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Supporting the Contribution of Higher Education Institutions to Regional Development

Peer Review Report

The Jyväskylä Region of Finland

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

This Peer Review Report is based on the review visit to the Jyväskylä region in Finland in January 2006, the regional Self-Evaluation Report, and other background material. As a result, the report reflects 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 the Jyväskylä region wish to acknowledge the substantial contribution of the region, particularly through its Coordinating Team, the authors of the Self-Evaluation Report, and its Regional Steering Committee.

TABLE OF CONTENTS

PREFACE 6

EXECUTIVE SUMMARY 7

ABBREVIATIONS AND ACRONYMS 10

1. INTRODUCTION 11

1.1. Evaluation context and approach 11
1.2. The conduct of the evaluation 12
1.3. The Jyväskylä region and Central Finland – key features 14
1.4. The structure of this report 16

2. REGIONAL DEVELOPMENT IN FINLAND AND THE ROLE OF THE HEIS 18

2.1. Introduction: the geography of development 18
2.2. Territorial development policies 18
2.3. The regional dimension to the national innovation system 19
2.4. The definition of funding and for the third task of HEIs 21
2.5. The emerging challenge of globalisation and localisation 22
2.6. Conclusions and recommendations: a Higher Education and Regional Development Fund 24

3. THE REGIONAL INNOVATION SYSTEM 26

3.1. Introduction 26
3.2. The regional economic base 26
3.3. Actors in the regional innovation system 27
3.4. Case Study: Wellness technology and ageing 28
3.5. Case study: renewable energy 29
3.6. Managing the interface with business: Jyväskylä University 29
3.7. Managing the interface with business: Jyväskylä Polytechnic 31
3.8. Integrating the Science Park into the HEIs 32
3.9. Entrepreneurial and business education 33

4. THE LEARNING REGION AND HUMAN CAPITAL DEVELOPMENT 35

4.1. Structure and characteristics of higher education in Central Finland and in Jyväskylä sub-region 35
4.2. University of Jyväskylä – human, nature and technology built on educational heritage .. 36
4.3. Jyväskylä Polytechnic – from a group of vocational colleges to a modern higher education institution 38
4.4. Enterprise education 39
4.5. Adult education – a tool to enhance the matching of skills and labour market needs 40
4.6. Concluding remarks 42

5. CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT 43

5.1. Towards a more balanced perspective 43
5.2. Widening access to higher education 44
5.3. Health, welfare and sustainability 45
5.4. Culture and creative industries 47
5.5. Concluding remarks and Recommendations 48

6. CAPACITY BUILDING FOR REGIONAL ENGAGEMENT 49

6.1. Introduction 49
6.2. City and regional leadership 49
6.3. Conjoint regional action by the University and Polytechnic 50
6.4. Capacity for engagement within the University 51
6.5. Capacity for regional engagement within the Polytechnic 52
6.6. Conclusion: towards a learning region 53

7. CONCLUSIONS AND RECOMMENDATIONS FOR THE NATIONAL GOVERNMENT, REGION, AND THE HEIS 54

7.1. Introduction 54
7.2. National level recommendations 55
7.3. Regional level recommendations 55
7.4. Institutional level recommendations 56

REFERENCES 59

APPENDIX 1. THE OECD REVIEW TEAM 61

APPENDIX 2. REGIONAL COORDINATOR, REGIONAL STEERING COMMITTEE, AND THE AUTHORS OF THE REGIONAL SELF-EVALUATION REPORT 63

APPENDIX 3. PROGRAMME OF THE REVIEW VISIT 64

Tables

Table 1.1 The University of Jyväskylä 15
Table 1.2. Jyväskylä Polytechnic in 1998-2004 (youth education) 15
Table 3.1. Central Finland regional strategies connected to the operation of HEIs 27
Table 3.2. Areas of excellence in research at the University of Jyväskylä 31
Table 3.3. R&D centres of expertise at the Jyväskylä Polytechnic 32

Figures

Figure 1.1 The region and its surroundings 14

Boxes

Box 2.1. The Finnish ICT Cluster: a view from the Ministry of Interior 20
Box 2.2. Ministry of Education Regional Strategy for Higher Education and R&D 21

Box 2.3. Globalisation, Innovation and Universities 23
Box 4.1. Team Academy promotes entrepreneurship 40
Box 5.1. WIRE – Tackling exclusion in Central Finland 45

PREFACE

We have written this report with three main readerships in mind. The first are those working together for the development of the region of Jyväskylä and Central Finland. We hope that the report will help them to enhance the balanced development of the region.

Secondly, this report is intended to assist other regions in Finland: to those playing similar roles at the regional level; and to those in central government who have regions as part of their political interest or administrative responsibilities. We believe this report will be relevant to the national government which is currently faced with the challenge of restructuring local government and regional development policy and implementing legislation concerning the "third task" of High Education Institutions (HEIs).

Thirdly, this report is written for the Organisation for Economic Cooperation and Development, which along with the region owns this review. The OECD interest is to promote international learning about the role of higher education in regional development across a number of Member States.

As with the other reports in this OECD project, we have written for a highly involved and well informed regional policy and practitioner community; but also for those unfamiliar with the local story. Our report attempts to be comprehensible with a minimum requirement of local knowledge.

We have drawn upon a substantial regional Self-Evaluation Report (SER) available on the OECD website.[1] We make no attempt to reproduce or summarise it; readers requiring more background data should refer to that study. We have departed from the OECD reporting template only insofar as the particular conditions of the region to require this, but not so far as to make inter-regional comparison problematic.

We are grateful for the generosity and openness that we met during the review week in January 2006. The extreme circumstances – 27 degrees below zero – had no impact on the visit which ran smoothly, thanks to excellent organisation by the Regional Coordination Team.

1. See project website at www.oecd.org/edu/higher/regionaldevelopment

EXECUTIVE SUMMARY

Background: OECD/IMHE review

This review of the Jyväskylä region in Finland is part of the OECD/IMHE project entitled *Supporting the Contribution of Higher Education Institutions to Regional Development* which embraces 14 regions in 12 countries in 2005/2006. The IMHE thematic review project was launched as a response to a multiplicity of initiatives across OECD countries seeking to mobilise higher education in support of regional development. The aim was to synthesise this experience into a coherent body of policy and practice to guide higher education institutions and regional and national governments. At the same time, the IMHE project was designed to assist with capacity building in each country/region through providing an opportunity for dialogue between HEIs and regional stakeholders and clarifying roles and responsibilities.

Review process

The Peer Review drew on a self-evaluation process guided by an OECD template. This asked HEIs to critically evaluate with their regional partners and in the context of national higher education and regional policies how effective they were in contributing to the development of their regions. Key aspects of the self evaluation related to: the contribution of research to regional innovation; the role of teaching and learning in the development of human capital; the contribution to social, cultural and environmental development and the role of the HEIs in building regional capacity to act in an increasingly competitive global economy.

The Jyväskylä self-evaluation was overseen by a Regional Steering Committee with participation and part financing from key regional stakeholders and the Finnish Ministry of Education. The regional self-evaluation was linked to a national process initiated by the Ministry requiring universities and polytechnics to update their joint regional strategies. The process was characterised by a focus on data collection and review and analysis of existing strategies, plans and policies.[2] The OECD review visit took place in January 2006. The Peer Review Team – Professor John Goddard (UK), Professor Henry Etzkowitz (US), Professor Ilkka Virtanen (FIN), and Jaana Puukka (OECD) – met more than 60 senior people, including the representatives from three ministries (Ministry of Education, Ministry of Trade and Industry, and Ministry of Interior), the Prime Minister's office (Science and Technology Policy Council of Finland), and TEKES (Finnish Funding Agency for Technology and Innovation) and key regional stakeholders, the leaders of the higher education institutions, and representatives of staff and students.

Jyväskylä region and Central Finland

Central Finland is a region of sharp contrasts: There are six sub-regions covering 30 municipalities. More than 60% of the total population reside in the Jyväskylä subregion. There are marked intra-regional disparities with a decline in prosperity in the peripheral areas characterised by an ageing population and rapid growth in the Jyväskylä region. The Jyväskylä region is one of the key urban areas in Finland. The early 1990s deep recession was followed by a rapid structural change. Since the end of 1990s, as a result of collective efforts from the local authorities, the higher education

2. The resulting Self-Evaluation Report is available at the OECD website: www.oecd.org/edu/higher/regionaldevelopment

institutions, and the business sector, a regional knowledge economy has emerged. Today, the Jyväskylä region is one of the fastest growing city regions in the country but lags behind the national average on critical performance measures. For example, the unemployment rate remains higher than the national average (13.5 vs. 11%). Central Finland as a whole suffers from low productivity within the existing business base which is predominantly SMEs with low levels of R&D investment.

Higher education institutions' contribution to region building

The expansion of higher education has been a key factor in the growth of the regional economy, with a total employment of nearly 3 000 staff and more than 20 000 students accounting for 7% of the total population of Central Finland and one third of the population of the city of Jyväskylä. The University of Jyväskylä is a multi-faculty institution which produces the second largest number of Masters level graduates in the country. The output of graduates exceeds the absorptive capacity of the region with two thirds of graduates leaving to find employment elsewhere. The Jyväskylä Polytechnic offers 30 bachelor degree programmes. 34% of these students are from Central Finland and 60% of the graduates find employment in the region. The University of Jyväskylä and the Jyväskylä Polytechnic differ in terms of history, missions, governance structures, and funding systems. While they both articulate a desire to implement regional engagement strategies, there is diversity in implementation and emphasis: the University is geared towards research connecting the locality with the international knowledge base whereas the Polytechnic is concerned with the development of well-being and working life here and now.

Key points from the review

The Self-Evaluation Report and this Peer Review Report inevitably represent a snap shot of an evolving situation, one that is particularly dynamic in the context of Finland where a third task has been laid by Parliament on Universities and where the recently created Polytechnics have been given a specific regional role. Bearing this in mind, this Peer Review report includes a number of specific recommendations for the Finnish Government, regional and local agencies and the higher education institutions, some of which are already being implemented. The recommendations (see Chapter Seven) are designed to assist with the evolution of policy and practice with regard to the mobilisation of HEI capacity to support regional development by "reach out" to the community and the community "reaching in" to the HEIs. The following paragraphs highlight some of the most important themes underpinning these specific recommendations.

The national perspective

As in many countries, a wide range of national policies in addition to higher education policy influence the capacity of HEIs to engage in the development of their regions. For example, Finland has possibly the most sophisticated and well funded national innovation policy amongst OECD countries, but the regional dimension to this policy is only beginning to emerge, promoted in part by the success of the lightly funded Centres of Expertise programme and Science Parks. The Review team believes HEIs in the major cities like Jyväskylä can play a key role in driving the development of internationally competitive hubs in the global knowledge economy. But for this opportunity to be seized, funding mechanisms for universities (currently strongly linked to student number outputs) and research funding (which does not cover the full economic costs) need to be fundamentally changed to give greater financial rewards for external engagement and more autonomy to institutions working with their regional partners to determine priorities in this domain. In the short run, a national pot of funding to support regional engagement to which universities and polytechnics together with their regional partners could bid to support specific projects of their own choosing could kick start the necessary change process.

A key feature of the development of Finland is its highly polarised nature both inter-regionally (the Helsinki region versus the rest of the country) and intra-regionally (major cities *vis-a-vis* their hinterlands). This raises the question as to whether there should be an explicit territorial dimension to higher education funding which differentially rewards HEIs to engage in the development of their regions in relation to regional needs. In the case of Jyväskylä this would be linked to the support of the peripheral areas of Central Finland and disadvantaged groups within the city region itself. To achieve this goal collaboration between Polytechnics with explicit regional role and Universities **in** the regions such that there is a joint responsibility for the development **of** the region will be necessary.

The regional perspective

Successful regional development involves the building of partnerships between key actors and agents and the creation of a shared understanding of the strengths and weaknesses of the region and the steps necessary to counter threats and realise opportunities. HEIs can play a key role in this process. The OECD review has stimulated a dialogue in Jyväskylä with the Steering Committee now pursuing the recommendations of the self-evaluation and Peer Review. The leadership role of this group and its acceptance by the wider society will be critical. The group will need to achieve a wide buy in to the view that the HEIs are a key component in the long term success of the Jyväskylä sub-region and Central Finland. It will need to pursue the rationalisation of the multiplicity of regional strategies which impinge on the HEIs into a single coherent vision which links the global role of the higher education and research to the development of Jyväskylä and Central Finland.

The HEI perspective

Grand visions need resources and capacity for their development and to drive through the implementation process. The University and Polytechnic, ideally working together through a joint unit that they could establish, are best placed to facilitate the process of reach in and reach out from the HEIs. The success of the Jyväskylä Science Park as an intermediary body facilitating the development of key industrial clusters via spin-outs, R&D, the development of MSc programmes to meet regional skill needs and assisting with management of facilities for the University provides a model that could be applied to a wide range of other areas where both HEIs interact with the region (*e.g.* continuing education and enterprise education).

Embedding the endeavour of these intermediary bodies dedicated to regional development into the academic heartland of the HEIs requires strong institutional leadership. This is a challenge for universities like Jyväskylä with a long tradition of collegial governance. If Finnish universities are going to earn greater autonomy from the Government in return for additional resources to support regional engagement, stronger performance management at all levels is required.

Conclusion

Jyväskylä has frequently been used as a pioneer for the development of new approaches to higher education in Finland. Finland is now facing major challenges arising from globalisation which have profound implications for both higher education and territorial development. The process of regional capacity building in Jyväskylä that has been accelerated by the OECD review could provide the basis for testing and evaluating a raft of new approaches at the interface between higher education and the wider society regionally. It is a domain that poses major challenges for national policy. A pilot programme in one region and with two different HEIs and which builds on the recommendations in the Peer Review Report could assist with the shaping of answers to these national level challenges. The international networks established as part of the overall OECD/IMHE programme could also assist with a learning process which draws on experience from other countries.

ABBREVIATIONS AND ACRONYMS

ARENE	Rectors' Conference of Finnish Polytechnics
ASTP	Association of European Science & Technology Transfer
AUTM	Association of University Technology Managers
ERDF	European Regional Development Fund
ESF	European Structural Fund; European Social Fund
EC	European Community
EU	European Union
FE	Further education
FINHEEC	Finnish Higher Education Evaluation Council
GPD	Gross domestic product
GVA	Gross value added
HE	Higher education
HEI	Higher education institution
ICT	Information and communication technologies
IMHE	Programme on Institutional Management in Higher Education
IP	Intellectual property
IPR	Intellectual property rights
IT	Information technologies
JSP	Jyväskylä Science Park
JYKES	Jyväskylä regional development company
OECD	Organisation for Economic Co-operation and Development
PRT	Peer Review Team
RAY	Finland's Slot Machine Association
R&D	Research & development
RDA	Regional Development Agency
SER	Self-Evaluation Report
SME	Small & medium-sized enterprise
STAKES	National Research and Development Centre for Welfare and Health
SWOT	Strengths, Weaknesses, Opportunities and Threats
TE centre	Employment and Economic Development Centre
TEKEL	Finnish Science Park Association
TEKES	Finnish Funding Agency for Technology and Innovation
VTT	Technical Research Centre of Finland

1. INTRODUCTION

1.1. Evaluation context and approach

This review of the Jyväskylä Region in Finland is part of the OECD/IMHE project entitled *Supporting the Contribution of Higher Education Institutions to Regional Development*. The project engages fourteen regions across eleven OECD countries and Brazil.

The IMHE launched the project in spring 2004 as a response to a wide range of initiatives across OECD countries to mobilise higher education in support of regional development. There was a need to synthesise this experience into a coherent body of policy and practice that could guide institutional reforms and relevant policy measures, such as investment decisions seeking to enhance the connection of higher education institutions (HEIs) to regional communities. Current practice needed to be analysed and evaluated in a way that was sensitive to the varying national and regional contexts within which HEIs operate.

The aim of the IMHE project is to compare and evaluate the efficiency and effectiveness of regional initiatives and partnerships, to provide an opportunity for a dialogue between higher education institutions and regional stakeholders, to assist with identification of roles and responsibilities of stakeholders, to provide advice at national level on the impact of policy initiatives *e.g.* funding initiatives at a regional and institutional level, and to lay the foundations of an international network for further exchange of ideas and good practice.

Each of the participating regions has engaged in a self-review process against a template provided by OECD, followed by a site visit by an international review team. Participating regions have designated Regional Co-ordinators and an independently chaired Steering Group to oversee the process. Each regional review is conducted by an International Peer Review Team with two International Experts, one being the Lead Evaluator, as well as a National Expert and an OECD Team Co-ordinator. The entire project is coordinated and led through the OECD secretariat and a Project Task Group which is also charged with nominating the members of the Peer Review Teams.

Each regional review generates two independent reports, a Self-Evaluation Report (SER) and a Peer Review Report (PRR). All reports are published online on the OECD project website for the benefit of the participating regions and a wider audience. A final OECD synthesis report, drawing from the experiences of the participating regions and a comprehensive literature review, will follow in 2007.

The OECD review process has been much influenced by the evaluations of the Finnish Higher Education Evaluation Council[3]. As in the FINHEEC evaluations, the IMHE project seeks to be developmental rather than produce summative judgement: the focus is on encouraging collaborative

3. See www.finheec.fi/english

working between the higher education institutions and their regional partners with the objective of facilitating regional learning and capacity-building.

1.2. The conduct of the evaluation

Self-evaluation process

The self-evaluation process of the Jyväskylä region was linked to a national process initiated by the Ministry of Education requiring universities and polytechnics to update their joint regional strategies. The Ministry's process, unlike that of the OECD, did not formally require imputs from regional stakeholders. The regional strategy of the HEIs in Jyväskylä was submitted to the Ministry of Education in autumn 2005. The OECD review can therefore influence its implementation, if not its contents.

The Regional Steering Committee had members from key regional stakeholders as well as the Ministry of Education. The region had difficulty finding an independent chair within the region. As a consequence, Ossi Lindqvist, Professor Emeritus and Chair of the Finnish Higher Education Evaluation Council (FINHEEC), was invited from outside the region to chair the Committee. All members of the committee apart from the business organisations contributed to the funding of the project which was planned to cover not only the self-evaluation and the international review phase, but also the subsequent dissemination period until the end of 2006.[4]

The Regional Steering Committee met three times before the Peer Review Visit in January 2006. The Self-Evaluation Report and the organisation of the review process were commissioned from researchers within the University[5]. The Steering Committee contributed to the Self-Evaluation Report with information and comments on the text.

