ISBN 978-92-64-03414-3
Higher Education and Regions:
Globally Competitive, Locally Engaged
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Chapter 6

Contribution of Higher Education to Regional Human Capital Formation: Overcoming the Barriers

This chapter considers the role of higher education institutions in regional human capital systems and in building "learning regions". It presents several examples from OECD countries highlighting the different roles that the higher education institutions play in this domain. First, higher education institutions can widen access to higher education, particularly from remote areas and/or communities with low traditions of participation in higher education e.g. through lifelong and e-learning activities. Second, they can improve the balance between labour market supply and demand through creating improved labour market intelligence, enhancing the links with the employers and supporting new enterprising. Third, higher education institutions can attract talent to the region and help retain it.

The previous chapter examined the ways through which higher education institutions (HEIs) are involved with regional innovation systems. It had a primary focus on the "hard" contributions, such as the inputs to and infrastructure for firm-based innovation, including patenting/licensing activity, consultancy and knowledge transfer and provision of specialist facilities such as laboratories, science parks and incubators. While OECD countries have rightfully pointed the need to focus on the R&D generated by academia, the development of spin-offs and patenting, the approach has sometimes been unbalanced. The focus on the "hard" contributions of higher education ignores what is arguably one of the most effective mechanisms for knowledge transfer, knowledge which is embedded in students and graduates and is subsequently absorbed – via the regional labour market – into the regional knowledge economy (Martin and Trudeau, 1998). This "knowledge transfer on legs" is a critical element of the regional role played by higher education institutions. Thus, this chapter considers the broader significance of labour market processes for the technological and organisational dynamism of regions.

Labour markets are diverse and demand- and supply-side conditions vary significantly within and between OECD countries. The processes that occur at the regional and local level and the articulation between the different instances of governance are important in the success of human capital development. In this sense, analyses of methods for upgrading workforce skills need to be linked to the local labour market (Peck, 1996; Martin and Morrison, 2003). So far only limited attention has been paid to the territorial dimension of skills creation and upgrading (OECD, 2006h). The relationship between geography and skills strategies has recently been acknowledged by some OECD countries (see *e.g.* DfES, DTI, DWP, HM Treasury, 2003).

Higher education institutions have a key role in building "learning regions". A "learning region" refers to a territory where institutions, individuals and incentives are geared to a continual learning and up-skilling process which maximises not only economic performance, but also individual achievement. It is a special form of human capital system with a set of inter-connected labour markets through which individuals progress during their working lives. Human capital formation is thus driven by individuals seeking learning in response to market demands and to increase their earning potentials and personal fulfilment. Entrepreneurship and enterprise

education can help students to be better employed by local businesses, increasing demand for those skills, and stimulating more people to involve themselves with learning. (Lundvall, 1992; Lundvall and Borrás, 1997)

This chapter presents several examples from OECD countries and more specifically from the fourteen regions in the current OECD study highlighting the different roles of the higher education institutions in human capital formation and uptake in the region. Local, regional and institutional responses can reduce the problem of one-size-fits-all approaches that are unsuitable in responding to diverse business and individual needs. However, local solutions do not guarantee policy effectiveness. Practices linked to human capital formation cannot be disconnected from the broader national and supra-national policy framework that governs the fields of education and territorial development. The emphasis given to the regional agenda of higher education institutions by national authorities can act as either a constraining or an enabling factor. Moreover, a lack of involvement on the part of local and regional employers can be a barrier to policy effectiveness and a source of regional variations.

Widening access

Development of human resources is a key element in the enhancement of growth and international competitiveness. Benefits of education include higher employment rates and earnings for individuals, and increased productivity and economic growth for countries and regions. 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. A low level of education attainment is a crucial determinant of being poor. Groups which are likely to suffer from lower levels of education include immigrants, individuals in remote areas and excluded communities, and children of lower socio-economic status (*e.g.* Grubb *et al,* 2006). Increased financial pressures can, however, result in higher education institutions working with those most **able** to participate, which – from the perspective of regional development and equity in education – might not necessarily be the same groups as those which most **need** to secure access to higher education.

Geographical access in higher education systems

National systems have grown considerably during the last decades bringing new groups within the scope of higher education. In some countries the growth has been linked to addressing regional disparities (Chapter 2). The Nordic systems of higher education have traditionally laid a strong emphasis on equity and the main argument behind the expansion has been to include new groups in higher education and to reduce inequalities in gender, place of residence and socio-economic background.[1]

In the Nordic countries, equity in human capital development has been supported by means of free education, generous student support, enhanced geographical accessibility and emphasis on open and further education provided to non-traditional learners. There has, however, been a focus on quantity (in terms of entrance or cost of studies) as opposed to the quality of learning outcomes which may become the key dimension of equity (see Davies *et al.*, 2006).[2] Targeted policy interventions may need to be considered through which individuals are consciously treated differently, as has been done in Sweden in the case of disabled students (OECD, 2008, *forthcoming*).[3]

Some countries have introduced a specific regional dimension to the higher education equity initiatives. (See Box 6.1)

There is pressure in most national higher education systems to establish hierarchies of institutions; entrance to the elite institutions inevitably provides individuals with positional advantage in the labour market often regardless of their personal attributes and home location. In these circumstances individual access to higher education as a means of social advancement from disadvantaged backgrounds may not be possible for students in regions without an elite institution if these students are unable to move away. On the other hand, the expansion of mass higher education into most regions is creating opportunities that did not exist previously and if employment opportunities in regional knowledge economies are expanding, equity objectives will be met. (Compare *e.g.* Brennan and Naidoo, 2007, forthcoming.)

