Driernlo campus (where the AKI is located), where principles of environment sustainability are employed in building design. No performance parameters are provided however, for example in relation to savings in greenhouse gas emissions, water and energy savings, waste minimisation, etc. This monitoring needs to be carried out.

The Peer Review Team is of the opinion that this is not a sufficient leadership demonstration to the rest of the regional community as to what can be done by higher education institutions to enhance environmental sustainability. *We recommend that a specific Green Campus strategy is formulated that embraces sustainable environment principles that relate to all campus functions. This could be undertaken on a whole-of-Twente region basis across education institutions.*

The SER also refers to initiatives undertaken by Saxion to enhance awareness among regional stakeholders of everyday initiatives they can undertake to enhance environmental outcomes (e.g. the *lectoraten* and the *kenniskringen* in Sustainable Energy Provision and Sustainable Development of the Everyday Environment). This is welcomed, but again not enough is being done to enhance the ecological attributes of the region through learning and knowledge transfer by the HEIs.

There was a general concern raised by the provincial authorities that the HEIs were not doing enough in Twente to foster sustainable environmental objectives, at the same time recognising that there were significant initiatives that could be being pursued.

The Peer Review Team recommends that the HEIs in Twente jointly agree an approach to enhance sustainability outcomes for the region that bring together their collective expertise, programmes, experiences and leadership and that they each develop sustainable practice strategies for their own institutions and for the region as a whole. There are many opportunities to work with the province, local authorities and local enterprises concerned with technology applied to solving environmental issues such as water quality, air quality and waste minimisation. There may be opportunities in this area for inclusion, for example, in the Kennispark initiative.

6.5 Conclusion

The Review Team notes all the relevant initiatives being undertaken by individual HEIs in the region and feels these and others could form a region-wide strategy approach to the role of higher education in social development with specific objectives and targets that involve partnership approaches not only among the HEIs but with regional partners as well. Again, the Roombeek

redevelopment provides a central focus for a joint centre of excellence in social development research and learning to be instituted around this new community. Our view is that Roombeek has such a high profile standing in the community and beyond that it would be a good vehicle for bundling good practice initiatives in the social development area.

Noting the important contribution that HEIs can make to social, cultural, environmental, and civic development that underpins and sustains economic development the Peer Review Team recommends consultation between relevant national and regional authorities about ways of financially supporting these dimensions of HEIs' regional mission.

7. THE CONTRIBUTION OF HEIS TO CAPACITY BUILDING FOR REGIONAL COOPERATION

The central problem with Twente's governance is that it is highly fragmented. There are fourteen municipalities, and a province (which also covers two other regions). Although there is a regional authority, its powers are extremely limited. This can make it difficult to combine and concentrate resources to achieve projects of strategic regional importance. In the field of urban governance, Twente has potential to be a strong polycentric urban region with three main cores, but those three cities have historically been reluctant to work meaningfully together to allocate regional functions between them.

In the last few years, the governance issue has begun to be addressed by creating new regional bodies (notably *Netwerkstad* and the Innovation Platform), and HEIs have contributed to making these bodies successful. The Peer Review Team noted that Saxion UPE had recently signed a "letter of intent" together with the province, and we regard this as one initial step towards building a strategic relationship between the HEIs and regional stakeholders in Twente.

The other challenge that the region faces is that many of its collective organisations have stagnated and ceased to be useful. HEIs have also helped in revitalising a number of these bodies, and contributed to the debate around attempting to eliminate superfluous and overlapping activities. However, as with other spheres, HEIs are not contributing strategically to these processes. In this chapter, we comment on how the existing good practices outlined in previous chapters can be strategically harnessed to strengthen regional decision-making capacity and ultimately elevate Twente's development trajectory.

7.1 Current good practice in regional capacity building

In Chapter 3, we identified that the key economic development issue for Twente is addressing the lack of upwards mobility in the regional human capital process. An important component of this is the lack of critical mass in Twente. It is a relatively small region, there are not strong knowledge-intensive businesses, and in particular there is not the headquarters of one of the "Big Seven" companies of the Dutch economy (i.e. Philips, ASML, Shell, Akzo, Unilever, DSM and Océ). The failure to collaborate between regional stakeholders means that Twente is not realising economies of scope and scale at the level of the city region. This has created a range of issues for the HEIs, and in their responses to those issues they have demonstrated a range of innovative good practices.

Some of those effects have been the result of HEIs working with one municipality but then spreading the effects more generally across the Twente region. The *Muziekkwartier* project appears to be a good example of this (see Chapter 6, text box 6.2). Another similar example of HEIs involving themselves in addressing gaps in regional governance can be seen in the case of the Education Boulevard project. In both these cases, an important part of the success has been for several HEIs (Saxion, AKI; Saxion, Edith Stein, UT) to work together to join up national policy agendas at a regional scale to deliver the regional goals to which national policy-makers have pledged commitment. Despite having different reporting and accountability structures, Twente's HEIs have worked together

effectively and innovatively in these particular projects to address problems hidden from the national ministries.

The Peer Review Team recommends to national policy makers to consider introducing a funding instrument to support innovative and structural co-operation between HEIs to promote regional economic development.

An example of good practice is how an HEI has helped municipalities to work together is the case of Kennispark (see text box 7.1 below).