The process was characterised by a strong focus on data collection as well as review and analysis of existing strategies, plans and policies, but limited attention to mutual learning and capacity building. In short, by the time of the site visit, the ownership of the evaluation process by the Regional Steering Committee still seemed limited. In view of the ongoing changes in Finnish higher education and regional policy such as the demise of EC income streams and the revision of the national Centre of Expertise Programme, a more concerted action would now seem advisable.

International peer review

The international Peer Review Team (PRT) was established in 2005. Professor John Goddard (UK) was nominated the Lead Evaluator, Professor Henry Etzkowitz (US) the International Expert, Professor Ilkka Virtanen (FIN) the National Expert, and Jaana Puukka (OECD) the Team Co-ordinator.

The Team Coordinator visited Jyväskylä in November 2005 to agree on the procedures for the review and to give feedback on the draft of the Self-Evaluation Report. It was agreed that instead of a list of responses to the individual issues in the OECD guidelines, the report should be a coherent, self-

4. Total budget of EUR 135 000 was covered by contributions from the Ministry of Education (26%), City of Jyväskylä (22%), Regional Council of Central Finland (8%), and the University, Polytechnic, Jyväskylä Regional Development Company JYKES and the Science Park (11% each). Central Finland's Chamber of Commerce and Central Finland's regional unit of the Federation of Finnish Enterprises were also members of the Steering Committee.

5. Expert division of the School of Business and Economics

contained analytical document with emphasis on processes, outcomes, and evidence. To strengthen the evidence base of the report, hard comparative data should be provided. It was also agreed that different views of stakeholders should be clearly articulated.[6] The report should include a description of the consultation process and the methodology used to ensure involvement of different stakeholders.

It was also agreed that some additions, notably those linked to the current topics relevant to the Finnish HEIs' regional role should be made. These included: (1) the upcoming reform within the local government; (2) the question of the optimal size and direction of tertiary education and the potential rationalisation of the HEI network (world class universities vs. high standards for all HEIs); (3) the Government productivity and efficiency programme aiming at enhanced productivity in public sector including HEIs; (4) upcoming reform of the Regional Centre programme and the regional Centre of Expertise programme; and (5) the debate on whether to bring polytechnics directly under central government administration.

In mid-December 2005 a revised draft of the Self-Evaluation Report was submitted to the Peer Review Team with additional background material including the OECD Territorial Review of Finland and Finland's country background report for the OECD thematic review of tertiary education.

The OECD review visit took place between 15 and 20 January 2006. On arrival and during the visit the PRT received further information on the region, its stakeholders and higher education institutions. (A very significant additional document, published immediately before the review visit, was an independent institution wide peer review of research quality in the University of Jyväskylä). The Team also invited more information to be sent after the Review visit as well as imput on the discussion themes outlined in the SER.

The Peer Review Team met more than 60 senior people. The top officials from three ministries (Ministry of Education, Ministry of Trade and Industry, and Ministry of Interior), the Prime Minister's office (Science and Technology Policy Council of Finland), and TEKES (Finnish Funding Agency for Technology and Innovation[7]) travelled to Jyväskylä to meet the team. The team met the leadership, faculty and students of the two higher education institutions, the Regional Steering Committee, as well as representatives of local and regional organisations in the public, private and the third sector. We also met with a number groups organised around specific themes (culture and creative industries, wellbeing of ageing people, bioenergy, and lifelong learning) drawing from the HEIs and regional stakeholders but unfortunately not any representatives of big companies in the region. All meetings were accompanied by the Regional Coordination Team, who were also the authors of the SER. The meetings provided valuable insights that supplemented the written report.

The Peer Review Team commends the region for the quality of the Self-Evaluation Report which represents a comprehensive analysis of the present situation and which has generated numerous areas of further discussion. More effort is, however, needed in order to carry on the process of partnership building and to guarantee full ownership of the role of higher education in the regional agenda. *We therefore recommend that the region creates mechanisms to ensure the continuation of the learning process initiated by this review and which brings together the higher education institutions and the regional stakeholders. The self- evaluation should be followed by a structured process continuing the SWOT analysis to build on strengths, address weaknesses, counter threats and exploit opportunities.*

6. During the pre-visit, there was evidence that all stakeholders had not fully accepted the fact that over the years considerable sums of EU funding had been channelled to the building of knowledge economy through University Master's Programmes.

7. Previously knows as the National Technology Agency TEKES.

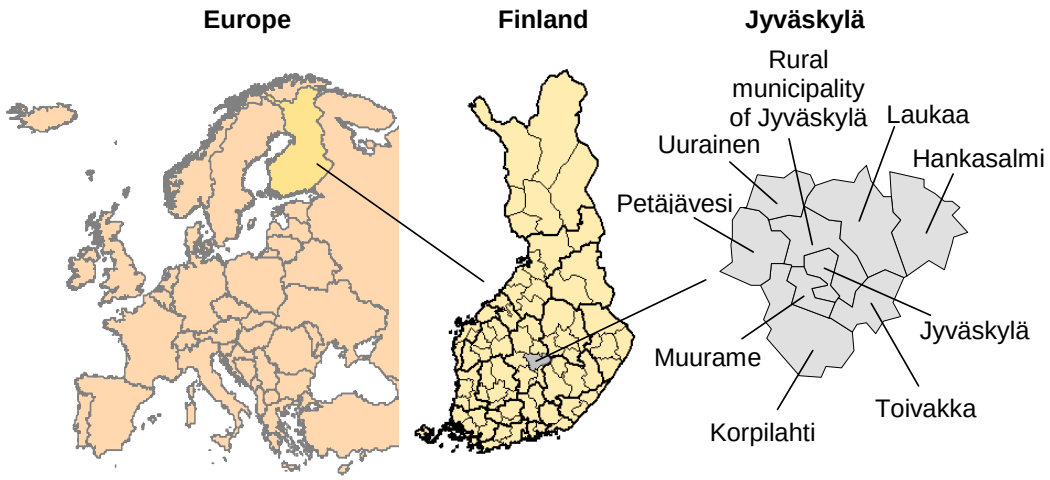
We recommend that steps are immediately taken to identify a leader from within the region to lead this process.

1.3. The Jyväskylä region and Central Finland – key features

There was uncertainty in the remit for this review as to whether the "region" of study should be the Jyväskylä region or the broader area of Central Finland. The ambiguity reflects a broader issue as to the degree of emphasis to be given to the economic impact or social inclusion aspects of the role of HEIs in region building.

The polarised nature of economic development with focus on core regions and major cities is clearly visible in the case of Central Finland. It is a region of sharp contrasts: there are six sub-regions covering 30 municipalities (Fig 1.1). More than 60% (163 000) of the total population (267 000), reside in the Jyväskylä subregion. There are marked intra-regional disparities with a steep decline in prosperity in the peripheral areas which are characterised by an ageing population and rapid growth in the Jyväskylä subregion. The Jyväskylä region is one of the key urban areas in Finland but is still a small region relative to the size of its higher education base. It has been growing at the expense of Central Finland and by attracting students and others from outside. In comparison with other regions Central Finland exhibits one of the greatest disparities between the city region and the periphery.

Figure 1.1. **The region and its surroundings**



The region has a history of affluence and stability. The industrialisation of Central Finland began in the end of the 19th century with the paper and pulp industry and machinery which are still important today. In the 1980s Jyväskylä was one of the most affluent cities in the country with industry, public administration, and educational institutions. However, in the early 1990s the region experienced deep recession – hitting Jyväskylä harder than other cities in Finland – followed by a rapid structural change with business closures, disappearance of 9 000 jobs, cuts in the local government spending, and unemployment rate of 25%. Since the end of 1990s, as a result of collective efforts from the local authorities, the higher education institutions, and the business sector, a regional knowledge economy has emerged through a series of steps, including a science park, EU funded university master's programmes, high-tech companies, and a multidisciplinary polytechnic.

Today, the Jyväskylä region is one of the fastest growing city regions in the country but lags behind the national average on critical performance measures. The unemployment rate remains high at

13.5% (national average 11%). Its hard core is structural in nature with nearly 30% long term unemployed. About 20% of the unemployed are under the age of 25 years. 11% of the population receive social assistance (national average 8%). As a result, in terms of social inclusion the City of Jyväskylä is ranked amongst the most problematic regions in the country. And Central Finland as a whole suffers from low productivity within the existing business base which is predominantly SMEs with low level of R&D investment.

The expansion of higher education has been a key factor in the growth of the regional economy, with a total employment of nearly 3 000 staff and students accounting for 7% of the total population of Central Finland and one third of the population of the city of Jyväskylä. (Tables 1.1 and 1.2) Although we have not seen it stated explicitly anywhere, this publicly funded expansion of higher education in Jyväskylä may well have been a conscious act of public policy designed to assess the structural problems of the economy in Central Finland through building of a new "sector".

Table 1.1. **The University of Jyväskylä**

	1994	**1999**	**2004**
Applicants*	5 851	6 571	5 805
New students	1 355	1 944	1 855
Number of students	9 219	12 060	14 027
Doctoral students	975	1 429	1 616
Foreign degree students	156	205	262
Master's degrees conferred	804	1093	1367
Teaching staff	563	615	721
Other staff	989	1 433	1 547

*Participated in entrance examination.

Source: KOTA database

Table 1.2. **Jyväskylä Polytechnic in 1998-2004 (youth education)**

	1998	2001	2004
Applicants	5 516	6 081	6 269
New students	1 050	1 149	1 211
Number of students	2 649	4 667	5 432
Foreign degree students		106	129
Degrees completed	177*	639	855
Teaching staff (full-time)	205	276	308
Other staff	101	231	335

*Jyväskylä Polytechnic was established in 1992 as an experimental polytechnic.

Source: AMKOTA database

The University of Jyväskylä is a multi-faculty institution built on a base in teacher education with a total income of EUR 141 million. Without an engineering or medicine faculty it does well to win external funding to the tune of EUR 50 million, largely from non-regional sources. In terms of its core budget it has been funded by the Ministry of Education to grow from 10 000 students in 1994 to 15 000 in 2004, many participating in programmes that are unique within Finland. Partly as a consequence of this uniqueness, 75% of the applications to the University are from outside Central Finland. The University also produces the second largest number of Masters level graduates in the

country with one in twenty of these being funded through the European Structural Funds. Notwithstanding these regional funds, the output of graduates far exceeds the absorptive capacity of the region with two thirds of graduates leaving to find employment elsewhere (although 2% of the unemployed in Jyväskylä are graduates).

Jyväskylä has also been favoured by the development of the Polytechnic system[8]. An experimental Polytechnic was established in 1992 with permanent status granted in 1997. The Polytechnic offers 30 bachelor degree programmes across seven schools including engineering, social care, tourism and education. Funded student numbers have expanded from around 2 500 in 1998 to 5 500 in 2004. 34% of these students are from Central Finland and 60% of the graduates find employment in the region. Of a total budget of EUR 51 million, 13% comes from outwith the Central state budget, the bulk from regional, largely European sources.

The University of Jyväskylä and the Jyväskylä Polytechnic are therefore very different institutions, reflecting the Finnish binary system of higher education. They have distinct history, missions, governance structures, and funding systems. While they both articulate a desire to implement regional engagement strategies, there is significant inter-institutional diversity in implementation and emphasis: the University is geared towards research connecting the locality with the international knowledge base whereas the Polytechnic is concerned with the development of well-being and working life here and now.

The HEIs have recently produced a joint regional strategy commissioned by the Ministry of Education (see above) but there are no mechanisms – apart from the top management groups meeting four times a year – for coordination between HEIs and for engaging with projects of strategic interest to the region. The Board of the Jyväskylä Polytechnic Ltd has strong regional representation (with Rector as the secretary) ensuring stakeholders can hold the polytechnic to account for the delivery of its regional mission. In short, while both HEIs contribute to the regional economy, the Polytechnic is more "embedded" in labour market and fiscal terms.

1.4. The structure of this report

In the next chapter we set the scene in terms of the national and regional policy arena. We highlight the tensions within higher education and regional development, and the ambivalent nature of "the region" in the Finnish context.

In Chapter Three we review the regional innovation system, while Chapter Four focuses on the learning region and the role of the HEIs in human capital development. Chapter Five explores the HEIs' contribution to the social, cultural and environmental development of the region and civil society in general. In Chapter Six we consider capacity-building for regional cooperation. In the final chapter we provide a summary of conclusions for the national authorities, and the region and its higher education institutions.

8. Prior to the review visit The Rectors' Conference of Finnish Polytechnics ARENE gave a recommendation that the English translation of the term "polytechnic" (ammattikorkeakoulu, AMK in Finnish) should be changed to "University of Applied Sciences". The reason for this change was the confusion that the term "polytechnic" – due to its connotations with non-higher education – was causing in international context. It was evident to the PRT that the university label was creating antipathy among the Finnish university sector. While the PRT do not wish to interfere in the national debate, in this report we use – mainly for the sake of consistency – the term "Polytechnic" as it is also the term used in the SER.

Our report draws on interviews carried out during a week-long site visit in January 2006, on the findings of the Jyväskylä Self-Evaluation Report, and using additional information provided to the Peer Review Team. Any review inevitably represents only a snapshot of an evolving process of development. This is also true in the case of the present study which coincides with a number of ongoing debates concerning major regional and higher education policy changes in Finland.

2. REGIONAL DEVELOPMENT IN FINLAND AND THE ROLE OF THE HEIS

2.1. Introduction: the geography of development

In this chapter we seek to set our evaluation of the role of higher education in the development of Jyväskylä and the wider region of central Finland in a national context, both in terms of patterns of regional development and central government policies designed to directly and indirectly influence these patterns. It is not the purpose of the chapter to provide a comprehensive review of the territorial development of Finland. For that the reader is referred to the recent OECD Territorial Review of Finland (OECD, 2005). However, key components from that review on the role of HEIs in territorial development are incorporated here.

Amongst OECD countries Finland has the fifth most polarised pattern of economic development, with four regions accounting for 60% of the national GDP. This polarisation has been increasing with social consequences, not least in terms of unemployment. Thus central Finland within which Jyväskylä is situated has the 4th highest level of unemployment in the country (14.3% in 2004).[9] This is a high figure by international standards and reflects in part the failure to re-absorb into the labour market older workers shaken out by the early 1990s restructuring of the economy and the growing number of young people "waiting" after graduation for an employment opportunity.

At the sub-regional scale growth is further concentrated in a limited number of urban centres surrounded by extensive areas with declining economic activity and population. Jyväskylä is one of these centres. Such urban centres have all benefited from the investment in higher education and are indeed classified by the Ministry of Interior as "diversified university regions". Thus in terms of population size, Jyväskylä urban region with a population of 163 000 in 2004 is the 5th largest in Finland and is further classified alongside Tampere, Turku and Oulu as a "Technology Region".

Notwithstanding this epithet, Jyväskylä accounted for only 3.3% of the Finnish R&D expenditure in 2002. Significantly, around one half of this expenditure was within the higher education sector. This is about double the percentage for the neighbouring Tampere city region and indicates both the lack of private sector investment and the potential for further exploitation of the knowledge base in higher education.

Outside the major cities and their immediate commuting hinterlands, there is a significant population (approximately 20% of the Finnish total) dependent on primary industries. This ageing population is supported by an increasingly expensive network of municipal services but with little engagement with the national and regional innovation system, including the higher education component. This is evidently the case of the Jyväskylä region vis a vis the province of Central Finland.

2.2. Territorial development policies

Before the 1990s Finland had a strongly redistributive regional policy and actively used higher education as an instrument in this policy. Thus Oulu University was developed as part of a major

9. Ministry of Labour

growth pole in Lapland and three new universities were established as a dispersed network of HEIs in Eastern Finland close to the Russian border (Kuopio, Joensuu and Lappeenranta). This dispersed pattern was in part driven by a desire to provide equality of access to higher education throughout the country.

The intensive recession experienced in Finland in the early 1990s led to a reorientation of territorial policy towards a stronger emphasis on raising regional competitiveness. A key dimension of this revised regional policy has been a focus on technologically driven innovation hubbed on key city regions and an *implicit* regional dimension to the national innovation system (we emphasise *implicit* because with the notable exception of the Centres of Expertise programme and science parks, innovation policy in Finland is very strongly top down and technology focused). Alongside raising regional competitiveness focused on growth poles, the Regional Development Act of 2002 seeks to address the needs of less favoured areas experiencing out migration and loss of vitality. According to OECD "the broad assumption is that regional development will support the growth of the total economy and in turn that this is reflected throughout the country". In this regard a key question for this review is whether HEIs in the urban centres can and should have a role in directly contributing to the economic, social and cultural development of a wider region.

The Ministry of the Interior has lead responsibility for linking the regional competitiveness agenda to the broader social objectives of equalising opportunities across the country. The Ministry chiefly acts through other bodies, most notable the 20 indirectly elected Regional Councils which are resourced by municipalities and European Structural Funds. The Regional Councils are responsible for drawing up with the Ministry regional strategic programmes. In addition the Ministry has its own programmes, most notably the Centres of Expertise and Regional Centres programme. Ten other ministries must also define their own regional development programmes. The Ministry of Education was the first to complete its programme in 2004 and this seeks to define and strengthen the regional roles of HEIs. In the following sections we expand upon these policy initiatives, focussing on the role of HEIs in the relation to the regional dimension to the national innovation system.

2.3. The regional dimension to the national innovation system

The Finnish national innovation system is extremely complex. It is possible to discern three key groups of actors at the regional level. First there are the Regional Employment and Economic Development Centres (TE Centres) which deliver national programmes for the Ministries of Labour and Industry and the Finnish Funding Agency for Technology and Innovation TEKES. Second, there are autonomous actors in the form of municipalities which support technology centres and science parks, with the latter generally housing Centres of Expertise sponsored by the Ministry of the Interior. Thirdly there are the Polytechnics, often municipally owned, but funded also by the Ministry of Education together with universities which are directly accountable to the Ministry. All of these elements are present in Jyväskylä.

The key player in the second pillar of the national innovation system is TEKES. TEKES focuses on technology based development with emphasis on four programme areas: ICT, Bio and Chemical Technology, Product and Production Technology, and Energy Environment and Construction. The main instruments of TEKES are R&D grants and loans to firms for technical research with public organisations including universities and polytechnics. The regional dimension represents a relatively new feature in the work of the agency: it now has technology units located in 14 regional Employment and Economic Development Centres, including Jyväskylä. The TE Centres are an important initiative in terms of seeking to achieve the joining up of national policy at the regional level. These regional offices of central government have access to a wide range of national funding programmes which can be tailored to the needs of businesses in their area.