Box 7.1. Kennispark

Since the 1980s, the University of Twente has been developing a science park to the south of its campus, originally focused around the Business & Technology Centre (BTC), but extending over time to include a 40ha Business and Science Park (BSP) housing a range of high technology inwards investors, bureaux for national firms as well as spin-offs from the university. This science park has avoided the "high-technology fantasy" of many science parks by creating buildings filled with firms and networks which demonstrate successes which have been achieved by close co-working with the university.

The early successes in the 1980s persuaded the Enschede municipality, through the *Netwerkstad Twente* to participate and develop the site. However, more recently, the *Netwerkstad Twente* has been persuaded to support a proposal for an extension to the BSP, called *Kennispark* (Knowledge Park) because of the regional benefits which that could bring. The BSP will be very close to Hengelo and will clearly benefit all the municipalities in the region by providing the basis for knowledge overspill. Thus, *Netwerkstad* have "adopted" the Kennispark proposal, and it has helped to bring the idea of a genuine city-regional governance structure closer to fruition.

The final element of good practice is the way that HEIs are working together to insert themselves strategically at the heart of regional decision-making, thereby strengthening that decision-making capacity and addressing a key shortcoming in the regional governance structure (*cf.* Chapter 3).

The Peer Review Team noted the project steering committee for the project in the region had been a valuable forum where all the HEIs can meet, exchange information and agree common agendas for the future. Moreover, a number of regional partners, including the Chamber of Commerce (KvK) and the Industry Circle (IKT) had used the SER to show to their members the scope and value of HEIs' business engagement in Twente. This suggests that there might be value in extending the lifespan of the steering committee beyond the life of the project, to ensure that the recent gains made in partnership working between HEIs were not eroded in the future. Of course, a number of these HEIs were also participating actively in the Twente Innovation Platform. The Peer Review Team regarded this as a sound attempt to focus and align university and commercial research and innovation to attempt to overcome some of the problems of critical mass in the region.

For these reasons, the Peer Review Team recommends the establishment of an additional sub-group within the Innovation Platform Twente comprising representatives of the existing Regional Steering Committee for this project to focus on a cross-cutting strategy for developing the region's human capital.

7.2 Towards an integrated enterprising Twente

The key issue for Twente remains the fact that what the HEIs are doing in terms of the regional governance system is coping with particular problems rather than systematically solving their causes. Although Twente's HEIs cannot themselves produce a better system of regional governance, the Peer Review Team saw evidence where HEIs, by extending their existing practice, could improve the quality of regional governance. In particular, we saw value in HEIs collectively articulating a regional strategic vision for Twente as a knowledge economy for all its communities.

One of the problems for regional governance is that there is a lack of a clearly expressed demand for regionalism. The national level sees the regional level as a means of delivering national sectoral targets, through institutional and other local entities. Local partners have until now been relatively narrowly focused on their own interests. However, where HEIs have demanded effective regional governance as a precondition for their own action, such as in *Kennispark*, then local and provincial level actors have responded to this. There needs to be a formal mechanism for HEIs to articulate their need for a strong regional tier, and to express what the HEIs will do in return for the regional economy.

As part of this, regional HEIs need to speak directly to the region; although mechanisms like the Saxion "letter of intent" are useful, they are couched at a high level and are not specific in relation to time periods, resource allocation, tasks and expected outcomes. The Review Team is of the view that agreements reached in the region need to be both detailed and formal in nature reflecting a purposeful commitment. The Peer Review Team was inspired by the idea that the new president of the University of Twente was planning to write an open letter to the region on what he had seen in his first three months in the post.

The Review Team recommends that all the HEIs open a dialogue with regional stakeholders, with particular regard for building communications with individuals and communities who might believe that higher education is not for them.

The Peer Review Team believes that there is scope to develop a mechanism for local communities to hold HEIs accountable. Without inviting a barrage of trivial and/or vexatious complaints, regional HEIs should set out clearly, individually and collectively, their principles for regional engagement, and implementation plans, and respond at a board level to local stakeholders who believe that they are not meeting their commitments in this area. An element of improving regional governance is improving the framework for regional partnership and dialogue.

Currently, OOST have good relationships with all the HEIs for presenting the region externally, but this – as with many other activities in Twente – is limited and shows a few strengths rather than the true potential awaiting to become harnessed. There are well established mechanisms for attracting inward investors by showing the strengths of the HEIs in bid books, and also for lobbying to the national government, for example in the *New Perspectives for Twente* document launched in the light of the closure announcement of the Twente airbase. However, we heard evidence that external perceptions of the Twente region more generally have not caught up with the reality of the entrepreneurial region.

The Peer Review Team recommends that the experimental nature of HEI-regional linkages in Twente are acknowledged as best practice at the provincial and national level, and that further funding is found to explore how more systematic linkages might be further developed. This would unlock the latent innovative potential of many of the excluded communities in the region, and therefore improve the region's overall contribution to the Netherlands meeting the Lisbon agenda targets.

7.3 Extending the benefits across the Human Capital Pyramid

The key regional issue seems to be that efforts by HEIs in Twente are fragmented and mainly directed at the top end of the human capital pyramid, targeting those groups which bring quick economic benefits (so-called low hanging fruit) rather than assisting with the broader process of regional social change. Consequently, the good activities in the region are not achieving a *transformatory* effect, reaching out into communities and inspiring those across the region to respond to the new opportunities of the knowledge economy.