The most explicit regional element in national innovation policy are the Centres of Expertise sponsored by the Ministry of the Interior. These focus on key industries in many different sectors where there is a certain degree of regional specialisation in the private sector and research competence in universities and polytechnics. Successive rounds of centres have been designated following national competitions. There are now 18 different regional centres across the country. The centres are expected to network nationally as well as regionally so as to develop their core competence in a networked fashion, thus creating a mutually supportive framework across the country. While investments in the centres have been small relative to other strands of innovation support, the Ministry of the Interior considers that this EUR 20 million investment has levered in EUR 330 million of total project funding.

The Centre of Expertise programme, although focused on specific sectors, does through its emphasis on networking, adopt methodologies associated with cluster development. In its introduction to a review of the Finnish ICT cluster the Ministry of the Interior set out its perspective on the future development of innovation policy, which is clearly much wider than supporting IT production locations (Steinbock, 2004; Box 2.1.). It embraces education and skills including "operating environments" that attract and retain creative people, highlighting ICT use. The Ministry argues that the future performance of the Finnish economy will depend on the ability of small firms in traditional sectors to benefit from the trickle-down effect of innovative cluster-type environments by efficiently adopting new technologies and organisational methods drawing on the expertise within HEIs.

Box 2.1. **The Finnish ICT Cluster: a view from the Ministry of the Interior**

The key question of future regional development is whether Finland will be successful as a user of the new information technology and not only a producer. To produce information services and contents can have a much wider basis than what is currently the case. All regions cannot be successful ICT producers, but each of them can increase their competitiveness through skilful ICT use.

The comprehensive educational network of Finland enables development based on expertise: universities, polytechnics and second grade vocational training support city regions on every level. In order to develop, every field of production needs top expertise. Universities, polytechnics and science parks are thus central actors in the new growth. Basic factors for growth in the city regions are technology oriented research- and development operations and productive applications, inputs on expertise and human capital, social innovations, functional infrastructure as well as good accessibility that requires functional logistics.

The competitiveness of the regions consists of quality factors that make certain regions attractive operating environments for businesses and skilful labour. Increasingly, the competitive ability of companies consists of local resources and quality factors. National policy without local commitment and division of labour is not sufficiently effective.

Narrow technology policy will no longer be sufficient. We need an extensive innovation policy and development of innovative environments. As a small country, Finland needs a special policy that is suitable for a small country in which different actors of innovation policy cooperate intensively and systematically.

We need specialisation of the regions, deepening division of labour within the country, between city areas and networking, cooperation and creation of clusters. Region's competitiveness ought to be strengthened so they become internationally attractive operating environments in their fields of expertise as well as pleasant living environments for skilful labour. It is necessary to decentralise national innovation policy.

Source: Steinbock (2004)

In meeting these challenges we believe regionally based science parks and technology centres working with HEIs should become essential components of the national innovation system. These

science parks are part of a national network (TEKEL) with 22 members located in 19 cities. All but one of the parks/technology centres supports the development and application of ICTs. All science parks aim to play a role in the national innovation system, including enhancing links to the university science base.

How can HEIs fit into regional innovation systems? Following a major policy review the Ministry of Education published its own *Regional Strategy for Education and Research up to 2013.* The overarching vision is that "Finland's welfare and international competitiveness rests on the vitality and innovativeness of the regions, which is promoted by a regionally comprehensive provision of education and research". The specific vision and strategic policy guidance for research and development are set out in Box 2.2. The translation of these policies into action has been the subject of an on-going process of review. A report completed in 2003 recommended "strengthening the role of Higher Education Institutions (HEIs) in regional innovation systems". Most significantly, the review recommended revision to the basic laws defining the role of HEIs to embrace a "third task". The 2004 University Act embodies this task as follows: "Universities should, as part of their operation, interact with surrounding society and promote the positive impacts of research activities". In addition, the Ministry of Education requires polytechnics to prepare joint strategies with Universities and submit these to the Ministry. Significantly, Regional Councils are not partners in this process. So *we would recommend that the joint regional strategies submitted by Polytechnics and Universities to the Ministry of Education are reviewed by the Ministry and other relevant Ministries, especially for the Interior, Industry and Labour, with the Ministry of the Interior taking account of the views of Regional Councils and relevant municipalities.*

Box 2.2. **Ministry of Education Regional Strategy for Higher Education and R&D**

Vision: Research and development is of a high quality in the different regions and its results are utilised in a versatile and effective way to strengthen the vitality and welfare of the regions. The regional innovation environments are based on university research and polytechnic R&D, which is geared to working life and regional development.

Strategic policy lines: Research and development in higher education institutions will be based on the development of their own strengths and on varied local, national and international networking. The Academy of Finland will support high standard research with long-term funding based on quality. Research infrastructures and support services will be developed to make quality R&D results available in different parts of the country. The utilisation of research findings will be developed to make the knowledge of universities and polytechnics easily and flexibly accessible in different regions.

Measures will be taken to strengthen regional research cooperation between universities and polytechnics, the latter's cooperation with other players in the region and universities' and polytechnics' contribution to the Centre of Expertise and Regional Centre Programmes and to science parks and technology centres. The operations of large, versatile research environments will be enhanced and their knowledge will also be utilised outside their own regions.

Source: Ministry of Education

2.4. The definition of funding and for the third task of HEIs

The third task laid on Polytechnics specifically refers to regional engagement as a core mission whilst in the case of universities there is no such geographically constrained remit. Polytechnics are thus obliged to meet regional skill needs and provide R&D support to local businesses and public service organisations. On the other hand the legislation recognises that universities engage with the

wider society and the economy at international, national, regional and local levels through a range of mechanisms – knowledge commercialisation through spin-outs and licensing, knowledge transfer via consultancy and work based learning and teaching, contributions to reducing social exclusion, enriching cultural life and providing leadership in civil society.

In many respects these contributions are embedded in the core teaching and research activities of HEIs. However it can be argued that unless funds are made available for specific regional activities the full potential of the HEIs contribution will not be realised and/or will be carried out through a reduction in the quantity/quality of other functions. This is particularly relevant to issues related to actions to improve the local and regional environment for innovation as highlighted in Box 2.1 and engagement with issues of social inclusion, including those faced by the rural areas of Finland.

In the case of universities, around 90% of funding from the Ministry of Education supports the core activities of teaching and research and is linked closely to the negotiated number of graduates. Within the core, "the funding allocated to other societal services is intended to support equipment intensive activities and those that reinforce the university's regional impact". Outside the core funding universities also receive funding for national programmes in which regional development is only one of the 10 priorities. Other non-core funding supports the university's own projects (which "could" be regionally focussed) and performance funding related to success in national competitions such as those supported by the Academy of Finland and other sources like TEKES. However performance funding represents on average only around 2.4% of university operational expenditure. While universities are free to allocate the funding as they see fit, in practice there is very little free funding to support new initiatives targeted at enhancing regional engagement. This problem is exacerbated by the fact that few universities charge (nor will public bodies pay) full economic costs for research and other services. These activities, which have to be underwritten by the core budget, have grown dramatically over recent years with the consequence of reducing degrees of freedom to invest in the regional service role.

In the case of polytechnics, 57% of core funding is provided by the Ministry of Education and the remainder by a "tax" on municipalities according to their population. As is the case with universities, unit costs are calculated per student. There is also a small element of project and performance funding and both include items related to regional R&D and regional impact. However, as with the universities, these activities are often financed through cross subsidy from core funding.

From this discussion and the perspective of our evaluation we *conclude that current funding and so-called "steering" mechanisms from the Ministry of Education and the ability of HEIs to use these resources to support regional engagement is problematic.* This is more so if we take account of the future challenges facing Finland and its regions and discussed in the next session. For now we *would recommend a fundamental review of the funding model for HEIs to include a requirement for full economic costing of research and other services, greater rewards for external engagement and more autonomy to determine priorities within this domain.*

2.5. The emerging challenge of globalisation and localisation

In a significant triennial review entitled Knowledge, Innovation and Internationalisation published in 2002, the Science and Technology Policy Council of Finland links national innovation policy to regional development[10]. It notes (p. 2/3) "the past success of Finland in combining extensive

10. Online publication available at:
www.minedu.fi/tiede_ja_teknologianeuvosto/eng/publications/Review_2003.pdf

production and economic utilisation of knowledge with other aims such as the promotion of welfare and balanced regional development". However "apart from technological innovation this requires systematic inputs into producing social innovations geared to prevent societal and social development from diverging from economic and technological developments…a systematic aspiration to create innovations cannot be limited to the national setting and traditional co-operation. Internationalisation must proceed at the level of the innovation system as a whole". These challenges are linked to the theme of placing knowledge exploitation at the heart of regional development. The review argues that regions face "the same international challenges which influence the national level. In order to be able to give a successful response to these, regions need to enhance their own factors for development. HEIs and local units of research institutes have a particular task in contributing to regional knowledge capital and to put it at the disposal of users. Relating to this, the anticipation of labour and educational needs must be urgently developed".

A more recent report on "Finland in the Global Economy" project published in December 2004 by the Prime Minister's office, entitled Finland's Competence, Openness and Renewability" highlights the need for a shift from science and technology policy to innovation policy.[11] It notes that in comparison with Finland's strong technological competencies there are "obvious shortcomings in competence in early stage production and commercialisation…. insufficient capital for start up enterprises …. and …. much disparity amongst innovation organisations". In support of a more open environment the report highlights the importance of attracting foreign investment and employment based immigration. Although the report does not highlight the regional dimension it is clear that many of these challenges must be addressed both nationally and regionally. A key underlying theme of both Finnish reports is the capacity of agencies at the regional level to address the challenges of globalisation. The Science and Technology Policy Council is most explicit about this with regard to the role of universities (Box 2.3).

Box 2.3. **Globalisation, Innovation and Universities**

One major question is how the university as an institution will be able to manage the pressures and growing expectations directed at it with regard to social, cultural and economic development …. whether the university has the internal capacity for renewal needed to lighten its work load in the face of constant new challenges. The traditional mission of the university is to promote free research and scientific education and to provide higher education based on research. The burning question in today's debate is how to include the duty to promote the utilisation of new knowledge in the Universities Act as the university's third mission. This question arises from both the growing expectations directed at universities by the users and from the legislative issues involved in efforts to reconcile the university's administrative culture, business and research ethics. The need to address these questions is tangible, because the change taking place in universities' mission and funding structure is systemic, shaking up the institution to its core.

A new challenge for universities and the whole research system is to be able to combine in-depth specialised knowledge with versatile expertise for the benefit of users and in contract research and in joint projects with them. A question partly relating to this is the future of higher education on the whole: how its different parts will take shape jointly and separately.

Source: Science and Technology Policy Council, 2003

11. Summary available at:

www.vnk.fi/julkaisukansio/2004/j26-Finland's-competence-openess-and-renewability-summary/pdf/Finland's_competence_-_loppuraportin_en_tiivistelmae.pdf

Regional initiatives supported by the Ministries of the Interior and Trade and Industry are clearly relevant to the issue of capacity. However the large number of intermediary organisations increases the co-ordination challenge and enhances transaction costs to support innovation in the private sector. Those responsible for the Centre of Expertise Programme based on Science Parks see these as key institutions drawing together universities and businesses. However this view raises fundamental questions regarding the financial relationship between centres, parks, universities and polytechnics and the contribution of the public vis a vis private sectors. *The Peer Review Team recommend that universities, working with polytechnics, should be formally assigned a lead role in establishing an integrated national innovation system with a regional dimension.*

A particular advantage of developing this integration would be in terms of a more transparent linkage between innovation and higher level skills that are provided through the education system. An interim evaluation of the Centre of Expertise Programme quoted by OECD has concluded that in the future technology based programme should extend into new "soft" fields and use new innovation instruments better suited to the utilisation of soft fields of expertise. This is clearly a matter for higher education including management, social sciences and the arts and humanities. These fields are vital in relation to the new emphasis given to social innovation (new ways of working) highlighted by the Science and Technology Policy Council and to knowledge intensive business services, including cultural industries (emphasised in the report from the Prime Minister's office). The issue here is actually how to properly support and disseminate a "culture of innovation" whereby individuals and firms but also public institutions foster creative processes and thinking when coming to strategic decisions of an organisational nature or bearing on methods of work. Finland has here the potential for a "leading edge" insofar as social innovation is now on the agenda, building on its long-standing traditions of civic participation.

Enhanced regional engagement as proposed above would not be incompatible with ambitions for Finnish Universities to compete on a global stage. The FINHEEC evaluation of Kuopio, Joensuu and Lappeenranta in Eastern Finland and Turku in South West Finland highlight external engagement as driving the creation of better managed and more competitive institutions (Goddard, *et al.*, 2003a, 2003b). The resources of the local environment, notably science parks and technology centres when integrated with the core resources of the universities, are potentially major assets that could support global competitiveness. This perspective is totally consistent with a policy of giving more autonomy than currently to universities. However such autonomy would need to be "earned" through an obligation for each university to serve its "region".

A further challenge in relation to territorial development in Finland is that of sparsely populated regions outside the immediate sphere of influence of ten or so major cities. While, a key characteristic of the Finnish Higher Education System has been the strong national coverage of provision, the recent Ministry of Education report on the Structural Development of HE system departs from this idea and calls for concentration of competence which could have negative consequences for the rural areas. In addition, to mainstream undergraduate and postgraduate programmes there is an extensive professional development activity undertaken by Centres of Continuing Education. The development of e-learning should also ensure that those living outside the large centres can be supported.

2.6. Conclusions and recommendations: a Higher Education and Regional Development Fund

From the analysis in this chapter it is clear that there are insufficient incentives in the national funding system to join up actions at the regional level in a way that could maximise the impact of higher education on regional development. The most effective measures have been those sponsored by the Ministry of the Interior working in partnership with municipalities and regional councils. In contrast very little leverage has been provided by the much larger funds available to the Ministries of

Education, Industry and Labour. We hope to put flesh and bones on these conclusions when we examine the experience of Jyväskylä in more detail in the subsequent chapters. However, in anticipation of this examination,

The Peer Review Team recommend the establishment of a national pot of capital and recurrent funding subscribed to by all of the relevant central departments but administered by the Ministry of the Interior to which regional consortia led by universities and polytechnics may bid competitively to support the active regional engagement of HEIs outside of the Helsinki region.

We would recommend that bids to this fund are led by universities and polytechnics together and that consortia should include other regional stakeholders such as municipalities, regional councils and organisations representing the private sector. Science parks and technology centres are likely to be key stakeholders. Bids should be based on a clear programme over 3-5 years and select from a range of activities including translational research, knowledge transfer, enterprise and skills development and community and cultural development. We would not recommend linking consortia to specific geographical areas; where appropriate the consortia could cross the boundaries of regions. Successful bids would need to indicate that appropriate structures are in place for managing, monitoring and evaluating the impact of the proposed interventions. This requirement would include the establishment of appropriate internal structures for programme management within the HEIs themselves. We believe that such a competition would provide an incentive to translate much of the imaginative but partial partnership working that we are about to describe for Jyväskylä into a fully fledged regional innovation and learning system. It could provide a basis for restructuring of the Finnish higher education system through building “critical mass” of competence in particular parts of the country and create a platform for subsequent structural changes such as institutional mergers (or indeed provide an alternative to what could be a “messy” process given Finnish employment law and the different legal status of Polytechnics and Universities.)

3. THE REGIONAL INNOVATION SYSTEM

3.1. Introduction

In the previous chapter we reviewed the role of HEIs within the Finnish national innovation system and the quest for a regional dimension to that system, chiefly driven by the Centres of Expertise programme and science parks. We have also noted the national aspiration to build competitive regional economies, hubbed on leading cities, plugged into national and international networks and in which HEIs play a leading role. Central to this aspiration are higher rates of new business formation delivering technologically and socially based innovation.

In this chapter we examine the extent to which the Jyväskylä sub-region and the wider Central Finland region meet these aspirations. We start by reviewing the local economic and governance situation since the scope for active engagement by HEIs will, in part, be constrained by the economic conditions presented by the region and the capacity for partnership working. We then highlight some examples where partnership between the University, Polytechnic, business and the public sector is working well and meeting the national aspiration for the creation of regional environments that support innovation. We conclude the chapter by assessing the systems working across the University and Polytechnic as a whole to deliver on this agenda.

3.2. The regional economic base

The first point to note is that the manufacturing base of Central Finland is dominated by the mechanical engineering sector (specialisation index 260 where Finland equals 100). Metso Paper which employs over 2 000 locally is the World's leading manufacturer of paper making machinery. Metso has long established links with the University and the Polytechnic and is at the centre of an industrial cluster which includes between 150 and 200 mainly small businesses. Notwithstanding the size of Metso the industrial structure of Central Finland as a whole is more dominated by SMEs than is the case for Finland overall. Only 16% of employment in the region is in businesses with over 250 employees compared with the national average of 39%. This no doubt explains the relatively low level of private sector R&D within the region that has already been noted. Most significantly, it is well known that the SME sector is notoriously difficult to reach from higher education.

Notwithstanding this traditional industrial inheritance, the region has been breaking through into high technology via a combination of inward investment and the indigenous growth of ICT based services. Thus Nokia started operating in 1999 (330 employees) alongside TeliaSonera (600 employees) and TietoEnator (550 employees). A significant "attractor" has been the supply of skilled labour generated by higher education, most notably ICT Masters programmes funded through the European Structural Funds. New clusters based around energy technology, environmental technology, wellness and nanotechnology, all with a base in the HEIs are also emerging. There is a clear strategy to market Jyväskylä as a "human technology city" in a way that picks up some of the social innovation themes identified in the previous chapter. (Some of these initiatives will be discussed in more detail later).

Finally it should be noted that (not surprisingly) the economic structure of the region is dominated by the private and public service sectors (75% of total employment). These jobs are heavily concentrated in the city of Jyväskylä itself. In terms of employment higher education is a leading player in the city with 3 150 direct jobs in just two organisations, which, in turn, generate 2 350 indirect jobs. The University in particular is a growing "export" business insofar as it attracts 15 000 students, more than 75% of them from outside Central Finland. A key feature of this attractiveness are departments which are unique in Finland, such as sports science. The University also attracts above the national average share of competitive excellence funding from the Academy of Finland (but well below the national average of industrially relevant funding from TEKES). The Polytechnic also recruits half of its students outside of Central Finland. Eventually two out of three polytechnic graduates find employment in the region. So relative to the size of the city and regional economy, higher education is more than a supportive sector – it quite literally is a dominant component. This is more particularly apparent because the other externally orientated sector that usually characterises vibrant cities, tourism and cultural industries, appears less well developed in Jyväskylä than might be expected.