To deliver the recommendations outlined above, *the Peer Review Team recommends that the HEI/region interface is strategically managed, in such a way that all people in the region have a "feeling" for the region's HEIs, and understand what the HEIs can offer them when they have particular needs.*

We recommend that all Twente's HEIs participate in a regional Higher Education Association, to continue the good work initiated through the Steering Group for this project. An HEA is an association of regional HEIs involving strategic participation at the most senior level (Rector/President), with its work delivered through a number of working groups undertaken by Executive Board level staff. We believe that the establishment of a new Hoger Onderwijs Twente (HOT) will greatly help in strategically joining up all the work undertaken in the region, and demonstrate to other regional partners the ways that diverse activities can be integrated for a greater regional good. The success of HOT is dependent on it having genuinely new flexible resources to achieve these tasks, giving the HEIs the resources to work collectively, and linking it with the Innovation Platform Twente.

A central task for HOT will be to co-ordinate the development of a Twente Human Capital Strategy plan extending from the early and primary school education to life long learning based on a regional knowledge audit, encompassing all levels of education.

The Peer Review Team commends the scope and the extent that the HEIs have inserted themselves in a variety of activities across regional communities. However, we strongly recommend a more structural mechanism, alongside the HOT, in the form of a regional compact identifying objectives, resources, timeline to embed regional engagement in activities which will take a longer time to come to produce returns.

The Peer Review Team is concerned with the differing levels of progress in delivering formal institutional missions for regional engagement. *We therefore recommend that HOT undertake a comprehensive audit of institutional strategies, missions, funding streams and identified Human Resources which are supporting regional engagement across the various regional priorities. We further recommend this audit be used to embed best practice at the highest level of the HEIs in the region.*

7.4 Recommendations to individual HEIs

The Peer Review Team commends the fact that UT has used their recent change of management to reaffirm their commitment to regional engagement. We welcome Professor Flierman's desire to open a dialogue with the region and we urge UT to continue to entrench these activities institutionally. This dialogue should be ongoing and wide ranging. *The Review Team sees the next step in regional engagement for UT being to extend the commitment of senior managers to all UT staff and students so that all have clear career paths and incentives to pursue regional engagement.*

The Peer Review Team notes that **Edith Stein** has only recently made a commitment towards regional engagement, and praises them for this commitment, and the substantial progress that they have made in the last two years to delivering that commitment. We were impressed with the way Edith Stein's *lectoraten* and Education Boulevard matched solid achievements against aspirations. *The Review Team recommends the next step in regional engagement for Edith Stein to be in communicating this progress across the region, and making more explicit their various regionally-facing projects and highlighting further opportunities for stakeholder involvement.*

The Peer Review Team recognises the various ways in which **Saxion** has begun to place strategic engagement at the heart of its organisation, and begun to develop projects and mechanisms to diffuse regional engagement throughout its routine working practices. Saxion are to be commended both for this and the work they have performed in bringing together the regional HEIs within this project. We are interested to see how Saxion deal internally with the issues which will inevitably arise from being present in three regions (Twente as well as the Stedendriehoek and IJsselvecht). *The Review Team sees the next step in regional engagement for Saxion in consolidating this regional leadership role, committing themselves to establishing HOT, and ensuring that HOT becomes an effective part of Twente's regional governance.*

The Peer Review Team acknowledges that the **AKI** is in a period of change, and strongly support Saxion's and AKI's decision to move the Conservatorium into the AKI. The Review Team was impressed to see AKI and the Conservatorium performing unique roles in Twente, and to some extent compensating for the lack of "alpha" (liberal arts) subjects offered in UT (and to a lesser extent Saxion). *The Review Team sees the next step in regional engagement for ARTEZ in Enschede being to take a strategic location decision which maximises both its pedagogical value and the contribution to regional development.* Although AKI may not move to Roombeek, the way that decision is handled will be important in producing an effective dialogue with the region and ensuring that the positive consequences of its location are maximised.

The Peer Review Team notes that **ITC** is not an institution with an intrinsically high regional engagement potential. The Review Team commends ITC for its timely and measured response to the Pakistan earthquake, and sees this as something which could effectively be used to engage and inspire otherwise excluded regional communities. *The Review Team sees the next step in regional engagement for ITC in integrating its student community more fully with those of Saxion and UT, to maximise the benefit to ITC students, but also to build more cosmopolitanism and vibrancy in Enschede and surrounding regions.*

The Review Team has noted the breadth of pathways into higher education provided in the region through a diverse tapestry of smaller institutions including SWOT, TSM, the Volksuniversiteit and the Open University. *The Review Team recommends that all these institutions engage with the proposed HOT in a formal manner. We recommend the new SWOT/ TSM foundation be a full member of HOT, the Volksuniversiteit involve itself with sub-committees, and the Open University be invited to have observer status. We further recommend that the HOT have a strategic projects sub-committee that decide on how Twente's HEIs will engage with Roombeek, Hart van Zuid, Waterrijk. ROC Twente and the AOC should also be invited to participate in such strategic projects as appropriate, as well as being involved directly in the preparation of the Regional Human Capital plan for Twente.*

8. CONCLUSIONS AND RECOMMENDATIONS

In this concluding chapter we draw together the recommendations embedded in earlier chapters. They are not summative judgments and hence should not be read in isolation from the argument in the body of the report. Our key conclusions deal with unlocking the potential of enterprising human capital in the region.