3.3. Actors in the regional innovation system

As indicated in the previous chapter responsibility for configuring regional innovation systems within Finland is dispersed amongst a large number of actors and agencies each with their own strategies. Table 3.1 lists those strategies identified in the Self-Evaluation Report but we suspect many more could be added. The Regional Council has a key strategic role and indeed has developed its own technology strategy (allegedly with little engagement with the HEIs). The Regional Council has a responsibility for the dispersal of European Union Structural Funds, funds which account for 20% of the total external funding of the University and 72% of the external funds of the Polytechnic. (There is a view in some quarters that the HEIs have absorbed too much of the European funding at the expense of other regional partners). The municipality of Jyväskylä operates in the economic development field through the regional development company JYKES Ltd, which also acts on behalf of the four neighbouring and smaller municipalities. The Rectors of the university and polytechnic are members of the Board of JYKES which focuses on representing the traditional industries. In contrast the Jyväskylä Science Park (JSP) specialises in supporting high technology businesses and as we will analyse below has strong links with the HEIs. Other key players are the TE Centre, the Central Finland Chamber of Commerce and the Central Finland unit of the Federation of Finnish Enterprises.

Table 3.1. **Central Finland regional strategies connected to the operation of HEIs**

Entrepreneurship strategy of Central Finland
Innovation strategy of Central Finland
Internationalisation programme of Central Finland 2006-2008
Municipal strategies
Provincial plan of Central Finland
Regional strategy for the Regional Centre of Expertise Programme
Regional strategy for the Regional Centre Programme
Regional industrial strategy (*Elinkeinostrategia*)
Regional development strategy of the HEIs in Central Finland 2005-2009
Regional strategy of structural funds
Regional strategy of sustainable development
Strategy of the Y4-agreement 2003-2009
Sub-regional expertise programmes (as a part of the operation of OPTIIMI)
Technology strategy of Central Finland 2005-2011

Source: SER

To varying degrees all of these strategies and sponsoring organisations are seeking to mobilise higher education in support of regional economic development, chiefly through the process of innovation and knowledge transfer from the science base to business. However with the notable exception of the Jyväskylä Science Park, the Self-Evaluation Report is critical of the intermediate organisations. Thus the report states that "intermediate organisations should have special expertise in marketing, communications and business knowledge … managing funding issues from the search for sources to the application phase should be an inherent part of their activities, more than at present. The intermediate organisations could also act as managers that bring small firms together, allowing them to participate in joint development projects with the HEIs" (SER).

In contrast to this rather negative assessment, which we would endorse, we regard the Jyväskylä Science Park as a clear success story. JSP is 57% owned by the municipalities of the Jyväskylä region with remainder of the shareholding in the hands of private investors. Its aim is to generate business activity based on new knowledge and expertise. There is a filtering process through which promising ideas are transferred into new business start-ups or occasionally established enterprises. Over the period since 1992, 800 jobs (6.2% of all new employment in the Jyväskylä region) have been generated through new business formation facilitated by JSP, with 60% of these based on know how from the HEIs. With the support of national Centres of Expertise funding JSP also contributes to cluster development through networking and facilitating joint projects between the HEIs and business. It focuses on ICT (especially utilising the human sciences), paper making technology, nanotechnology, wood energy and environmental technology (waste management and biogas). Last but not least JSP manages incubator and shared premises where researchers and businesses come together.

3.4. Case Study: Wellness technology and ageing

The PRT were impressed by the system that was evolving to translate leading edge research in health and physical activity amongst older people into products and services that could benefit an ageing population served by the municipal authorities. Elements of the system include:

- Basic research funded by the Academy of Finland in the Faculty of Sport and Health Sciences of the University.

- Establishment of an independent foundation with a strong representation from civil society (including the voluntary and community sector) and funded by Finland's Slot Machine Association (RAY) to underpin the development of systems and services to support active ageing (Gerocenter).

- Translation of the research into products using the Wellness Dream Lab developed by the Jyväskylä Science Park, now coordinated by the Polytechnic and supported by EU funding from the Regional Council.

- Assessing the social innovation necessary to facilitate the uptake of technology through practice based polytechnic applied research in hospitals and community services.

- Practitioner training undertaken in the Polytechnic and the flow of practitioners into the research programmes in the University to undertake higher degrees.

- A Human Technology Forum where actors in the system meet and exchange knowledge and experience.

- A building (Viveca) owned and managed by the Science Park where selected parts of the above chain can operate, including spin out companies.

It is worth noting that steps were taken ten years ago when JSP launched a special programme for the development of the new emerging Wellness industry combining education and research in the University faculties of Sport and Health Sciences, Information Technology and Mathematics and Science. In this particular example it does appear that the public authorities (Regional Council, JYKES, JSP, and the City of Jyväskylä) have played a key role, probably because their social services are potential customers for the technology and systems being developed. Equally significant is the emphasis on appropriate technology and services to assist elderly people, an approach which might not have emerged if the City had hosted a University hospital where the focus might have been more on the development of solely clinical solutions to mobility and ageing.

3.5. Case study: renewable energy

This is another example where the PRT found a developing system linking University research, Polytechnic R&D, private business, education and training and a particular regional opportunity/resource with the Jyväskylä Science Park once again playing a key role as animateur. The components of the system are:

- University research funded through the ERDF and TEKES on renewable energy (*e.g.* solar drying of bio-materials) and undertaken with regional, national and international collaborators and led by an endowed chair in Environmental Technology.

- MSc programmes in the University on the physics, chemistry and simulation of energy production, on environmental aspects of energy production and on energy economics and policy.

- Prototype testing in University labs and then transfer to the Polytechnic for field trials.

- Bachelor of Agriculture and Forestry education, further education, and extensive practical oriented R&D projects in bioenergy and rural areas development provided by the Polytechnic's Saarijärvi Institute of Natural Resources and its Bioenergy Centre.

- Demonstrator projects (roadside and schools) to increase public understanding of alternative technologies (*e.g.* heat pumps from lakes for private housing).

- Influencing national energy policy via national Bio-Energy Association Head Quarters based in Jyväskylä and socio-economic research in collaboration with JSP.

- A local major energy producer (VAPO) with interest in wood pellet heating systems.

- Polytechnic R&D support for farmers and SMEs with interests in use and supply of alternative energy systems.

- A bio-energy consortium of enterprises and public organisations managed by JSP.

3.6. Managing the interface with business: Jyväskylä University

In the case of the University, the success stories in the examples we have described are, we believe, largely down to the drive of individual academics partnering with external agents, most

notably the Jyväskylä Science Park. We commend the individual members of the University for their entrepreneurial drive in developing partnerships with industry and others outside the University. However, we believe the University could be at the cusp of the transition to an "entrepreneurial university" model in which the institution itself takes a direct and leading role in regional economic development and hope that this review will contribute to a "tip over".

The University has a limited technology transfer within its Research Services Unit and innovation manager. However it does not have organisational capability for searching internally for technology with economic potential and arranging for its utilisation, whether through licensing to existing firms or through the creation of start-up firms. Nor does the University have a formal incubator facility to mentor and otherwise assist the firm-formation process. It could be argued that many of these capabilities for technology transfer and incubation exist, either, formally outside of the University in the Jyväskylä Science Park, or informally within the University through the initiatives of students and faculty members. Indeed, it will be asked whether it is necessary for the University to develop its own transfer capabilities. Would they be duplicative of existing capacities, wherever located? Are there essential gaps that need to be filled by the development of internal transfer, incubation and entrepreneurial education initiatives, if not to initiate third strand capacities but rather to embed them more thoroughly throughout the University and link them more closely to education and research?

In a University lacking an extensive culture of technology transfer, there are, nevertheless, typically a few professors who have been inspired by models from elsewhere or having received their training in an entrepreneurial setting. They will engage in commercialisation of research even in the absence of more general capabilities for assisting the process. Indeed, such persons may even oppose the entry of the university administration into the arena, feeling that its efforts will be less competent than their own activities. Nevertheless, we believe a balance between allowing and encouraging individual initiatives and providing support needs to be found, in order to establish a broader base for technology transfer as the third mission is institutionalised.

In contrast to a few early mover universities, that have moved in advance of settled national policy, the University appears to the PRT to be waiting upon the passage of an amendment to the university law that would, among other issues, provide clear guidance on the university's obligations and responsibilities for intellectual property. Indeed, thinking of the output of research and teaching in intellectual property terms is, no doubt, a controversial issue. University leadership, based on broad consensus, is unlikely to take action until either a new consensus is reached internally or it is explicitly tasked by national policy. It is apparent, in this case, that a clear national policy will be the pre-requisite for local action.

Thus, in national terms, the University of Jyväskylä may be a second mover, equivalent to universities in the US that developed formal technology transfer capabilities, subsequent to the passage of the Amendment to US Patent law, the so-called Bayh-Dole Act of 1980, which clarified university's role with respect to commercialisation of research by placing ownership of intellectual property deriving from academic research in the hands of the university as an institution, while requiring the originators of this "property", such as faculty and students, receive a significant share of the rewards.

All of this is hardly surprising given that the University's academic strengths as recognised by Centres of Excellence in research designated by the Academy of Finland do not map well on to the regional economy. However, several developing areas of excellence identified by the University (such as gerontology), do have strong resonance with regional needs and opportunities (Table 3.2). Nevertheless the journey down the road of linking academic excellence and regional opportunities

could be a long one, especially in fields where there are no financial incentives to work regionally and where ample funds to support research are available from other (national) sources.

Table 3.2. **Areas of excellence in research at the University of Jyväskylä**

Centres of excellence in research nominated by Academy of Finland*	**Developing areas of excellence in research nominated by the University of Jyväskylä**
Evolutionary research	Gerontological research
Nuclear and accelerator based physics	Language learning and teaching
Learning and motivation research	Cognitive musicology
Political thought and conceptual change	Political theory and analysis
Study of variation, contacts and change in English (*jointly with the University of Helsinki*)	Structural chemistry
Study of virus research (*jointly with the University of Helsinki*)	Scientific computing with industrial applications
Geometric analysis and mathematical physics, 2002-2007 (*jointly with the University of Helsinki*)	
History of mind, 2002-2007 (*jointly with the University of Helsinki*)	

*For the period of 2006-2011

3.7. Managing the interface with business: Jyväskylä Polytechnic

Formerly focused on skills training and providing human capital relevant to local industry, the Polytechnic has expanded its remit to provide R&D support to local industry and working life. The advantages of the Polytechnic approach is that it is closely related to the interests of local companies and is better equipped to work with the SMEs which form the backbone of the economy. The downside is that this model is less likely to be useful in developing new industrial areas from research. However, this is basis of an implicit division of labour between the University with its advanced research capabilities and their potential for use, and discontinuous innovation, and the Polytechnic's "close to the market" focus on incremental innovation.

Future upgrading of the Polytechnic's capability to support existing industry will likely further break the boundaries of the distinction between the Polytechnic and the University. Having upgraded from the BA level of skills training to the MA level in selected applied research areas in response to the development of new industries created from advanced research, will also require specific applied research support from the Polytechnic. Conversely, as the traditional technological areas of the Polytechnic are upgraded, they will need to link to some of the advanced research capabilities that traditionally reside in the University.

The Polytechnic has defined nine multi-disciplinary workplaces driven Centres of Expertise which respond to regional needs. They are not separate parts of the institution but form co-operative groups supported and marketed centrally (Table 3.3). Activities include R&D projects for industrial clients, customised training, consultancy and work with the Jyväskylä Science Park. Most significantly the Polytechnic maintains a sophisticated management information system which tracks the performance of each individual school. Of 138 performance indicators, 8 are specifically linked to regional engagement. These school based indicators are regularly monitored by the central management team (there are no faculties). Finally, and unlike the University, the Polytechnic runs an entrepreneurs development programme (Team Academy). This three year undergraduate programme is

generating graduates able to hit the deck running in the SME sector. (Its value will be considerably enhanced when elements are made available to students on other programmes). In short, the Polytechnic attempts to make up for its limited research resources by maximising the effective use of these resources.

Table 3.3. **R&D centres of expertise at the Jyväskylä Polytechnic**

Centre of expertise	Supported regional development programme
Paper industry	Paper manufacture management (Centre of Expertise Programme)
Bioenergy	Energy and environmental technology (Centre of Expertise Programme)
Information network technology	Information technology (Centre of Expertise Programme)
Creative industries	Development of creative industry in Central Finland
Wellness technology	Wellness technology and industry (Regional Centre Programme)
Health and welfare services	Wellbeing services (as part of Regional Centre Programme)
Well-being tourism	Regional node of Networked Centre of Expertise for Tourism
Food industry	Regional node of Networked Centre of Expertise for Food Processing Industry
Logistics and transportation	Innoroad centre of expertise of the future

3.8. Integrating the Science Park into the HEIs

In this chapter we have highlighted in several places the key role played by the Jyväskylä Science Park in the economic development of the region and the mobilisation of resources within the HEIs to this end. We have also noted that in several industrial clusters JSP has facilitated collaboration between the University, the Polytechnic and business. And insofar as JSP provides and manages premises both inside and outside of the HEIs this corresponds to the increasingly popular "Science City" variant of the "triple helix" model of business / government / HEI interaction at the sub-national scale.

While this model is working well, we have noted the limited systems within the University to mobilise its considerable resources to support business development in the region and beyond. *The Peer Review Team therefore recommend that the University and the Polytechnic jointly contract JSP to support technology transfer on their behalf.* Tasks would include:

- The development of a common innovation strategy
- Agreements between the parties concerning codes of practice to guide action and purchases during the process of innovation from ideas to commercial products/service.
- Consideration of commercial applications in the planning of new R&D projects and business possibilities during their execution
- Provision of pre-incubator facilities and services for students and academic staff.
- Licensing via specialist service provider (*reach out*).
- Identification of business sources to contribute to HEI programmes and projects (*reach in*)

We believe that a formal contractual relationship along these lines would be the quickest route to fully mobilising the HEIs to support business development in the region. (The extent to which such

"services" could be legally provided without an "open" tender would of course require further investigation). We further believe that joint working facilitated by the JSP could expedite the transfer of best practice between the Polytechnic and the University (without introducing too heavy handed management that might stifle academic enterprise). Last but not least, this arrangement could contribute to rationalisation of numerous strategies propagated by the various regional stakeholders.

In the previous chapter we argued that HEIs should be mandated by central and local government to take on this leadership and rationalisation role. However, given the lack of readiness for this task within the University of Jyväskylä, we believe the role of the Science Park, could in this instance, speed up this process. But there are dangers with this recommendation insofar as it might enable the academic heartland of the University to believe commercial engagement is undertaken "elsewhere". To minimise this risk *the Peer Review Team recommend that the University proceeds with some urgency to establish its own technology transfer functions overseen by the Vice Rector and with strong links to the departments and research institutes and with the central office acting as the interface to the JSP*.

While the relationship with JSP should accelerate the process of generating new business activity and the development of specific industrial clusters, there remains a case for enhancing the performance of established SMEs through consultancy services, student placements and customised training. While such services are provided by the Polytechnic there are likely to be instances where the University could contribute but where the "route in" is not clear to the average SME. *We would therefore recommend the establishment of joint one stop shop for business support services shared between the University and the Polytechnic*. This shop would have a matchmaking and quality assurance role (*i.e.* matching company needs to academic skills and ensuring services are delivered on time and to budget).

3.9. Entrepreneurial and business education

As entrepreneurial and business capabilities become relevant to a broader range of activities, well beyond the traditional business arena, the need for entrepreneurial and business education expands. However, the type of education required to make business skills relevant to the sciences, arts and humanities is often quite different from what is taught in conventional business courses. Two strategies are possible in this circumstance: either (1) to expand the horizons and activities of the traditional business school; or (2) to conduct these new forms of business education and training in separate units *e.g.* "enterprise centres" or as extensions of the sciences and arts, in effect making these academic units responsible for the business and entrepreneurial education of their own students. Given academic conservatism, it is typically the second option that is chosen, at least as an intermediate step, until the business school can be renovated and/or other academic units have acquired the necessary compliance.

The Faculties of Science and Mathematics, Information Technology, and the School of Business and Economics are currently seeking resources from the Ministry of Education to implement a business training programme for their students. It may be expected, that other parts of the University, will no doubt follow suit over time. In general, the School of Business and Economic appears to offer a traditional business curriculum and expresses belief in a "one size fits all" model: if other students want business training, they should take advantage of the generic programme designed for non-business school students. We believe this programme needs to be tailored to cater for the potential growth fields, such as ICT, biotechnology or creative industries.

Entrepreneurial and Business Education is splintered among the variety of HEI actors in the region. The Polytechnic, for example has a very interesting *Team Academy* Programme for training

young entrepreneurs intending to pursue business careers, without any special technical focus. The University of Jyväskylä School of Business and Economics offers a PhD in Entrepreneurship, focusing on the issues of family entrepreneurship. Many of the elements of a broader entrepreneurial and business education programme are present in the region but their focus and reach requires dramatic expansion.

The Peer Review Team recommend that consideration should be given to establishing a unified enterprise education programme, bringing together all of the region's capabilities, currently located in the Open University, vocational institutions, University of Jyväskylä, and the Polytechnic possibly as a prelude to forming a regional Business School. (It is conceivable that critical mass will not be attained in any single institution in such a small region without taking this bolder step).

We will return to the discussion of enterprise education in the following chapter in recognition that it forms a contribution to building a learning region as well as contributing directly to the economic base.

4. THE LEARNING REGION AND HUMAN CAPITAL DEVELOPMENT

4.1. Structure and characteristics of higher education in Central Finland and in Jyväskylä sub-region

The province of Central Finland and its Jyväskylä City centred core, Jyväskylä sub-region, perform well as a platform for describing and analysing the Finnish higher education system, its role based on a binary model (university sector and the polytechnic sector) and its decentralised structure with countrywide regional coverage. The higher education institutions in the region are the University of Jyväskylä and Jyväskylä Polytechnic.

According to the Self-Evaluation Report and the Peer Review Team's experience during the site visit, the two HEIs seem to operate tightly in the framework of the Finnish dual model. The University of Jyväskylä, a rapidly growing multidisciplinary university with seven faculties has given special emphasis to its position as a scientific community and to improve the quality of research and to expand and deepen its internationalisation. The role of the University has been dominated by the fact that universities have in the first hand been tightly connected to the *national* innovation system and international competitiveness. The contribution of universities to regional development has gained special attention just during the new Millennium. Jyväskylä Polytechnic on the contrary, representing the other, fairly new sector in the dual model, is supposed to be more strongly connected to regional working life and industry. The dominating factor in the role of the Polytechnic in the social arena is its expected ability to respond to regional demand and develop its operations in coherence with the regional socio-economic environment.

Adoption of the dual roles in the HE system, different development trajectories of the institutions and an existing tension between the two HE sectors on the national level have led to a situation where division of labour has been preferred to collaboration between the region's two HE institutions. However, the SER presents, and the PRT experienced during the site visit, examples of good collaborative practices between the two institutions. These seemed to arise more in projects of common interest than as results of some systematic mechanisms that addressed the core business of each institution. The implementation of the recent regional development strategy prepared – as requested by the Ministry of Education – jointly with University and Polytechnic opens new ways for institutional collaboration.

The province of Central Finland is a "5% region" of the whole country. Its 267 200 inhabitants count up to 5.1% of Finland's population, the shares of its total area and number of enterprises are 5.0% and 4.4%, respectively. The corresponding figures for Jyväskylä sub-region are 3.1%, 1.2 % and 2.5 %. In higher education, University of Jyväskylä has an 8-9% share of the Finnish university system (KOTA database 2004). The shares of new students, total number of students, master's degrees, doctor's degrees, teaching personnel and other (budgetary) personnel are 9.1%, 8.1%, 10.9%, 8.1%, 9.1% and 6.6%, respectively. In the light of these figures, the University seems to be "oversized" as compared with the size of Central Finland. This is even more obvious when the comparison is made with the Jyväskylä sub-region which was defined as the region of the OECD review (first proposed by the Ministry of Education and finally accepted by the Steering Committee). The size of Jyväskylä Polytechnic, on the other hand, is in line with the size of Central Finland (but

not necessarily of Jyväskylä sub-region). The Polytechnic has a 5% share of the Finnish polytechnic market. Its shares of new students, all students, bachelor's degrees, (polytechnic) master's degrees and teachers are 4.5%, 4.9%, 5.0%, 5.2% and 5.2% (AMKOTA database 2004).

The ambiguity in definition of the region for the review (Central Finland vs. Jyväskylä sub-region) reflects most strongly on statistics concerning teaching and learning in the region. There are no reliable data available, for example, about student recruitment from and graduate placement to the Jyväskylä sub-region. All data concern the whole Central Finland, part of it being based, especially in the case of the University, on surveys with a low response rate. The Polytechnic defines its region as the whole province; gathering data for the Province is therefore quite natural to the Polytechnic. And further, one of the Polytechnic's units, Institute of Natural Resources, is situated outside the Jyväskylä sub-region, in Saarijärvi, and the School of Business has a branch unit in Jämsänkoski, outside the Jyväskylä sub-region as well. On the other hand, the University has a strong local presence in Jyväskylä and Jyväskylä sub-region, the main emphasis here being to establish and strengthen its national and international reputation.

4.2. University of Jyväskylä – human, nature and technology built on educational heritage

The history of the University of Jyväskylä dates back to 1863 when in the Finnish context the pioneering Teacher Training College (Seminar) was founded in Jyväskylä. The Seminar was upgraded to higher education institution, Jyväskylä College of Education, in 1934. Since a college of education has typically several disciplines in humanities, social sciences, natural sciences *etc*., the development of the college towards a multidisciplinary university has been quite natural. Jyväskylä College of Education received the university status in 1966, as a part of the big Finnish university reform (decentralisation) at that time. Today, Human, Nature and Technology form the key elements of the multi-disciplinary scientific profile of the University. Putting this in other words, the University of Jyväskylä has a strong commitment to develop information technology to serve human and social needs and to enhance quality of life. The long educational heritage is reflected by pedagogical innovations in teaching within the University (University of Jyväskylä, 2005).

University of Jyväskylä is a "second-tier" multidisciplinary university – after the University of Helsinki – together with the universities of Oulu, Tampere and Turku, each representing slightly below 10% of the Finnish university system. At the same time, the home cities of these universities form the five most important growth centres in Finland. A large number of student places and a wide range of disciplines combined with an attractive image of the University and the City have guaranteed that the University of Jyväskylä has been one of the most popular universities in terms of students' applications. This results in a situation where the majority of the recruited students (ca. 75%) come from outside the region (Central Finland), and also where a majority of the graduates will or have to leave the region (ca. 60% immediately after the graduation and ca. 65% in the long run). However from the point of view of the region, the University is a net human resource recruiter, with more students studying locally than leaving for universities elsewhere.

With its seven faculties (Humanities, Information Technology, Education, Sport and Health Sciences, Mathematics and Science, Social Sciences, School of Business and Economics) the discipline palette of University of Jyväskylä covers almost all the main academic disciplines, with the most notable exception being the lack of engineering and medical faculties. An engineering faculty is often seen as a necessity for a university in order that it efficiently responds to the needs of a region's industrial and economic life. Authorisation by the Ministry of Education to establish programmes in engineering has been an objective of the University of Jyväskylä for some time, but with no success so far. However, the University does have high academic expertise and reputation in mathematics, computer science and natural sciences (including bio and environmental sciences). By incorporating

an applied orientation into the agenda of these disciplines the University has been able to create several technology programmes with strong regional relevance and contribution to the development of the region. Instead of hard engineering the application areas are in information technology, renewable and diversified energy solutions and wellbeing of the region's inhabitants in general.

The University of Jyväskylä can be seen as a Finnish pioneer in establishing and running special Master's Programmes with the aim of contributing to both national and regional skills development. After the period of deep recession and high unemployment in the early 1990s, cooperation between the University and regional actors strengthened and led to the launch of the region's (and Finland's) first Master's Programmes funded by the EU (Regional) Structural Funds. The Faculties of Information Technology and Mathematics and Science have been very active managing these programmes. In fact, the programmes can be seen to have had a significant contribution to the establishment of the Faculty of Information Technology. The programmes have promoted cooperation between the University and enterprises in the region by improving the skills of the students. However, in the discussions with the regional stakeholders the PRT was made aware that usefulness of the programmes for SMEs in particular could be further enhanced.

The (National) European Social Fund (ESF) financed Master's Programmes have also been of great importance for the supply of the University's education, *e.g.* in 2004 the volume of this funding was more than EUR 8 million representing a 5% share of the University's total budget. The university will certainly have a problem in continuing the programmes when the current ESF funding ceases. The University seems to have no tenable plans to replace this funding stream. Parallel to these ESF funded programmes the University has in 1998-2004 organised special retraining and upgrading qualifications programmes financed by the Finnish Government through its national Information Technology Programme. The object of the IT programme was to increase the skills and ability of the labour force and society more generally to respond to the challenges of rapid technological development. Financing of the programmes was allocated on a regional basis but has now ceased.

Most parts of Central Finland are rural areas. Even five municipalities out of nine in Jyväskylä sub-region are classified as rural. In general it is difficult to find fruitful cooperation activities between universities and the regions' hinterlands. In this context we commend the University of Jyväskylä for its initiative to engage in rural development through programmes to support rural know-how and entrepreneurship in Central Finland. This is supported by the establishment of a professorship for rural issues and participation in the national programme of Rural Studies. Rural Studies is a network initiative between nine Finnish universities aimed at establishing a multi-disciplinary Rural Studies programme for graduate level students. It provides students with specialised knowledge and understanding of rural change, development policies and practise. The programme is being piloted with the support of European Social Fund (ESF) and the Ministry of Education in the framework of European Union Objective 1 programme for Eastern Finland for 2000-2006. Rural studies at the University of Jyväskylä includes a special programme on Rural Areas as Economic and Social Platforms The professorship was established in 2004 and master level studies started in 2005, so it is difficult to assess its impact.

Regional engagement of a university should not be seen solely in terms of industry and business mindedness. The humanities and social sciences should be encouraged to learn from successful experiences in the traditional arenas of collaboration and to actively engage with the challenges of all kind of technological, economic and cultural development in the knowledge economy. There are many well-functioning examples in the University of Jyväskylä involving common education and learning projects between the University's human sciences (Faculties of Social Sciences, Humanities, and Health and Sports) and local or regional organisations. We have already noted the achievements in wellness technology and in the Gerocenter based on the wellness concept of ageing people. In the

Gerocenter there is integration and collaboration in many dimensions. The expertise in human sciences is combined with the expertise in the fields of technology, ICT and applied sciences. Education and research are closely related with each others and with development organisations and international enterprises. Students and researchers of both the University and the Polytechnic work together and are connected to innovative development projects in the region. One of the students we interviewed exemplified all this: she had started her studies and graduated from the Polytechnic, worked some time as a nurse, continued her studies in the University for a Master's degree, and now she is preparing her doctoral thesis. She has also participated in development projects in the Gerocenter.

The University of Jyväskylä offers undergraduate and postgraduate degrees, teacher training programmes and over 120 subject area disciplines within its seven faculties. It has a significant role in the Finnish university system and more widely in international cooperation. The University has succeeded in creating many innovative and pioneering teaching programmes with strong regional orientation and contribution to the region's skill development. Taken as a whole, however, the best practices created seem to be more a result of inspired work of engaged individuals and working groups than consequences of systematic development and monitoring processes within the University. *The Peer Review Team recommend the University carefully consider mechanisms by which these good examples relevant to the development of the regions human capital could be embedded in customs and practices throughout the institution.*

4.3. Jyväskylä Polytechnic – from a group of vocational colleges to a modern higher education institution

The creation of the polytechnic system in the beginning and mid-1990s has been the biggest HE reform in Finland since the expansion of the university system in the 1960s. The polytechnics were formed mainly from vocational colleges, which were upgraded to higher education institutions after a pilot phase and a rigorous external (FINHEEC) evaluation. The object of the reform was to raise the educational level of the country in general and at the same time guarantee that all the regions in the development process. This involved a total renewal and extension of the education programmes. Today, the network of 29 polytechnics form an integral part of the Finnish higher education system and cover the whole country. Most of polytechnics are – like Jyväskylä Polytechnic – multidisciplinary higher education institutions which provide instruction in several fields. A special emphasis is an orientation towards working life and its development. The polytechnics also carry out regional R&D activities relevant to their teaching and working life. The role of the polytechnics is thus more regional in nature than that of the universities.

The development of Jyväskylä Polytechnic has followed the general lines described above. It was established in 1992 by merging seven independent vocational colleges into one institution of higher education. The Polytechnic received the accredited permanent status in 1997. Today Jyväskylä Polytechnic is, according to its website "a multi-disciplinary expert community with several units, in addition to Jyväskylä, also in Saarijärvi and in Jämsänkoski. The Polytechnic includes the following schools: School of Cultural Studies, School of Business, School of Engineering and Technology, School of Information Technology, Institute of Natural Resources, School of Health and Social Care, School of Tourism and Services Management, and Teacher Education College. We assume responsibility for the development of Central Finland and react quickly to the region's educational needs. Our responsibilities include research and development activity concerned with enterprise and working life. Our activities emphasise, in particular, the promotion of small and medium-sized enterprises as well as development within the public sector. Our skilled staff have created both regional and international cooperation networks. In the future Jyväskylä Polytechnic wants to take an even more active and effective role as a developer of learning and competence in Central Finland."

The PRT is pleased to note that the challenging process of merging the separate colleges into one institution, increasing the competence of the teaching staff and developing new degree programmes at a totally new knowledge level than before has succeeded in just over ten years. The Polytechnic seems to have a well-functioning management system which is based on a high degree of autonomy for the schools (within the framework of budget constraints), annual target and result negotiations between the rectorate and the heads of the schools (where a Balanced Score Card approach is used as a management tool), and regular meetings of the Polytechnic's strategy group (heads of the schools and top management of the Polytechnic). To survey regional needs and to support and enhance the interaction with regional actors the Polytechnic has developed a system of advisory councils with representatives of firms, regional organisations and other stakeholders. Each school has also been nominated a development manager responsible for the enhancement of R&D activities and contacts with external stakeholders.

The Polytechnic has many specialities in the area of teaching and learning which have high regional relevance and contribute to the region's skill development. As was discussed in connection with the University of Jyväskylä, wellness technology is one of the spearhead topics of the Jyväskylä region. Jyväskylä Polytechnic is an important player in this subject. It has undertaken pioneering work in wellness technology by launching wellness engineering education in 1997. Development since then has been very fast. One of the latest innovations is the development project called Wellness Dream Lab which integrates education, research and development work of firms and organisations. Cooperation between the partners of the project is versatile and many-dimensional in a similar way to in the University driven Gerocenter discussed earlier.

Finally, we note that the Polytechnic as a whole has been purposefully developed towards a higher education institution with a practical orientation, aiming to respond to the needs of the labour market and with a special responsibility for the development of Central Finland and for its educational needs. During their studies Polytechnic students create contacts with working life. The practical training, project studies, and the bachelor's thesis are carried out in working life or in cooperation with the representatives of business and industry. The Polytechnic's degree-granting education includes almost 30 Bachelor level degree programmes within seven fields of study. The recently launched Master's degree programmes have a minimum of three years of work experience after graduation as a prerequisite to entering the programme.

4.4. Enterprise education

In Chapter Three we referred to the contribution of enterprise development programme to strengthening capacity in regional innovation systems. More generically HEIs can make an important contribution to their regional labour markets through encouraging graduate entrepreneurship. Entrepreneurship initiated by HEI students can be based on new technological or social innovations or supply of knowledge intensive business services in which their expertise has an important role. Finnish HEIs have devoted some effort to promoting entrepreneurship but so far with limited success. A national reality is that graduates are not keen to act as entrepreneurs. The SER of the Jyväskylä region supports this national pattern.

In the case of the University of Jyväskylä less than 1% of the graduates start their own business directly after their graduation. This is slightly below the national average even though it is possible to study entrepreneurship as a major subject in the School of Business and Economics at the University. Students from other fields can profit from this entrepreneurship knowledge base via the courses which are organised by the School for students of other faculties and cover the basis of business thinking. As we have noted in Chapter Three in the absence of financial and field-specific skill resources, the programmes do not meet the special needs of students from different fields.

The Polytechnic has recently launched an interesting elective entrepreneurship path called "The Path for Nascent Entrepreneur" which is open to all students. The programme is composed of modules such as "Orientation and basic studies of entrepreneurship", "From business opportunity to business plan" and "Venture development". While it is too early to judge its impact we commend the Polytechnic for steps taken to provide access to enterprise education to all students.

The established Team Academy is a laboratory type special degree programme which is in full use not only in Jyväskylä Polytechnic where it has been developed but in other Finnish Polytechnics, too. Thanks to the Team Academy and practical oriented education, the share of the Jyväskylä Polytechnic's graduates setting up businesses is higher (3%) than the national average (in all Finnish Polytechnic 2%). The idea of the Team Academy is presented in Box 4.1.

Box 4.1. **Team Academy promotes entrepreneurship**

The *Team Academy,* founded in 1993, is a unit of Jyväskylä Polytechnic specialised in marketing, management and entrepreneurship. It operates in Jyväskylä (217 students) and Jämsänkoski (163 students). During the last ten years the Team Academy has provided various forms of entrepreneurial education, serving the needs of the business world. Every student takes three and a half years' intensive training (210 ECTS credits) in leadership and marketing as a member of a team. Team Academy is a learning laboratory, where new learning methods and models for business life are continuously being developed (*e.g.* building effective teams, learning organisations and modern marketing). The establishing of one's own business is not the only aim of the education, as a stronger and stronger focus is on mental entrepreneurship. The aim is to increase the entrepreneurial spirit of those working in their own companies as well as of those employed by others.

The Team Academy concept has attracted growing interest nationally and internationally, *e.g.* in 1997 it was awarded with the Productive Idea Award of the Junior Chamber of Commerce of Finland. During our site visit in Jyväskylä we received positive feedback about the Team Academy programme and its graduates. Interviewed students, representatives of firms and business organisations and an external team coach provided anecdotal evidence of the impact of the programme. The graduates find employment easily and are often placed in key positions; they have also shown preparedness to start private companies, especially in the service sector and consultancy. On the other hand, shortcomings were apparent. As a CEO with experience in business and entrepreneurship consultancy stated, "…to be a good entrepreneur, one must have the right spirit, substance knowledge, management skills, and experience; Team Academy graduates have only the right spirit…" Today, the Team Academy degree programme is open to students of the Business School only (there is a separate recruiting channel for the programme). *We therefore recommend that consideration be given to opening the Team Academy to students of other schools within the Polytechnic.* Students with orientation and interest towards engineering and IT subjects for example, might be better equipped with some special substance knowledge for entrepreneurship in the future. Of course, this raises a big question of resources, both human and financial.

4.5. Adult education – a tool to enhance the matching of skills and labour market needs

Structural change in industry and in the labour market and resulting increased requirements in employees' skills and knowledge have highlighted the role of adult education and lifelong learning in Finnish education policy. Further, the education level of older generations is lower than that of younger people, creating an additional need for supplementary and further education. Both sectors in HE offer a wide range of adult education from degree-oriented programmes (polytechnic sector) to professional continuing education courses (both sectors). The Open University education also has a long tradition in Finland.

The role of the University of Jyväskylä as an adult education provider resembles its role in the supply of degree programmes; the University is a big player on the national level and the students are not only from Central Finland but from other parts of the country as well. The main units organising adult education are the Open University and Continuing Education Centre. In addition to this, departments in the faculties provide continuing education of their own.

In 2004 over 18 000 young people and adults chose to study in the Open University of Jyväskylä. The University is together with the University of Helsinki the leading provider of Open University teaching in Finland as measured by total annual study places. The Open University arranges university level studies for all interested individuals without age limits or requirements in terms of their basic education. Teaching corresponds to the basic university level in quality and standard and is arranged according to the curricula of the faculties and with their authorisation. Half of the Open University students come from Central Finland. The courses are organised by the Open University itself or by partner institutions all around the country (150 partners in total). This means that regional aspects are not the leading force in Open University activities; "we work with individuals" as the PRT was told in discussions with the representatives of Open University.