8.1 Enterprising Human Capital

The Twente region has a well founded international reputation for innovation and entrepreneurialism. There are a number of highly innovative and unique initiatives that contribute to this reputation. The HEIs in the region are at the forefront of stimulating and partnering in these good practice initiatives. Nevertheless, as a region Twente lags behind national performance aggregates in a number of areas. This suggests some incongruity or incompleteness associated with the current entrepreneurialism and innovation strategy.

The Peer Review Team believes that much more can be achieved in Twente with its entrepreneurialism and innovation agenda by taking a wider and deeper approach to the region's human capital potential through more focussed and collaborative action by the region's higher education institutions. We feel there is a need for a complementary strategy for the region that focuses on dismantling the barriers to innovation and entrepreneurialism in all areas of the region's human capital that may have become unknowingly erected through the current approach.

In particular, to ensure that the current strategy of innovation and entrepreneurialism realises outcomes of sustainable significance we feel the focus on the region's human capital should be on realising its enterprising potential, in other words, enhancing the region's capacity for realising on-the-ground outcomes throughout the regional community from its innovation and entrepreneurial activity. The current mechanisms in the region for facilitating innovation and entrepreneurship are limited in two key areas:

First, they are concentrated in their vertical reach to a particular segment of the region's human capital that has high level technical academic exposure and an enthusiasm and direction for advancement. These are generally a small cohort of the population, predominantly highly educated males, generally in the ages 20 to 35 years. It generally tends not to extend to other areas of available regional human resources such as those in primary and secondary education, those in older age categories, as well as those in the "non-innovative areas" of regional society. A sub-element of this is that there is a concentration of innovation and entrepreneurial effort to the main urban areas to the exclusion of the more peripheral rural communities in the region.

Second, they are concentrated in their horizontal reach to the process of idea generation and its conversion into products and processes but there is limited transmittal or translation into outcomes of meaningful usefulness for society and the environment locally or globally (i.e. market penetration and growth). This connotes the need for skills in business strategy, product development, risk assessment, accessing business finance, human resource management and so on. Such an approach requires complementary comprehension of the way society works and how it can be a supportive milieu for sustainable development, and a focus on outcomes that is timely in this regard.

The result from these two limitations is that invisible barriers have been erected to the achievement of greater regional outcomes by limiting the realisation of the full potential of the region's human capital.

Our observation from the review process is that there are a number of key instruments that can be used as vehicles to enhance the reach of an enterprising human capital agenda for the Twente region that involve the HEIs. These instruments would add value to the current regional strategy of innovation and entrepreneurship and would include the wider application of some existing innovative initiatives, more collaborative action on a number of additional fronts, and changes to government policy.

8.2 Collation of recommendations to HEIs in the region

8.2.1 *Towards a more strategic approach*

The Peer Review Team commends the Regional Steering Committee of the project for bringing the higher education institutions together for the first time to carry out a collective dialogue on regional matters of importance to Twente. While the Self-Evaluation Report was a major effort led by the Saxion UPE we recommend that the region creates mechanisms to ensure that the learning process bringing together the higher education institutions and the regional stakeholders will not be a one-off activity but will continue and grow.

The Peer Review Team recommends that all the region's HEIs participate in a regional Higher Education Association (HEA), to continue the good work initiated through the Steering Group for this project. An HEA is an association of regional HEIs involving strategic participation at the most senior level (Rector/President), with its work delivered through a number of working groups undertaken by Executive Board level staff. We believe that the establishment of a new Hoger Onderwijs Twente (HOT) of this kind will greatly help in strategically joining up all the work undertaken in the region, and demonstrate to other regional partners the ways that diverse activities can be integrated for a greater regional good. The success of HOT is dependent on it having genuinely new flexible resources to achieve these tasks, giving the HEIs the resources to work collectively, and linking this work with the Innovation Platform Twente.

A central task for HOT will be to co-ordinate the development of a Twente "Human Capital Strategy" plan extending from the early and primary school education to life long learning based on a regional knowledge audit, encompassing all levels of education. The HOT would also undertake a comprehensive audit of institutional strategies, missions, funding streams and identified human resources which are supporting regional engagement across the various regional agents and agencies. We further recommend this audit be used to embed best practice at the highest level of the HEIs in the region.

8.2.2 *Building bridges and open dialogue*

The Peer Review Team commends the University of Twente and Saxion UPE for their close cooperation to ensure that there are well defined student progression pathways between the institutions. In this regard the Peer Review Team makes the following recommendations to take this further throughout the region.

The Peer Review Team recommends that the HEIs give consideration to systematising the links and pathways between the region's HEIs and between HEIs and lower level institutions to identify areas that can be strengthened. We also recommend that HEIs, as autonomous bodies with

commitment to their location, actively seek ways to contribute to helping with the general upwards movement of individuals, by widening the appeal of their courses and services throughout the region and working with regional businesses and the community's action plans to help them begin to be enterprising and learning. We also suggest that such an approach consider designing and delivering education programmes within HEIs which support the development of social enterprise skills throughout the Twente region.