While it is not explicitly part of its remit the Open University does have a regional impact. Due to the high volume of activity, many of the courses take place in the region. The impact arises by providing education for people who want to update their skills or learn something new. The studies are easily accessible for people in working life (evening and weekend education, education in many places) as well as for the unemployed and for those still searching their "own" field of study. The Open University has also created tailored course packages – using normal courses of University curricula – with some local companies and the region's municipalities. Hence, the Open University of Jyväskylä maintains and enhances the knowledge base of the regional labour force. *We therefore recommend that the regional role of the Open University is more explicitly recognised and encouraged by the University and regional stakeholders.*

The Continuing Education Centre operates as a self-contained business organisation within the University, as its financing comes totally from external sources (students fees, consultancy, customer tailored programmes and development projects *etc.*). The Centre sees its role as an intermediate organisation between the university and external actors transferring academic knowledge into the practise through education and training programmes. The market area for the Centre's 120 training programmes is the whole country; only 10% of the volume comes from the region. The direct regional focus of the Centre is not very strong which is rather untypical among Finnish universities, where centres of continuing education are usually seen as the regionally most active part of the university. Teacher education, special education in particular, and the existing diverse networks constitute the Jyvaskyla Centre's strongest links to the region.

The PRT believes that continuing education is not very effectively coordinated at the University of Jyväskylä. In addition to the teaching organised by the Continuing Education Centre, the faculties provide continuing education of their own. There is a clear need to develop a system which ensures that scattered continuing education services across the University are gathered together into one large operative unit. In addition, following the general lines adopted in earlier corresponding evaluations, *the Peer Review Team strongly support a model where purchasing of the work undertaken by departments through the Continuing Education Centre is based not on individual contracts but on joint appointments between the Centre and departments. We also recommend that the Director of the Centre becomes a member of the senior management team of the University and closely involved in its strategic planning and guiding its responses to regional needs (with this appointment being linked to a stronger regional focus).*

Jyväskylä Polytechnic is also a continuing education provider, although to a lesser extent than the University. The professional specialisation studies are continuing education programmes, which can be completed as part time students in 1-2 years while working (nearly 1000 students in 2004). Participation in the specialisation studies deepens and widens the skills and professional competitiveness of the participants. The studies are open to everyone with a college or higher education degree, or extensive knowledge and skills obtained through practical experience. The specialisation studies or parts of them can be included in a polytechnic Master's degree, upon agreement of the polytechnic organising the degree programme. The volume of the professional continuing education is largest in the fields of social and health care and business. The Jyväskylä Polytechnic also provides degree programmes for adults in certain fields (nearly 700 students in 2004). These flexible programmes are primarily designed for people having earlier education or working experience in the same or a related field.

It is our view that the field of continuing education in the region is full of unnecessary and inappropriate competition. The Continuing Education Centre of the University competes with the departments of the University and also with the schools of the Polytechnic. *We therefore recommend a joint review of the organisation of continuing education in the region.* Of particular importance for the review will be: how to coordinate the use of experts and instructors so that both institutions can profit from their expertise; cooperation in the provision of courses; and to cooperate in creation of networks. In order to achieve this, similar regulations governing the supply of continuing education should be established in the University and the Polytechnic; at the moment the University must finance the education totally from external sources whereas the Polytechnic can use partly budget funding for running courses. (This is a problem to be solved on the national level).

4.6. Concluding remarks

Cooperation and a clear division of labour between the universities and polytechnics is highlighted by the Ministry of Education (the dual model of Finnish HE). This is seen as necessary in order that: HEIs focus on their strengths; as a more effective use of resources; and as a tool to respond to the regional and national needs in a more holistic and complementary way. Adoption of the dual roles in the HE system has resulted in the Jyväskylä sub-region in a situation where division of labour is preferred to over enhanced collaboration between the region's two HE institutions. The cooperation of the University of Jyväskylä and Jyväskylä Polytechnic is still at an early stage. There are some examples of good collaborative practices between the two institutions but these seem to arise more in projects of common interest than as results of any systematically developed mechanisms. Implementation of the new joint regional development strategy into practise is a challenge for institutions. *The Peer Review Team therefore recommend that the HEIs in the region organise their collaboration in a more structured and systematic way to cover e.g. systems for a common use of libraries, laboratories and other infrastructure as well as definition of education pathways across the institutions. We recommend that this is planned in collaboration with regional stakeholders, particularly those concerned with labour market issues.*

There is a special need for a closer cooperation between the two institutions in relation to continuing education, with this being a closer and organised internal cooperation in the institutions, especially in the University. In addition, continuing education, and partly also the Open University, is not primarily seen as a mean of regional capacity building but more as a national task. New methods of identifying the educational needs of the region and matching the programmes with these needs are clearly required. (We were surprised that the TE Centres, where the Ministry of Labour is active, do not seem to have a role here). The use of the new two-step (Bologna) system in university degrees and the polytechnic Master's degrees may open innovative possibilities for adult education.

5. CONTRIBUTION TO SOCIAL, CULTURAL AND ENVIRONMENTAL DEVELOPMENT

5.1. Towards a more balanced perspective

Regional development is often thought of in economic terms only. The OECD project briefing notes however suggest a wider interpretation. This chapter reviews the attitudes and practices of the HEIs in Jyväskylä in relation to the social, cultural and environmental development of the region, not only as means to economic progress but also as ends in themselves.

The relevant SER chapter describes several dimensions and areas of social, cultural, and environmental development. It refers to urban and rural area regeneration, health and social care, library services, research for community benefit, as well as cultural, and environmental development.

Both HEIs, despite their different missions and histories, see a social and cultural role as part of their mission. There are however variation in emphasis and implementation which stem from the binary system of higher education. The Polytechnic embeds community service into its teaching and R&D work. Given the practical orientation of the institution "knowledge transfer on legs" is a typical way the Polytechnic develops working life and the wellbeing of the region. Despite the scope and extent of this activity – nearly all students are engaged in some form of work based learning in the region – there is room from improvement particularly in terms of quality, and systematic engagement to guarantee long term impact. As the leadership of the Polytechnic put it, "....projects and practical work is our way. More than 90% of our students prepare their final thesis in cooperation with working life. Our challenge is to upgrade, to improve the quality of our work....".

The University has many examples of good practice in community engagement within the Faculties of Social Sciences, Sport and Health Sciences and the Humanities, but no systematic way of mobilising, supporting or encouraging this type of work. We heard of difficulties in setting up multidisciplinary projects across faculty borders because of rigid institutional funding mechanism. From interviews with the University leadership we learnt that some academic staff feel that there is a conflict between becoming more active in regional society and the pursuit of international research excellence. It was clear to the Peer Review Team that efforts had not yet been made to carry out the high level message of the Third Mission or regional engagement to the faculty and the department level.

The Peer Review Team gained the impression that although the HEIs regard their role in supporting regional development as important, they have not yet fully embraced the role of "good regional citizenship". HEI staff and students do lead community associations and serve in local government positions, adding to the region's stock of human and social capital, but we did not have an opportunity to explore this part of the HEIs civic agenda in detail. While we learnt that the Polytechnic had carried out systematic mapping of the links and networks of its staff, we were not made aware of any similar type of activity taking place in the University. In fact the SER indicates that the lack of comprehensive information on "who" is engaged with "what" as a way to achieving more systematic regional engagement by the University.

We believe that higher education can contribute strongly to social, cultural and environmental development in a region, but that this requires horizontal delivery structures to be put in place which facilitate inter and intra-institutional cooperation. We shall return to this matter later in Chapter Six dealing with capacity building for regional engagement.

5.2. Widening access to higher education

As the OECD review on equity and education suggests development of human resources is a key element in the enhancement of growth and international competitiveness. Inequity in education implies that human potential is wasted, and under-educated individuals not only fail to contribute to national prosperity, but also generate social costs. Low level of education attainment is a crucial determinant of being poor. In Finland the groups which suffer from lower levels of education include immigrants, individuals in rural areas, and children of lower socio-economic status.

While the Finnish comprehensive education system is successful in generating excellent results in quality and equity particularly through its ability to prevent students from falling behind, differences start to show in transition to upper secondary education and tertiary education. As individuals progress up the system, the processes that create inequality become more visible: students from families with higher incomes and higher parental education levels are more likely to enrol in higher education where universities are the more preferred option.

Polytechnics were created in the early 1990s to provide greater choice in higher education and to open access to non-traditional students. The ability of vocational students to apply to universities and polytechnics has also expanded access to higher education. At the national level, this channel was used in 2004 by 28% of polytechnic's new students (young and adult education) and 5% on new students at universities (Tilastokeskus, 2006).[12][13] In the case of Jyväskylä Polytechnic the share of students without matriculation examination is about 30% which indicates that the Polytechnic has succeeded in broadening access to education. The trend is however declining and we would like to draw attention to the sustained links with the vocational education sector.

From the interviews it was evident that the University prides itself being a national institution attracting talent throughout the country.[14] We heard references to outreach programmes with schools, *e.g.* music therapy working with local schools, the Faculty of Science carrying out long term cooperation with schools to raise aspirations, special education working with people with learning disabilities, and carrying out internationally renowned research through the dyslexia research group which was also producing practical applications to help the local young. While it was clear that the University portfolio includes many more examples of similar outreach activities, we had no evidence of a systematic approach to raising aspirations and widen access to higher education within the region's excluded communities.

We have discussed the Open University in the previous chapter. It has taken a particular approach to widening access through working in sustained partnership with educational institutions throughout

12. Here the share of vocational students includes all students with vocational qualifications including those who also have matriculation examination background. Figures for students with vocational qualifications only (no matriculation examination) would be 19% and 1%, respectively.

13. According to national goals, by the year 2008 25% of new polytechnics' students should have a vocational qualification completed on the basis of comprehensive school education.

14. We found no evidence of concern or initiatives taken to counter the eventual talent outflow after graduation.

the country. Although this approach is not unexceptional among Finnish open universities, in Jyväskylä the Open University has been particularly successful in its work.[15] But as we have already noted the focus of the Open University's work is national, rather than regional.

Given Central Finland's low skills outside the city of Jyväskylä and the pervasive youth unemployment within the city, a concrete social endeavour would include initiatives to promote widening participation in higher education. Unfortunately we were not in the position to make a thorough examination of these aspects during our visit. However, with the notable exception of WIRE projects (see box 5.1), our general impression was that within the HEIs and their regional stakeholders there was no shared commitment to address hard-core problems of a low skills base and high worklessness.

It is our view that concentration solely on excellence and technological advancement based on cluster development involves a risk of reduced sense of belonging of people in the remote areas and in the fringes of the society, as well as under-optimal use of human resources. While we acknowledge the strength of the of Finnish Welfare State and the fact that there are issues to be dealt with at the national level in terms of transition to higher education, we feel that the HEIs in the region have an important role to play. *We therefore recommend that the HEIs discuss with their local and regional partners how they might contribute to improving pathways into higher education for the more socially disadvantaged within the city and the wider region, including those with low aspirations and the long term unemployed.*

5.3. Health, welfare and sustainability

The Jyväskylä region is one of the fastest growing city regions in the country but lags behind the national average on critical performance measures. It is well above the national average in terms of both the long term and youth unemployment rate, as well as the share of the population receiving social assistance. Indeed, the City of Jyväskylä has been ranked among one of the most unwell regions in the country in terms of social performance and inclusion (see SER). Central Finland also features wide disparities between the centre and a periphery characterised by depopulation, low skills and ageing. It is evident why a long term approach to development is necessary.

The collaborative action between the HEIs and regional stakeholders in the field of social sciences and services is channelled through the Central Finland Centre of Expertise in Social Field. There are many examples of good practice in terms of HEI collaboration with regional and national stakeholders in this domain. For example the WIRE project seeks to enhance the life quality and social inclusion of the long-term unemployed in Central Finland (Box 5.1). The practices of the WIRE projects are, as far as we can tell, quite effective, and several of them could be adopted in other regions with high rates of long-term unemployment.

Box 5.1. **WIRE – Tackling exclusion in Central Finland**

Jyväskylä Polytechnic in collaboration with the Jyväskylä Regional Development Agency JYKES and Jyväskylä Employment Office has over the last ten year developed a new type of social inclusion model (WIRE) targeted at disadvantaged groups. WIRE includes a range of physical and social rehabilitation measures, partly delivered through the Rehabilitation Service Clinic *Fysipiste* which is a student training centre at the Polytechnic. Activities involve collaboration through an extensive network of public, private and third sector representatives.

15. At the time of the review we heard that it had been nominated for the second consecutive time as a quality provider in open university education by the FINHEEC.

The WIRE method of gradually rehabilitating long-term unemployed back to the working life has been a success: in 2000-2004 it contributed to the re-employment of 800 long-term unemployed persons in Central Finland. The WIRE projects have been recognised as the best practice by the National Research and Development Centre for Welfare and Health (STAKES).

A key to the success is the mutual trust built up over time and flexibility and sensitivity in taking into account not only the different resource base of partners, but also the varying needs of the end customers.

We heard of the University's Faculty of Social Sciences and social work, psychology and various other disciplines cooperating closely with regional stakeholders. The Department of Psychology has been involved in local activities for decades through different administrative models and approaches: clinical neuro-psychology works with young children carrying out nationally recognised research; the Psychotherapy Department participates in training programmes and projects; The Research and Training Clinic operates through a foundation with the local guidance clinic and the university.

While it is evident that the University faculty is responsive to needs arising from the region, there appears to be no systematic way of responding to these needs. As the Dean of the Faculty of Social Sciences noted *"…we are often approached by the public with social problems such as domestic violence. ...The problem is that we always have to find an ad hoc organisation and a template to design a tailored response."* The complexity of ad hoc structural models is not understood by external stakeholders. It also implies that many opportunities arising from the society are not taken on board.

As already stated Central Finland is faced with a rapidly ageing population. The HEIs in Jyväskylä are responding to this challenge, both individually and collectively. The University of Jyväskylä participates in cooperation with eight other Finnish universities in the *University of Third Age*. While it is a national scheme, there are regional variations. The University of the Third Age of Jyväskylä, the first in the country, was launched in 1985 and currently delivers teaching in eight cities. About 2 500 people participate with the average age being 65. This scheme seeks to ensure that senior citizens, who have contributed to the building of the Finnish welfare state and who often only received primary level education background, should now have access to lifelong learning.

In this context we do not apologise for once again mentioning the work of the HEI in the field of gerontology. Gerontology has a strong multidisciplinary knowledge base within the HEIs in Jyväskylä and a tradition of community level intervention. In future a significant part of the HEIs' third role activities in the field of ageing will be channelled through the newly established Gerocenter Foundation.

The work carried out in gerontology clearly illustrates that high quality international level research is not jeopardised by regional cooperation and application. It also demonstrates how academics are able to create innovative ways to counter the lack of mechanisms and systematic assistance from the HEI administration.

We have already discussed the renewably energy in Chapter Three. The approach of the HEIs to environmental development was one of the most impressive examples of complementary work with broad indirect and direct community involvement: this included combining internationally recognised research with practical applications benefiting the local communities as well as student service to the local community through internships, work-based learning, thesis work and spinouts.

While we commend the HEIs for being a source of expertise not only through research and development, but also through generating human capital through teaching and learning programmes[16] and through acting as animateurs in bringing together stakeholders to sustainability process we were surprised that there was only limited evidence of making sustainability a flagship of the HEIs. We *therefore recommend that HEIs in Jyväskylä prepare strategies for sustainable development, and embrace the Green Campus ideas.* According to the SER, sustainable development is "horizontally integrated in their operations". We believe that this is not sufficient demonstration to the region and the students as to what HEIs can do in terms of sustainability and would encourage further steps to be taken. *We further recommend that the HEIs cooperate more closely in the area of environmental sustainability to ensure that their individual and combined efforts support the aim to make Central Finland a region free from fossil fuels by 2015.*

5.4. Culture and creative industries

Culture as an agent of development takes three forms: (1) a direct contribution to the creative industries through enterprise formation, growth, productivity and employment; (2) an indirect economic benefit in attracting and retaining the creative classes which drive the knowledge society; and (3) culture as an end in itself, enhancing the quality of life.

HEIs in Jyväskylä take pride in contributing to cultural assets and development. While the Polytechnic's School of Arts and Culture has a focus on building up a structured response to generate creative industries, the University's response is more diverse and fractioned. We heard of interesting national level work on cultural policy and management in terms of advice, project development and research in collaboration with a range of stakeholders, but had an impression that this work was not sufficiently linked with the University arts departments and the region. The arts departments in the Faculty of Humanities were in the process of seeking ways to engage directly with the community and business to enhance employability of their graduates.

The collaborative inter-institutional action in this field is still in its infancy. The Peer Review Team heard of promising new initiatives such as the Music Campus which will pool the education, R&D and international contacts of the university, polytechnic and conservatory for the benefit of music students and the region. *We commend the cooperation to establish the Music campus and would recommend further steps be taken to bring this project to fruition.* We also heard emerging collaboration in the field of creative industries where the Polytechnic and the Regional Council of Central Finland have taken the lead in cooperation with other stakeholders to build up a sustained network of stakeholders and to enhance the entrepreneurial skills of different actors. We also heard that the Regional Council's coordinator is working side by side with the faculty of the Polytechnic's School of Arts and Culture.

While we commend these early steps that have been taken we have the impression that the region and stakeholders inside and outside of the HEIs have not yet fully recognised the potential for collaboration, partnership and advocacy in culture and creative industries. For example we learnt that the City of Jyväskylä had decided to bid for the European Capital of Culture for 2011 but the initial plans had been prepared without wide engagement of the HEIs. From experience elsewhere we have learnt that even if unsuccessful, a bidding process may considerably enhance the capacity of the region and its HEIs to work together to add to the region's cultural assets In summary, *The Peer Review Team Review Team commend the early steps taken by the HEIs in the field of culture and creative*

16. The School of Business and Economics of the University has been a pioneer in the Nordic countries in introducing environmental management in its curriculum.

industries and recommend that the region creates sustained mechanisms to combine the efforts of all cultural actors in order to ensure culture is a flagship for the HEIs regional work.

HEIs can be major players in internationalising their regions and making them more multicultural. According to the SER the HEIs in Jyväskylä have been successful in their international exchange operations. We were however not made aware of active measures to link the international students and the faculty with region and its working life. While we heard of the University public lecture series linking the locality with the international knowledge base, we would encourage the region to make more effective use of the HEIs' international linkages with international research and education contacts and alumni. What appears to be missing is an overall strategy to link the internationalisation of the HEIs to the region building to make the Jyväskylä more diversified, interesting and attractive region. We *therefore recommend that the region implements a strategy linking the internationalisation of the HEIs to its ambitions to make Jyväskylä a more culturally developed place, attractive to people and business from out of Finland.*

5.5. Concluding remarks and Recommendations

In this chapter we have touched upon the wide variety of contributions that the HEIs make to the social, cultural and environmental development of the region. Whilst many of the initiatives are excellent in their own right we gained the impression that there was no concerted effort on the part of either the HEIs or those charged with the development of the region to work together with the HEIs in mobilising higher education resources in this domain. The primary focus seems to be on business related competitiveness and measurable outcomes related to this. The softer and long term issues of the contribution of higher education to community development and cultural change seems to be relatively under-developed. We also gained the impression that the areas of excellence in the University such as in Sport and Music were not being fully mobilised in support of the community.

To move this agenda forward *we would recommend that the HEIs undertake and disseminate an audit of their engagement in the social, cultural and environmental development of the region, highlighting examples of good practice locally as well as elsewhere, including other OECD case studies. Following this we further recommend the preparation of joint strategies between the HEIs and the appropriate public bodies (e.g. the Regional Council, the City of Jyväskylä, the Arts Council of Central Finland, and the TE Centre) who should use their resources to underpin selective programmes of action within the HEIs.*

6. CAPACITY BUILDING FOR REGIONAL ENGAGEMENT

6.1. Introduction

In earlier chapters we have reviewed the role of HEIs in raising regional competitiveness through innovation and enhancing the human, social and cultural capital of the region. Because regional development embraces all of these elements we are firmly of the view that HEIs **can be** key agents regionally linking together these often separate strands of public policy relating to competitiveness, human resources and the community. The extent to which they **are** able to achieve this linkage depends both on flexibility at the national level and the leadership and capacity to act at the local level. In Chapter Two we highlighted some of the challenges at the national level in relation to innovation policy. Here we focus on local leadership and the capacity within the HEIs to become dynamic actors in the development **of** the region (as distinct from being just located **in** the region).

6.2. City and regional leadership

A key element in the OECD review process agreed with national and regional authorities has been the establishment of a regional steering committee of stakeholders drawn from inside and outside of higher education with an independent chair. The reason for this approach was that OECD wished each review to focus on regional development needs and look **into** HE from this perspective. Put another way the review had to be regional rather than HEI centred.

We were therefore very disappointed to find that the stakeholders could not agree upon a chair of the Steering Committee and had to look outside the region for such a person. We were told that there were disagreements between the University and the Polytechnic about the chairmanship. Finally the University and Polytechnic came to an agreement to invite the chair of the Finnish Higher Education Evaluation Council who had experience of reviews of regional engagement elsewhere. To our mind this decision implied that the exercise was aligned to the Ministry of Education's own requirements for regional HEI strategies (as distinct from the Ministry of the Interior's focus on regional development).

This failure of local leadership was also exhibited in the disagreements about the territorial focus on the review – the Jyväskylä sub-region versus the whole of Central Finland. This inevitably led to some confusion as to whether the focus was on economic development, where Jyväskylä is clearly the key driver, or the service role in a wider region within which there are undoubted problems of rural decline. This tension between urban focused economic growth and regional social inclusion is a key national challenge but is one where HEIs could be playing a leading role in bringing together both dimensions, for example by judicious use of Open University and Continuing Education programmes.

Issues of the territorial governance of Finland are beyond the terms of reference of this review. Nevertheless, from the perspective of mobilising HEIs to contribute to regional development *we would endorse the recommendation of the OECD Territorial Review regarding the need for Central Government to clarify lead responsibility for economic development beyond the boundaries of the larger city municipalities.* This would go some way to providing the basis for clearer regional leadership that we perceive to be lacking. While the wider region remains a problem, we were

impressed by certain aspects of development in the Jyväskylä sub-region – for example the willingness of the municipalities to cede responsibility for economic development to an arm's length organisation, JYKES, and to invest in the Jyväskylä Science Park jointly with the private sector. This is a good strategy providing capacity exists to manage the division of tasks between the various agencies. Unfortunately, we could not escape the conclusion that at the present time responsibility and resources are diffused leading to a lack of high level of professionalism in economic development. In key areas there also seemed to be a reluctance to draw on the expertise of the HEIs in policy formulation and implementation and indeed to use this to influence national policies in ways that could benefit the city and region (by international standards this is a small city and region which cannot afford not to mobilise the resources of the HEIs in this way.)

So, we would extend the recommendation of the OECD Territorial Review to propose a single economic development agency for the whole of Central Finland with responsibility for all aspects of economic development. The responsibilities of this agency should include the mobilisation of and contributing to the resourcing of the regional engagement of HEIs and drawing down national programmes relevant to this end including those currently administered by the TE Centres.

We recognise that this is a far reaching recommendation and that there would be many obstacles to its implementation. However, one of the steps down the road to realising this recommendation could be to build on the good work initiated through this review process. We received a very positive response from all of the stakeholders during our visit to the region and welcome the invitation from the steering committee to return to discuss our findings. By that time we hope the steering committee will have found a regionally based independent chair and have considered the excellent analysis of strengths, weaknesses, threats and opportunities contained in the Self-Evaluation Report and the valuable suggestions for capacity building and the specific "discussion proposals" contained within it (SER, pp. 109-118). In this peer review we have not responded to all of these analyses and recommendations as we feel it is more important for us to stimulate the stakeholders to take ownership of their own self-evaluation. In short *we recommend that the continuation of the Steering Committee and the publication of a collective response (including from Central Government) to the capacity building proposals in the Self-Evaluation Report and our review.*

6.3. Conjoint regional action by the University and Polytechnic

We have noted in earlier chapters several areas where there is productive collaboration between the University, the Polytechnic and the regional interests. Indeed one could hypothesise that those parts of the two institutions which engage with the region also collaborate with one another. Put another way, regional collaboration can and does provide a bridge between two rather different HEIs, one born out of the region and the other located **in the** region. The Self-Evaluation Report discusses the perceived tension within the University between national and international excellence in teaching and research and regional engagement, especially in subject areas which have little **obvious** relevance to the region. The internal debate has yet to progress to a stage that is evident in many other research intensive universities that recognises that 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 university departments of, for example, music and of literature, gaining international profile from regional initiatives, such as folk music and creative writing programmes which are deeply embedded in local culture. Similarly, close working with SMEs and the community and voluntary sectors from within polytechnics can be based on internationally high standards in terms of business processes for knowledge transfer without drift into second rate academic research.

In the light of the above, we believe that there can be a fruitful division of labour between universities and polytechnics in relation to regional development, including mutual learning one from

the other. In the case of Jyväskylä we understand that the management groups of both institutions meet four times a year and that there is project based collaboration when there are external funding opportunities. While this evaluation has led to the creation of some temporary and limited joint inter-institutional capacity, there appears to be no underlying resource able to undertake joint academic planning and initiatives related to regional development, including the review of core teaching programmes. One obvious example where there is scope for joint academic planning is continuing education; in the case of the Polytechnic this is embedded in core teaching programmes whilst in the University it is a semi-detached activity. So, to further build on this review *we recommend that the Polytechnic and the University establish a joint academic planning unit to support regional engagement by both institutions and oversee the implementation of the regional strategy submitted to the Ministry of Education. The work of this unit should be guided by the ongoing steering group, thereby ensuring widespread buy-in by external stakeholders to the Ministry of Education Strategy.* (Part funding from these stakeholders would help establish this unit and ensure their buy-in).

For this unit to work it would need to be headed by a senior appointment, that is someone who can command respect in both institutions and amongst stakeholders. This implies an appointment at Rector/Chief Executive level but preferably not a secondment from either institution. This person would need professional support. His/her task would be to work with the stakeholders and steering committee to review the recommendations in the Self-Evaluation and Peer Review reports, drawing on the experience from the overall OECD programme.

6.4. Capacity for engagement within the University

It was not the objective of this review to undertake the kind of in-depth investigation of mechanisms for regional engagement of the type sponsored by the Finnish Higher Education Evaluation Council of the Eastern Finland universities or Turku University. Nevertheless many of the recommendations from the reviews of a long established multi-faculty university like Turku and more recently established institutions built on teacher education foundations like Joensuu can be applied to Jyväskylä University. In addition, the concerns raised by the Science and Technology Council about the leadership and management of Finnish universities in the face of challenges of regional engagement and internationalisation are also valid here.

There can be no doubt that regional engagement is a tougher agenda in terms of institutional leadership and management than what appears to have been the previous core aspiration of the University – namely growth through the expansion of student numbers to meet national demands. This growth has created areas of academic excellence some of which are highly relevant to the region. But as the University's own external review of research points out, it has not with notable exceptions developed a significant research infrastructure (*e.g.* research centres and institutes) outwith its doctoral training programmes. We believe that investment in infrastructure would enhance its capacity to shape regional development. For example as programmes for the Academy of Finland demand more societal relevance, this will inevitably involve the search for "laboratories" outside the institution and the region could provide an obvious resource in this regard. The most prominent "notable exception" is Nanoscience Centre – a cross disciplinary venture with 10 Professors, 80 Researchers, links with VTT and industry and with a dedicated new building housing specialist clean rooms available to business.

We therefore recommend a general strengthening of the academic management structures within the University as a necessary condition to facilitating its regional engagement, including partnership working with the Polytechnic, Science Park and various public actors and agencies. (This recommendation is predicated on the assumption that regional stakeholders expect an institutional response to key challenges as distinct from one based on relations with individual academics or small groupings). Specifically, we would advocate consideration of the following:

- The establishment of a stronger steering core based around the Rectorate, supported by an Executive office which co-ordinates regional engagement through teaching and research and which backs up the Rector and a Vice Rector with specific responsibility for this area. This Senior Management Team, which should include the Deans, who should promote external and regional engagement throughout the academic heartland.

- The Senior Management Team uses units currently on the periphery of the University, such as the Centre for Continuing Education and the Open University, the joint academic development unit with the Polytechnic which we have proposed and the Science Park as tools of regional engagement **and** for institutional development

- Giving more responsibility to **appointed** Deans to manage their Faculties, including external engagement. If this intermediate level of management is not acceptable, Faculties should be abolished and front line responsibility for teaching, research and third task activities devolved to well supported and appointed heads of departments and research institutes.

- The creation of an internal "headroom" fund to support the further development of the management of regionally relevant research institutes like the Agora Centre in ways that ensure that these are embedded into a re-invigorated academic heartland.

We are conscious that in making these suggestions we might be accused of proposing management structures that would disincentivise the academic community. While there is international evidence that some of the world's elite institutions are relatively under-managed, these are generally so well resourced that some inefficiencies do not matter. This cannot be said for relatively small institutions (in global terms) like Jyväskylä University. Moreover we believe that strong academic leadership and clear internal processes with regard to external engagement can empower rather than disenfranchise the academic community.

6.5. Capacity for regional engagement within the Polytechnic

The PRT became acutely aware that institutional management in the Polytechnic was at the other end of the spectrum from the University. This is exemplified by:

- Active use of a Balanced Score Card approach which integrates quality assurance on delivery of external engagement into the day to day business of every School.

- An academic staff workload model which includes R&D as well as teaching.

- Bonus funding for exceptional School performance.

- A headroom fund to pump prime new initiatives.

- Advisory councils for each School composed of members of the business community and other regional agencies.

- Business Development Managers in each School.

The PRT were not in a position to come to any judgement about the quality of these systems and their impact on the Polytechnic's regional engagement. Much of the R&D activity and training undertaken by Polytechnic staff involves SMEs and will inevitably support incremental change. Notwithstanding the difficulties of finding appropriate metrics *we recommend that the Polytechnic*

extends its internal performance measurement system to incorporate assessments of the external impact of its services on regional businesses, public organisations and regional development more generally.

The Polytechnic recognises that the impact of its services will be related to the quality of the staff involved. It has inherited many staff from institutions without a background in higher education but is working hard to upgrade their skills by encouraging them to undertake PhDs in the University, to upgrade their business acumen by periods working with companies and their research skills by periods of study leave abroad. In short, human resource and change management is clearly high on the agenda of the senior management team within the Polytechnic.

6.6. Conclusion: towards a learning region

The PRT are firmly of the view that all of the stakeholders in the development of Jyväskylä and Central Finland have much to learn from each other in terms of improved ways of working. To achieve this *we first recommend that the University examines in relation to its own regional aspirations what it could learn from the management procedures adopted by the Polytechnic.*

Second *we recommend that each of the principal regional stakeholders (The Regional Council, JYKES, the Jyväskylä Science Park, the City of Jyväskylä, TE centre, the Chamber of Commerce) review the processes by which they engage with the HEIs and identify how these processes might be improved (who, what, how, when).*

Third, *we recommend that the HEIs fully mobilise their academic resources to undertake a regional SWOT analysis and identify what they can individually and together contribute through their teaching and research to building on regional strengths and exploiting opportunities and address weaknesses and threats.*

7. CONCLUSIONS AND RECOMMENDATIONS FOR THE NATIONAL GOVERNMENT, REGION, AND THE HEIS

7.1. Introduction

In conducting this evaluation we became very conscious that in the case of Central Finland we were dealing with a region containing a large university relative to the size of the region. Thus whilst Central Finland is the home of 5% of the country's population it educates around 9% of university students. **(**In contrast, the size of the Polytechnic is more or less in line with the size of the region). This discrepancy in relation to university education is more apparent at the scale of the Jyväskylä subregion. We infer from this, that unlike Eastern Finland or Lapland, the expansion of the University of Jyväskylä has **historically** been driven by national higher education policy considerations with little regard to regional development needs and opportunities. However, **today** it is confronted by strong pressures for external engagement in a region facing structural adjustment challenges and a youthful Polytechnic created and dedicated to the region. As reviewers we are acutely aware that universities are bit like super tankers. The length of degree programmes, especially in the Finnish case, the rigidity of funding regimes linked to graduate output and the strength of collegiate governance structures all conspire to make it extremely difficult for institutions to quickly change course in the face of new external circumstances.

In the recommendations that we have made throughout this report and which are brought together here we have suggested what amount to tweaks that could be applied to the rudder to start that change of direction which links the global and the local. This is not simply a matter for the University and its collaboration with the Polytechnic but will require concerted action by partners at the regional and national level. Whether such incremental change built around consensus amongst all of the actors at each of these levels will be sufficient to confront the challenges of globalisation is open to question.

The crisis of the early 1990s resulted in a massive re-ordering of the Finnish economy and public policy and a commitment to public investment in R&D and higher education. A reduction in public resources, not least those made available from the European Union, could be a catalyst for another round of radical change, not least in terms of higher education and regional policy. Reduced core funding could force the HEIs in Jyväskylä to come together in search of economies of scale and scope, become more entrepreneurial and develop strategic alliances with HEIs elsewhere and with business and public bodies. This would be a very different situation to that which currently prevails and where the Ministry of Education closely regulates the boundary between the two parts of higher education and the other parts of the public and private sector. Less direct control from the Ministry of Education could encourage the HEIs to win resources from elsewhere in government and from the region in ways that could bring positive benefits to Jyväskylä and Central Finland. In short, *we recommend greater autonomy for HEIs "earned" on a case by case basis as the surest way of ensuring the emergence of entrepreneurial institutions actively engaged in regional development. Strong internal management structures and external partnerships should contribute to the earning of this greater freedom.*

In the following sections we group our recommendations embodied in the previous chapters according to the level in the higher education/regional development system to which they are most relevant, starting from the national level and moving through to the regional level and then to the individual HEIs. Our recommendations are not meant to be substantive judgements and should not be read in isolation from the text from which they have been extracted. (We recognised that there is inevitably some overlap in the recommendations insofar as they seek to address the single issue of regional engagement by HEIs from different directions. We also appreciate that following our review visit some of these recommendations are in the process of being taken aboard.)

A final introductory remark concerns several recommendations for new groupings of actors specifically charged with driving forward change across several agencies. There are always dangers that such recommendations require additional resources and do not result in great efficiencies in cross-institutional working. Our recommendation will only work if there is an agreement amongst the partners at the highest level to eliminate duplication and focus on the challenge of mobilisation of higher education to support the development of the city and region. If this sort of leadership cannot come from within the region, central government may need to impose it from outside.

7.2. National level recommendations

The Peer Review Team recommend that the joint regional strategies submitted by Polytechnics and Universities to the Ministry of Education are reviewed by the Ministry and other relevant Ministries, especially for the Interior, Industry and Labour, with the Ministry of the Interior taking account of the views of Regional Councils and relevant municipalities.

The Peer Review Team recommend a fundamental review of the funding model for HEIs to include a requirement for full economic costing of research and other services, greater rewards for external engagement and more autonomy to determine priorities within this domain.

The Peer Review Team recommend that universities, working with polytechnics, should be formally assigned a lead role in establishing an integrated national innovation system with a regional dimension.

The Peer Review Team recommend the establishment of a national pot of capital and recurrent funding subscribed to by all of the relevant central departments but administered by the Ministry of the Interior to which regional consortia led by universities and polytechnics may bid competitively to support the active regional engagement of HEIs outside of the Helsinki region.

The Peer Review Team recommend greater autonomy for HEIs “earned” on a case by case basis as the surest way of ensuring the emergence of entrepreneurial institutions actively engaged in regional development. Strong internal management structures and external partnerships should contribute to the earning of this greater freedom.

7.3. Regional level recommendations

The Peer Review Team recommend that the region creates mechanisms to ensure the continuation of the learning process initiated by this review and which brings together the higher education institutions and the regional stakeholders. The self-evaluation should be followed by a structured process continuing the SWOT analysis to build on strengths, address weaknesses, counter threats and exploit opportunities. We recommend that steps are immediately taken to identify a leader from within the region to lead this process.

The Peer Review Team recommend that the University and the Polytechnic jointly contract Jyväskylä Science Park to support technology transfer on their behalf. Tasks would include:

- The development of a common innovation strategy.
- Agreements between the parties concerning codes of practice to guide action and purchases during the process of innovation from ideas to commercial products/service.
- Consideration of commercial applications in the planning of new R&D projects and business possibilities during their execution.
- Provision of pre-incubator facilities and services for students and academic staff.
- Licensing via specialist service provider (*reach out*).
- Identification of business sources to contribute to HEI programmes and projects (*reach in*) including additional funding from industry.

The Peer Review Team recommend the continuation of the Regional Steering Committee and the publication of a collective response (including from Central Government) to the capacity building proposals in the Self-Evaluation Report and our review.