The Peer Review Team recommends the adoption of a mechanism to systematically identify where communities are mobilising themselves, going into these communities as partners. It is important that it is not only the flagship projects, as defined for example through the regional economic development plan, the airbase closure strategy and the Innovation Platform that are writ large in the region, but that a myriad of other initiatives large and small are also incorporated. This will transform the scope of what those projects will achieve, injecting extra vitality on social enterprising (through credit earning and/or voluntary student work, internships, mobilising the student societies, and so on).

The Peer Review Team recommends that ongoing demonstration programmes are introduced to highlight how innovative products and processes can be adopted in all levels and spheres of the Twente region society. This can be manifested in the form of annual knowledge festivals, product and process demonstrations in public spaces, etc.

The Peer Review Team recommends highlighting the profile of the HEIs within the region as places to which all people can aspire, and where all people can learn the skills and make the connections to take more control over and responsibility for their local environments. There is a need to explain how the particular sectors within the Innovation Platform will transform the lives of local people throughout all quarters of the Twente region. We recommend that all HEIs create physical locations of across the region where locals can begin to feel comfortable with engaging in learning with the assistance of the HEIs.

The Peer Review Team recommends that Twente's HEIs place more effort in promoting their contribution to the social, environmental, and cultural development of the region. Moreover, the Review Team recommends that serious consideration be given to how these social, environmental and cultural activities, particularly those which engage with excluded and deprived communities, can be used to empower and upskill those groups, and help move them towards a position of sustainable lifelong learning.

The Peer Review Team recommends that the HEI/region interface be strategically managed, in such a way that all people in the region have a "feeling" for the region's HEIs, and understand what the HEIs can easily offer them when they have particular needs.

The Review Team recommends that all the HEIs open a dialogue with regional stakeholders, with particular regard for building communications with individuals and communities who might believe that higher education is not for them.

8.2.3 Enhancing education

The Peer Review Team believes that the region and its HEIs – as a matter of urgency – address the low participation issue through raising the aspirations of young people and the region's residents generally. This can be done through engaging educational institutions with the community and reaching out to schools, business, institutions and organisations of various kinds, and key issues of regional concern. This will be most effective if engagement is channelled through visible projects

which demonstrate their relevance to regional communities. The Peer Review Team makes the following recommendations to assist with this objective.

The Peer Review Team recommends that the proposed HOT undertake a review of teaching and learning programmes and courses that currently exist with the region with a view of establishing stronger synergies and pathways to enable a greater reach throughout the community across the different local communities as well as the different socio-economic and demographic groups. It should also review existing entrepreneurship education programmes and examine whether marketing and commercialization aspects or any other issues (such as partnerships, pathways, flexibility in delivery arrangements, etc.) that are relevant could be further developed to enhance the reach and completeness of these teaching and learning initiatives for the benefit of the region as a whole. This would also include encouraging the uptake of such programmes by other education institutions, such as lower and medium professional education institutions and even secondary and primary education schools.

The Peer Review Team recommends that HEIs (including TSM/SWOT and ITC) actively seek ways to extend and adapt their current adult education programmes for the benefit of lower and middle layers of the human capital pyramid in Twente.

The Peer Review Team recommends that HEIs cooperate with lower level educational institutions e.g. through the development of joint education programmes. We also recommend cooperation (e.g. student placements) with companies, which employ graduates from these institutions.

8.2.4. Enhancing community building

The Peer Review Team proposes several recommendations that seek to build the social, cultural and environmental basis of the region.

The Peer Review Team recommends that Twente's HEIs place more effort in promoting their contribution to the social development of the region. A solid social foundation in the region will provide a basis for greater regional outcomes to occur from its innovation and entrepreneurial strategies. Moreover, the Review Team believes that serious consideration be given to how these social initiatives, particularly those which engage with excluded and deprived communities, can be used to empower and upskill those groups, and help move them towards a position of sustainable lifelong learning. Because the economic pay-offs from this are long-term, we believe that it will require a significant commitment from HEIs and local, regional and provincial partners to achieve this. The long-term commitment is of vital importance if regional partners are serious about addressing many of the weaknesses identified in the Regional Human Capital Pyramid.

The Peer Review Team recommends that a specific Green Campus strategy is formulated that embraces sustainable environment principles that relate to all campus functions. This could be undertaken collaboratively by all education institutions on a whole-of-Twente region basis.

The Peer Review Team recommends that the HEIs in Twente jointly agree an approach to enhance sustainability outcomes for the region that bring together their collective expertise, programmes, experiences and leadership and that they each develop sustainable practice strategies for their own institutions and for the region as a whole. There are many opportunities to work with the province, local authorities and local enterprises concerned with technology applied to solving environmental issues such as water quality, air quality and waste minimisation. There may be opportunities in this area for inclusion, for example, in the Kennispark initiative.

8.3 Collation of recommendations to regional stakeholders

The Peer Review Team commends the region for the progress it made in consolidating leadership through the establishment of the Innovation Platform Twente. We recognise that the five clusters identified by the platform are consistent with the national policy framework as set up in Pieken. While the five sectoral thematic areas are well targeted, the Peer Review Team feels a more inclusive regional engagement approach could be achieved by introducing a common link to connect the five themes i.e. the addition of the 6th, cross-cutting, theme: addressing the question of human capital.