The Peer Review Team recommend that each of the principal regional stakeholders (The Regional Council, JYKES, Jyväskylä Science Park, the City of Jyväskylä, TE Centre, the Chamber of Commerce) review the processes by which they engage with the HEIs and identify how these processes might be improved (who, what, how, when).

The Peer Review Team endorse the recommendation of the OECD Territorial Review regarding the need for Central Government to clarify lead responsibility for economic development beyond the boundaries of the larger city municipalities.

The Peer Review Team extend the recommendation of the OECD Territorial Review to propose a single economic development agency for the whole of Central Finland with responsibility for the designation of all aspects of economic development. The responsibilities of this body should include the mobilisation of and contributing to the resourcing of the regional engagement of HEIs and drawing down national programmes relevant to this end including those currently administered by the TE Centres.

The Peer Review Team recommend that the region implements a strategy linking the internationalisation of the HEIs to its ambitions to make Jyväskylä a more culturally developed place, attractive to people and business from out of Finland.

7.4. Institutional level recommendations

The Peer Review Team recommend the establishment of joint one stop shop for business support services shared between the University and the Polytechnic. The Peer Review Team recommend that consideration should be given to establishing a unified enterprise education programme, bringing together all of the region's capabilities, currently located in the Open University, vocational institutions, University of Jyväskylä, and the Polytechnic possibly as a prelude to forming a regional Business School. (It is conceivable that critical mass will not be attained in any single institution in such a small region without taking this bolder step).

The Peer Review Team therefore recommend that the HEIs in the region organise their collaboration in a more structured and systematic way to cover *e.g.* systems for a common use of libraries, laboratories and other infrastructure as well as definition of education pathways across the institutions. We recommend that this is planned in collaboration with regional stakeholders, particularly those concerned with labour market issues.

The Peer Review Team recommend a joint review of the organisation of continuing education in the region.

The Peer Review Team recommend that the HEIs discuss with their local and regional partners how they might contribute to improving pathways into higher education for the more socially disadvantaged within the city and the wider region, including those with low aspirations and the long term unemployed.

The Peer Review Team recommend that HEIs in Jyväskylä prepare strategies for sustainable development, and embrace the Green Campus ideas. The Peer Review Team further recommend that the HEIs cooperate more closely in the area of environmental sustainability to ensure that their individual and combined efforts support the aim to make Central Finland a region free from fossil fuels by 2015.

The Peer Review Team commend the cooperation to establish the Music campus and recommend further steps be taken to bring this project to fruition.

The Peer Review Team Review Team commend the early steps taken by the HEIs in the field of culture and creative industries and recommend that the region creates sustained mechanisms to combine the efforts of all cultural actors in order to ensure culture is a flagship for the HEIs regional work.

The Peer Review Team recommend that the HEIs undertake and disseminate an audit of their engagement in the social, cultural and environmental development of the region, highlighting examples of good practice locally as well as elsewhere, including other OECD case studies. Following this we further recommend the preparation of joint strategies between the HEIs and the appropriate public bodies (*e.g.* the Regional Council, the City of Jyväskylä, the Arts Council of Central Finland, and the TE Centre) who should use their resources to underpin selective programmes of action within the HEIs.

The Peer Review Team recommend that the Polytechnic and the University establish a joint academic planning unit to support regional engagement by both institutions and oversee the implementation of the regional strategy submitted to the Ministry of Education. The work of this unit should be guided by the ongoing steering group, thereby ensuring widespread buy-in by external stakeholders to the Ministry of Education Strategy.

The Peer Review Team recommend that the HEIs mobilise their academic resources to undertake a regional SWOT analysis and identify what they can individually and together contribute through their teaching and research to building on regional strengths and exploiting opportunities and address weaknesses and threats.

The Peer Review Team recommend that the University proceeds with some urgency to establish its own technology transfer functions overseen by the Vice Rector and with strong links to the departments and research institutes and with the central office acting as the interface to the Science Park.

The Peer Review Team recommend that the University carefully considers mechanisms by which the good examples relevant to the development of the regions human capital could be embedded in customs and practices throughout the institution.

The Peer Review Team recommend that the regional role of the Open University is more explicitly recognised and encouraged by the University and regional stakeholders.

The Peer Review Team strongly support a model where purchasing of the work undertaken by departments through the Continuing Education Centre is based not on individual contracts but on joint appointments between the Centre and departments. The Peer Review Team also recommends that the Director of the Centre becomes a member of the senior management team of the University and closely involved in its strategic planning and guiding its responses to regional needs (with this appointment being linked to a stronger regional focus).

The Peer Review Team recommend a general strengthening of the academic management structures within the University as a necessary condition to facilitating its regional engagement, including partnership working with the Polytechnic, Science Park and various public actors and agencies. Specifically, The Peer Review Team would advocate consideration of the following:

- The establishment of a stronger steering core based around the Rectorate, supported by an Executive office which co-ordinates regional engagement through teaching and research and which backs up the Rector and a Vice Rector with specific responsibility for this area. This Senior Management Team, which should include the Deans, who should promote external and regional engagement throughout the academic heartland.

- The Senior Management Team uses units currently on the periphery of the University, such as the Centre for Continuing Education and the Open University, the joint academic development unit with the Polytechnic which we have proposed and the Science Park as tools of regional engagement **and** for institutional development.

- Giving more responsibility to **appointed** Deans to manage their Faculties, including external engagement. If this intermediate level of management is not acceptable, Faculties should be abolished and front line responsibility for teaching, research and third task activities devolved to well supported and appointed heads of departments and research institutes.

- The creation of an internal “headroom” fund to support the further development of the management of regionally relevant research institutes like the Agora Centre in ways that ensure that these are embedded into a re-invigorated academic heartland.

The Peer Review Team recommend that the University examines in relation to its own regional aspirations what it could learn from the management procedures adopted by the Polytechnic.

The Peer Review Team recommend that the Polytechnic extends its internal performance measurement system to incorporate assessments of the external impact of its services on regional businesses, public organisations and regional development more generally.

The Peer Review Team recommend that consideration be given to opening the Team Academy to students of other schools within the Polytechnic.

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APPENDIX 1. THE OECD REVIEW TEAM

Lead Evaluator

Dr **John Goddard**, Professor of Regional Development Studies and Pro-Vice-Chancellor of the University of Newcastle upon Tyne, UK has more than thirty years experience in the field of regional development as a policy developer and ministerial adviser, programme manager, regional practitioner, researcher, and evaluator. He was a member of the Peer Review Team considering the regional role of Eastern Finland Universities, the lead evaluator of the external impact of the Turku University and subsequently chaired the Peer Reviews of their self-evaluation in 2003. He led the OECD Institutional Management in Higher Education Programme study on the "Response of Higher Education Institutions to Regional Needs" published in 1999 and is the Academic Leader of the current OECD/IMHE project.

International Expert

Henry Etzkowitz is chair in Management of Innovation at the Business School, University of Newcastle-Upon-Tyne and Director of the KITE (Knowledge, Innovation, Technology, Enterprise Research Centre). He is co-founder of the Triple Helix international conference series on university-industry-government relations[17] and author of Triple Helix: A New Model of Innovation, MIT and the Rise of Entrepreneurial Science and co-author of Athena Unbound: The Advancement of Women in Science and Technology.

National Expert

Dr. **Ilkka Virtanen**, Professor of Operations Research and Management Science and Dean of the Faculty of Technology of University of Vaasa has an extensive experience in university evaluations in Finland and elsewhere. He was a team member in the review and the subsequent re-evaluation of the external engagement of Turku University in 2000 and 2003, and a member of the review team which conducted the 1998 evaluation and 2003 re-evaluation of the regional role of Eastern Finland Universities. In 2004-2005 he was a team member in the review of the administration and supporting services of University of Helsinki. He has since 2003 been a team member in several reviews of study programmes in Business Administration and Management of Estonian HEIs. He chairs the Accreditation Board of Professional Courses, a subsection of Finnish Higher Education Evaluation Council FINHEEC.

Team Coordinator

Jaana Puukka is the OECD consultant overseeing the current OECD/IMHE project and the Team Coordinator of four regional reviews. She has experience in regional development in Finland as a ministerial and local government adviser, programme manager, practitioner, and evaluator. She is the Regional Development Manager of Turku University of Applied Sciences, the biggest professionally oriented HEI in Finland, and has been involved in the evaluation of the external engagement of the

17. www.triplehelix5.com

University of Turku 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 Coordination Team and the Authors of the SER

Kirsi Mukkala	Researcher, University of Jyväskylä, School of Business and Economics, Expert Division
Jari Ritsilä	Leading Researcher, University of Jyväskylä, School of Business and Economics, Expert Division
Eero Suosara	Jyväskylä Polytechnic

Members of the Regional Steering Committee

Ossi V. Lindqvist (chair)	Finnish Higher Education Evaluation Council, FINHEEC
Jukka Akselin	Managing Director, Jyväskylä Science Park
Jouni Juutilainen	Regional Development Chief, City of Jyväskylä
Anita Mikkonen	Executive Director CEO, Regional Council of Central Finland
Ritva Nirkkonen	Managing Director, Jyväskylä Regional Development Company, JYKES
Mauri Panhelainen	Rector, Jyväskylä Polytechnic
Kyösti Saarimäki	Chair of the Board, Federation of Finnish Enterprises, Regional unit of Central Finland
Ari Saarinen	Counsellor of Education, Ministry of Education
Aino Sallinen	Rector, University of Jyväskylä
Uljas Valkeinen	Managing Director, Central Finland Chamber of Commerce

Substitutions

Marketta Mäkinen	Head of External Relations, City of Jyväskylä

APPENDIX 3. PROGRAMME OF THE REVIEW VISIT

OECD Review Visit to the Jyväskylä Region, 15-20 January 2006

Sunday 15 January

18:30-21:00 Review Team private meeting

Monday 16 January

09:00-10:15 Regional Coordination Team (authors of the Self-Evaluation Report)
Kirsi Mukkala, Researcher, University of Jyväskylä, School of Business and Economics/Expert Division
Jari Ritsilä, Leading Researcher, University of Jyväskylä, School of Business and Economics/Expert Division
Eero Suosara, Jyväskylä Polytechnic

10:30-12:00 Leadership of the University of Jyväskylä
Aino Sallinen, Rector
Timo Tiihonen, Vice Rector
Erkki Tuunanen, Director of Administration
Ritva Nirkkonen, Deputy Board Member of the University, Managing Director, Jyväskylä Regional Development Company, JYKES (replacing *Reima Kerttula*, Metso)

12:20-15:00 Leadership of the Jyväskylä Polytechnic
Mauri Panhelainen, Rector
Jussi Halttunen, Director of Strategic Development
Johanna Heikkilä, Quality Manager
Kari Malinen, Member of the Board of the Jyväskylä Polytechnic Ltd., Business Controller, TietoEnator

15:30-17:00 Key Regional Stakeholders
Jukka Akselin, Managing Director, Jyväskylä Science Park
Esko Koliseva, Municipal Manager of Laukaa Municipality
Marketta Mäkinen, Head of External Relations, City of Jyväskylä
Ritva Nirkkonen, Managing Director, Jyväskylä Regional Development Company, JYKES

18:00-21:00 Review Team private meeting

Tuesday 17 January

09:00-10:45 Regional Steering Committee
Jukka Akselin, Managing Director, Jyväskylä Science Park
Ossi V. Lindqvist, Chair, Finnish Higher Education Evaluation Council, FINHEEC (Chair)
Marketta Mäkinen, Head of External Relations, City of Jyväskylä
Ritva Nirkkonen, Managing Director, Jyväskylä Regional Development Company, JYKES
Mauri Panhelainen, Rector, Jyväskylä Polytechnic
Aino Sallinen, Rector, University of Jyväskylä
Uljas Valkeinen, Managing Director, Central Finland Chamber of Commerce

11:15-13:15 *Contributing to the wellbeing of ageing people – Case Gerocenter*
Juha Hautanen, Development Manager/Wellness technology, Jyväskylä Regional Development Company, JYKES
Eila Latvala, Director of the School of Social and Health Care, Jyväskylä Polytechnic
Mareena Löfgren, Developer of Wellness Field, Jyväskylä Regional Development Company, JYKES
Aila Pikkarainen, Researcher, Finnish Centre for Interdisciplinary Gerontology
Taina Rantanen, Professor, Gerontology and Public Health, University of Jyväskylä
Pekka Utriainen, Director, Social and Health Care Services, City of Jyväskylä

13:45-15:00 Students of the Jyväskylä Polytechnic
Hanna Immonen, Student in Teacher Education College, Teacher in School of Engineering and Technology
Sami Kantalainen, Student of Master of Engineering (Postgraduate Degree) in Technological Competence Management, Manager (Material Management) in Metso Paper
Ville Keränen, Student of Business Administration in the Team Academy
Eija Laitinen, Student of Business Administration in the Team Academy
Anna-Maija Lallu, Student of Hospitality Management in Tourism

15.15-16:45 Directors of the Schools of the Jyväskylä Polytechnic
Hannu Ikonen, School of Cultural Studies
Eila Latvala, School of Health and Social Care
Annikki Mikkonen, School of the Tourism and Service Management
Heikki Saastamoinen, School of Information Technology
Mikko Salminen, School of Engineering and Technology

Wednesday 18 January

08:45-10:00 Business and Business Support Services
Juha Koskinen, CEO, Wellcon Development Oy
Juha S. Niemelä, Manager of Rural Department, Employment and Economic Development Centre of Central Finland (TE Centre)
Kyösti Saarimäki, Chair of the Board, Federation of Finnish Enterprises (regional unit of Central Finland)
Timo Taskinen, Senior Technology Adviser, Employment and Economic Development Centre of Central Finland (TE Centre)
Uljas Valkeinen, Managing Director, Central Finland Chamber of Commerce

10:15-12:00 *Bioenergy*
Dan Asplund, Director, Energy Technology, Jyväskylä Science Park
Jouko Korppi-Tommola, Professor, University of Jyväskylä
Timo Nyrönen, Research Manager, VAPO
Anneli Ylimartimo, Development Manager, Institute of Natural Resources, Jyväskylä Polytechnic
Pekka Äänismaa, Project Manager, Bioenergy Technology Transfer Network, Jyväskylä Polytechnic

12:15-14:00 Regional Council of Central Finland
Anita Mikkonen, Executive Director CEO
Hannu Korhonen, Director of Planning and Development
Rauli Sorvari, Training Manager Education Projects

14:15-14:45 Review Team private meeting

15:00-17:00 National authorities
Janne Antikainen, Senior Researcher, Ministry of the Interior
Riikka Heikinheimo, Director, Finnish Funding Agency for Technology and Innovation (TEKES)
Veijo Kavonius, Director of Regional Development, Ministry of the Interior
Alpo Kuparinen, Industrial Counsellor, Ministry of Trade and Industry
Osmo Lampinen, Counsellor of Education, Ministry of Education/Polytechnic Division
Ulla Mäkeläinen, Senior Adviser, Ministry of Education/University Division
Esko-Olavi Seppälä, Chief Planning Officer, Science and Technology Policy Council of Finland

19:00-22:00 Reception hosted by Mr. *Markku Andersson*, the Mayor of the City of Jyväskylä,
Jussi Halttunen, Director of Strategic Development, Jyväskylä Polytechnic
Veli-Pekka Heikkinen, Director / Industry Development, Jyväskylä Science Park
Osmo Lampinen, Counsellor of Education, Ministry of Education/Polytechnic Division
Ritva Nirkkonen, Managing Director, Jyväskylä Regional Development Company – JYKES
Aila Paloniemi, Member of the Finnish Parliament, Member of the Board of the Jyväskylä Polytechnic Ltd.
Mauri Panhelainen, Rector, Jyväskylä Polytechnic
Aino Sallinen, Rector, University of Jyväskylä

Thursday 19 January

09:00-11:00 *Culture and Creative Society*
Heikki Hanka, Professor/Vice-Dean, Faculty of Humanities, University of Jyväskylä
Ismo-Pekka Heikinheimo, Choreographer and dancer, State Provincial Office of Western Finland
Hannu Ikonen, Director, School of Cultural Studies, Jyväskylä Polytechnic
Petri Jussila, R&D Manager, School of Cultural Studies, Jyväskylä Polytechnic
Raija Partanen, Project Manager, Regional Council of Central Finland
Jukka-Pekka Pelttari, Regional Manager, Elisa Oyj

11:30-13:30 *Lifelong Learning and Continuing Education*
Satu Helin, Director, Open University of Jyväskylä
Päivi Kauppila, Course Coordinator, Jyväskylä Polytechnic / Vocational Teacher Education College
Anna-Liisa Rassi, Director, Continuing Education Centre, University of Jyväskylä
Katri Ryttyläinen, Development Manager, Jyväskylä Polytechnic / School of Health and Social Care
Sinikka Vihavainen, Senior Coordinator, State Provincial Office of Western Finland

13:45-15:00 Students of the University of Jyväskylä (incl. lunch)
David Agar, Doctoral Student in the Renewable Energy programme
Mikaela von Bonsdorff, Doctoral Student in Gerontology
Jari Salmela, Doctoral Student in Nanotechnology
Olli Sandberg, Student in Master's Programme of the Faculty of Information Technology (working in Nokia)

14:45-17:00 Deans of the University of Jyväskylä
Heikki Hanka, Vice-Dean of the Faculty of Humanities
Lasse Kannas, Dean of the Faculty of Sport and Health Sciences
Tommi Kärkkäinen, Vice-Dean of the Faculty of Information Technology
Matti Manninen, Dean of the Faculty of Mathematics and Sciences
Hanna-Leena Pesonen, Professor, School of Business and Economics
Jarl Wahlström, Dean of the Faculty of Social Sciences

18:00-21:00 Review Team private meeting

Friday 20 January

9:00-11:45 Review Team private meeting

12:00-13:30 Concluding remarks and feedback to the Regional Steering Committee
Jukka Akselin, Managing Director, Jyväskylä Science Park
Anita Mikkonen, Executive Director CEO, Regional Council of Central Finland
Marketta Mäkinen, Head of External Relations, City of Jyväskylä
Mauri Panhelainen, Rector, Jyväskylä Polytechnic
Kyösti Saarimäki, Chair of the Board, Federation of Finnish Enterprises (regional unit of Central Finland)
Timo Tiihonen, Vice Rector, University of Jyväskylä

13:30-14:44 Jyväskylä Science Park and university spin off – special visit by Prof. Etzkowitz

Departure from the region