The Peer Review Team recommends that Twente formalises the co-operation between regional HEIs into a structural mechanism (which we have named a Hoger Onderwijs Twente or HOT), producing a strategy and implementation plan for a full “Human Capital Plan for Twente”.

The Peer Review Team commends the region and its universities for their entrepreneurial activities and in particular their record of producing spin-off companies. We however believe that delivering the high level message of entrepreneurship is not a completed task and has not been fully carried out across the region and the whole Human Capital chain. We recommend the region brand itself as the entrepreneurial or enterprising region, as “a place where people get things done”. However, in order for the reality of an Enterprising Twente to match the brand, there is a need for a more systematic approach in disseminating good practices in regional engagement between institutions, and ensuring HEIs work with communities at all levels.

The Peer Review Team recommends that the next strategic step in improving Twente’s performance is in extending successful modes of engagement from high-technology communities into promoting economic, social and environmental development in excluded inner-city and rural communities.

The Peer Review Team recommends that a formal mechanism be created so that when flagship projects are announced, the HEIs automatically produce a collective response. This response will focus on ensuring that individuals and teams within the HEIs who have something to offer to particular projects have the physical, organisational and financial opportunity and encouragement to co-develop these projects.

8.4 Consideration for future policy development and implementation at national level

The majority of our comments and recommendations are addressed to the Twente region and its HEIs. However, the policy context for that region is national. We have described the attitude of central government elsewhere in the report. Recommendations reproduced below exhort “the Hague”, and particularly the Ministry of Education, Culture and Science, to “buy-in” more fully and openly to regionalism. The other general lesson emerging from the Twente review concerns the need for joined-up governance. The following recommendations are therefore directed at the National Government to ensure there is a strong policy and programme connection that takes into account the diversity of Netherlands regions that will enable them to more fully unlock their potential.

The Peer Review further recommends that the Ministry of Education compiles basic information on the geography of higher education within the national territory including identification, for the higher education system as a whole, which courses are taught where, the home origins of students and where graduates enter into the labour market. The analyses need to be benchmarked against regional data on participation in higher education and industrial and occupational structure to identify areas of under and over provision. The mapping task need to identify the steps between different levels of education system – schools, further/vocational education colleges, higher education, post graduate

institutions – to assess how far the regional pattern of provision assists/inhibits access and progress of students. In short, geographical analysis should highlight the fact that lifelong learning is an agenda that should be responsive to the needs of people in places.

The Peer Review Team recommends that the government, through the region's leadership, take note of the strategic initiatives that can be undertaken by the region's HEIs and provide the facilitative support required to assist to bring the regional plans to fruition. This will involve assistance in bringing about the necessary structural and behavioural change within the HEIs themselves and in their relations with wider regional stakeholders.

To strengthen the regional contribution to national growth and make government policies more regionally relevant and effective in engaging with diverse regional communities, the Review Team recommends that the government introduces discretionary funds to support the structural and collaborative requirements for HEIs to purposefully pursue regional engagement.

For the government to be able to introduce discretionary funds to support HEIs' regional engagement instead of ad hoc program initiatives, the Peer Review Team recommends a creation of strong evaluation framework that can show the the HEI contribution to agreed regional outcomes and partnerships.

The Peer Review Team recommends to national policy makers to consider introducing a funding instrument to support innovative and structural co-operation between HEIs to promote regional economic development.

Noting the important contribution that HEIs can make to long-term social, cultural, environmental, and civic development that underpins and sustains economic development the Peer Review Team recommends consultation between relevant national and regional authorities about ways of financially supporting these dimensions of HEIs' regional mission.

The Peer Review Team recommends that the experimental nature of HEI-regional linkages in Twente is acknowledged as good practice at the provincial and national level, and that further funding is found to explore more systematic linkages. This would unlock the latent innovative potential of many of the excluded communities in the region, and therefore improve the region's overall contribution to the Netherlands meeting the Lisbon agenda targets.

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APPENDIX 1. THE OECD REVIEW TEAM

Lead Evaluator

Dr Steve Garlick has more than twenty years experience in the field of regional development as a policy developer and ministerial adviser, programme manager, regional practitioner, and researcher. He was a senior executive in the Australian Government for around twelve years in the areas of regional development, industry and local government. He holds Masters and PhD degrees in economics. He is currently Professor of Regional Engagement at the University of Sunshine Coast and an adjunct professor in regional development at Swinburne University of Technology in Melbourne. His research interests are in the fields of regional and community development, higher education, and institutional performance assessment. For the last eight years he has researched and published particularly in the area of universities and regions. He also runs a research consultancy business. He also has a keen interest in ethics and in his spare time is the president of a large Australian native animal caring organization and, with his wife, cares for injured and orphaned wildlife on their property near Canberra.

International Expert

Dr Paul Benneworth is a Research Councils UK Fellow in Territorial Governance at the School of Geography, Politics and Sociology at the University of Newcastle upon Tyne, U.K. In 1999-2001 he was a member of the OECD Technology and Innovation Policy Group focus group on clusters. He has been working on the role of universities and regional development since 1998, and was a joint author of the HEFCE report "The regional mission" in 2001. In 2004-05, he ran an ESRC-funded research project comparing the impact of university spin-out companies in old industrial regions. He is a board member of the Regional Studies Association, and is the Editor of Regions, the RSA Newsletter. Since 2004, he has been a visiting researcher at the Faculty of Business Studies at the Radboud University, Nijmegen. He is writing the literature review for the current IMHE project with Professor Peter Arbo.

National Expert

Dr Peter Vaessen is a contract researcher at the Radboud University Nijmegen, department Nijmegen School of Management. At the Nijmegen University he also obtained his doctoral degree, in the field of Economic Geography with a thesis on small business growth in contrasting environments. Then he moved to the University of Utrecht, Department of Sociology, conducting basic research on trust relations between organizations. After four years he returned to the Radboud University of Nijmegen. His recent work elaborates on these two fields of knowledge. Since 1998 he has been measuring and analyzing the interconnections and flows between the Nijmegen University and the external environment. Apart from research on external linkages of the Nijmegen University he carries out research on new and small businesses. He takes a special interest in the relations between new businesses and their incubator organizations, including, among others, university spin out companies. Among his research interest fields are also the relations within organizations and management teams.

Team Coordinator

Jaana Puukka is the OECD consultant managing the IMHE project on "Supporting the Contribution of HEIs to Regional Development". She has experience in regional development as a ministerial and local government adviser, programme manager, practitioner, and evaluator. She is the Regional Development Manager of Turku Polytechnic, the biggest professionally oriented HEI in Finland, and has been involved in the evaluation of Turku University's external impact and the subsequent re-evaluation. She has worked for the Ministry of Education for the review of master's programmes with funding from the EU structural funds.

APPENDIX 2. REGIONAL COORDINATOR, REGIONAL STEERING COMMITTEE, AND THE AUTHORS OF THE REGIONAL SELF-EVALUATION REPORT

Regional Coordinator

Irene Sijgers, Senior Project Manager, Saxion UPE

Regional Steering Committee

Wim Boomkamp, Member of the Board, Saxion UPE (Chair)

Kees van Ast, Vice President of the Board of the University of Twente, (as of 1 Oct 2005)

Willem te Beest, Vice President of the Board of the University of Twente (until 1 Sep 2005)

Erik Helder, Alderman of the City of Enschede

Wilma Van Ingen, President of the Chamber of Commerce

Henk Mulders, President of the Board of Edith Stein

Geert de Raad, President of the Industrial Circle Twente

Richard Slotman, Management Consultant, Netherlands Association of Professional Education
(HBO-Raad)

Regional Coordination Team

Gabi Brühne, Coordinator of Edith Stein

Henk Brouwer, Coordinator of SWOT and TSM

Juud de Lange, Coordinator of ICT

Irene Sijgers, Senior Project Manager, Saxion UPE

Peter Sonderen, Coordinator of AKI

Sjoerd van Tongeren, Executive Director, Coordinator of the University of Twente

Authors of the Regional Self-Evaluation Report

Derek-Jan Fikkers, Researcher, Institute of Governance Studies/CSTM, University of Twente

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Gert-Jan Hospers, Assistant Professor of Economics, University of Twente

Ben Jongbloed, Senior Research Associate, CHEPS, University of Twente

Paul Nieuwenhuis, Manager Education & Quality Care, Saxion UPE

Peter van der Sijde, Senior Project Manager, University of Twente

Irene Sijgers, Senior Project Manager, Saxion UPE

APPENDIX 3. PROGRAMME OF THE REVIEW VISIT

27 Nov – 3 Dec 2005

Sunday 27 November

The OECD Peer Review Team arrives at Enschede

17.00-18.00 Meeting of the Peer Review Team with the Regional Coordinator

18.00-21.00 Internal meeting of the Peer Review Team

Monday 28 November

Venue: Saxion, Enschede

9.00-10.00

The management of Saxion UPE

drs. Wim Boomkamp, Member of the Board of Saxion UPE

drs. Frans Pol, Director of AGZ (School of Healthcare)

ir. Peter van Dam, Director of LED (School of Life Science, Engineering and Design)

drs. Hans Weusthof, Director of ABO (School of Business Administration and Entrepreneurship)

10.30-12.00

Regional Steering Committee for the OECD Review

drs. Wim Boomkamp, Member of the Board of Saxion UPE and Chairman of the Steering Committee

drs. Wilma van Ingen, Chairman of the Chamber of Commerce Veluwe and Twente

drs. Henk Mulders President of the Executive Board of Edith Stein UPE

ing. Geert de Raad MBA, President of "Industry Circle Twente"

drs. Richard Slotman, Management Consultant HBO-raad

13.00-14.00

Ministry of Economic Affairs

Gerhard Schouten, Policy Officer for the Netherlands, Eastern part

14.15-15.15

Intermediary organizations

drs. Pieter Dillingh, Senior Project Manager, Regional Development Agency "Oost NV".

drs. Ton ten Vergert, Regional Secretary of the Chamber of Commerce Veluwe and Twente

Jan Scholten, Consultant, Syntens (Business Innovation Network)

15.30-16.30

Innovation Platform Twente

drs. Paul Bijleveld, Secretary of the Innovation Platform Twente

dr. Michiel Scheffer, *lector* at Saxion UPE

prof. dr. M.A.F.J. van de Laar, Medical Manager of Medical School Twente (MST), Enschede

17.00-20.00

Internal meeting of the Peer Review Team

Tuesday 29 November

Venue: Various

9.00-10.00

Higher education institutions AKI, ITC and SWOT/TSM

Location: TSM Business School, Enschede

dr. Peter Sonderen, Director of AKI UPE, Art Academy

prof. dr. ir. Martien Molenaar, Director of ITC International Institute for Geo-Information Science and Earth Observation

Yvo Matser M.Sc., Director of SWOT and TSM Business School

10.45-11.45

Edith Stein University of Professional Education

Location: Edith Stein, Hengelo

drs. Henk Mulders, President of the executive board

drs. Inge Sterenborg, Director

drs. Gabi Brühne, Team Manager

12.00-13.00

Primary and secondary schools

Location: Edith Stein, Hengelo

Herman Slot, Manager, Stichting VPCO Centraal Twente (Association of Primary Education), Enschede

drs. Peter Breur, Member of the Board, Schaepmanstichting (Primary Education), Hengelo

Tom Morskieft MME, president of the management team, Stichting Carmelcollege (Association of Secondary Education), Oldenzaal

drs. Albert van de Werf, President of the Board of OSG Hengelo (Secondary Education), Hengelo

13.30-14.30

Representatives of Thales

Location: Thales, Hengelo

Aart Jan Smits, Director Strategy & Marketing

Dick Arnold, Director Research & Technology Thales NL, Director International Projects, TRT Corporate at UT

prof.dr. ir. ing. Frank Leferink, Technological Authority, EMCelectroMagnetic Compatibility

ir. Pieter de Witte, Director Training & Development

14.45-16.15

Cultural Visit

16.30-17.30

Municipality of Hengelo

Location: City Hall, Hengelo

Drs. Frank Kerckhaert, Mayor of Hengelo and President of the Steering Committee of Network-city Twente

Wednesday 30 November

Venue: Saxion, Enschede

9.00-10.00

Fast forward theme group

ing. Aldo van Duivenboden MBA, companion of Fast Forward trainees, Marketing Manager, Hitec Power Protection (Factory of Power Protection Systems), Almelo

Simone Talla, Fast Forward Trainee at Hitec Power Protection (Factory of Power Protection Systems), Almelo

Boris Kruidhof, former Fast Forward trainee, Manager Service and Repair, Switch (SME), Oldenzaal

Alberto Tiehuis, Manager Human Resource Management, Stork, Hengelo

10.30-11.30

Ministry of Education, Culture and Science

mr. Joost den Oudsten, project manager Innovation Higher Education

12.00-13.00

Cultural affairs

drs. Joop Hassink, Alderman of Cultural affairs, Municipality of Enschede

14.00-15.00

Design and technology theme group

ir. Henk Jansen, Director, INDES (SME), Enschede

ir. Fred van Dijk, Managing Director, First (SME), Enschede

ir. Peter van Dam, Director of LED (School of Life Science, Engineering and Design), Saxion UPE

prof. dr. ir. Fred van Houten, CTW, University of Twente

15.15-16.15

Health and technology theme group

dr. Hermen van der Lugt, Business Development Manager, Telematica Institute, Enschede

Ton Swagerman MHA, Chairman of the Board of Directors, Carint (regional organization for Housing, Welfare and Care), Hengelo

prof. dr. Maarten IJzerman, Director Research and Development, 't Roessingh (Rehabilitation Centre), Enschede

ir. Arjen de Weerd, Director, MMS (SME), Enschede

17.00-20.00

Internal meeting of the Peer Review Team

Thursday 1 December

Venue: University of Twente, Enschede

9.00-10.00

Grolsch Brewery

drs. Ab Pasman, Chairman of the Board of Directors

10.15-11.45

Entrepreneurship theme group

drs. Theodor van de Velde, Senior Advisor Saxion UPE, Director of Lev'l

drs. Jos Brunninkhuis, Manager of the "Small Business" training programme, Saxion UPE

dr. Peter van der Sijde, Senior Researcher, NIKOS and *lector* at Saxion UPE
BBA Mark Hulshof, Starting Entrepreneur

dr. ir. Gert Veldhuis, Managing Director, Nanomi, Enschede

12.00-13.00 **Socio-cultural theme group**
mr. Eddy Tulp, director of Saxion Conservatory
Meine Bruinsma, Director of Co-operation “Muziekkwartier”, Enschede

14.15-15.15 **Student Union**
Steven van Roon, Chairman of the Board
Marlous Boenders, Member of the Board

15.30-16.30 **Executive Board of the University of Twente**
dr. Anne Flierman, Chairman of the Board
drs. Pieter Binsbergen, Secretary of the University of Twente

17.00-20.00 Internal meeting of the Peer Review Team

Friday 2 December

Venue: Saxion, Enschede

9.00-11.00 **Visit to Roombeek**

11.00-12.00 **Meeting with the Province of Overijssel**
drs. Carry Abbenhues, Deputy of Economic Affairs

13.00-17.00 **Internal meeting of the Peer Review Team**

17.00- 18.30 **Feedback to the delegation of the Regional Steering Committee**
drs. Wim Boomkamp, Member of the Board of Saxion UPE, Chairman of
the Steering Committee
mr.dr. Erik Helder, Alderman of Enschede
drs. Pieter Binsbergen, Secretary of the University of Twente
drs. Henk Mulders President of the Executive Board of Edith Stein UPE
ir. Irene Sijgers, Regional Coordinator, Saxion

Saturday 3 December

The Peer Review Team leaves Enschede.