In developing countries, enhancing growth and innovation requires both expanding the higher education sector and widening participation. Mexico

Box 6.1. **Higher Education Equity Programs in Australia**

In Australia, the *Higher Education Equity Program* (HEEP) was reviewed in 2004 as part of the *Backing Australia's Future* initiative to ensure that equity funding remained focused on groups experiencing significant educational disadvantage. It resulted in the launching of two new programmes from 2005, the Higher Education Equity Support Program (ESP) and the Higher Education Disability Support Program (DSP). Allocations to institutions under ESP are driven by enrolments, retention and success of students, from low socio-economic status students, with a weighting to the students from rural and isolated backgrounds. DSP is the scheme that higher education providers may apply for funding the educational support and/or equipment to students with disabilities.

Source: Thematic Review of Tertiary Education (OECD, 2008, forthcoming).

has witnessed an explosive growth in higher education; however, participation in higher education remains among the lowest in the OECD countries (Brunner *et al.*, 2006). In Brazil, only 7.6% of the 18-22 year-old age-group enter higher education. There are big regional differences and some evidence that students from higher socio-economic backgrounds benefit from the state universities with lower tuition fees (Box 6.2).

Higher education institutions with diverse cultural foundations respond to particular needs in regions with indigenous and other minorities and are a

Box 6.2. **Paraná, Brazil: Higher education expansion driven by the local authority**

Brazil has low educational attainments at all levels. The recent expansion in higher education has taken place in private institutions which have not fully addressed the needs of the labour market. Enrolment in higher-education level technological institutes is low. Brazil has a degree of state-level devolution and higher education institutions in the region are managed through the state Higher Education Co-ordinating Committee, which reports to the State Secretariat for Science, Technology and Higher Education. This council is primarily consultative and faces challenges in channelling the collective views of a highly diversified higher education sector to the State Government.

In northern Paraná, the transfer from extensive grain production towards knowledge-based economy requires the involvement of both public and private universities. The largest state university of Paraná, the State University of Londrina, and several private universities operate in Londrina. Among them, UNOPAR has 12 000 conventional students and 63 000 distance education students mostly from outside Paraná. This institution alone provides 30% of the distance education in Brazil. Still, limited access to higher education remains a critical weakness in the region. The share of the young finding places and able to afford to attend local universities is low.

The State and Municipal governments have interest in increasing the provision and local uptake of short cycle, 2½-year technical courses, which reduce the study costs and increase the employability of students. Public-sector actors in Londrina have developed a number of actions to secure this outcome. These include attracting a new institution, Pontifical university, to the region and granting public land in return for particular course provision Furthermore, the establishment of an extension of the Federal Technological University is helping to guarantee the availability of the short degrees are highly demanded by the labour market. The first programmes to be offered are Food Technology and Industrial Chemistry where special needs were identified.

means of raising aspirations in those communities (see Box 6.3). If access to the institutions is not extended to all citizens, they may, however, involve a risk of undervaluing other parts of the culture.

Lifelong learning and distance education

Differences in productivity across countries and regions can be explained by differences in skills and educational attainment. More than a third of working age adults are poorly qualified in the OECD area. Ageing societies depend on older workers as a source of skills and know-how. Due to rapidly changing skill requirements in working life, lifelong learning and skills upgrading are becoming increasingly important. As economies restructure and relocate production in countries with lower labour costs, there is a stronger pressure to upgrade the skills of the local work force so that they can fuel economic growth (OECD, 2006h). The rationale for this investment is supported by modern growth theory, which emphasises the relationship between acquisition of human capital and economic growth. There is a strong linkage between investment in the human capital of the low-qualified workers in a country and labour productivity (Coulombe, Tremblay and Marchand, 2004).

The emphasis on a knowledge-based economy and the need to invest in human capital to increase productivity and competitiveness have significantly raised the profile of adult learning in public policy over the past decade. There are marked differences in the provision of adult learning across OECD

Box 6.3. **L'Université de Moncton: A symbol of cultural pride and catalyst of local economic development**

The struggle for cultural survival of the Acadian people – numbering some 300 000 in Atlantic Canada – goes back more than three centuries. Traditionally, a people largely dependant on fishery and agriculture, Acadians have emerged as one of the most dynamic elements in Atlantic Canada, with a vibrant entrepreneurial class and strong community leaders. The cultural revival and economic vitality – especially of south-eastern New Brunswick centred on Moncton – have sometimes been referred to as the "Acadian Miracle". The Université de Moncton has been a central player in this development. Incorporated in 1963 – the largest fully French-language university (with regional campuses) outside Quebec – it rapidly became a centre for Acadian artistic life, scientific achievement and community initiatives. The university has produced three Provincial premiers. Some 80% of its graduates have remained in New Brunswick; the percentage is even higher for Atlantic Canada, a sign of the close links between the university and its community.

countries and differences in the policy approaches and delivery systems. A large part of the workforce benefits from adult education in the Nordic countries, the United Kingdom, Switzerland and Canada (OECD, 2003c). Other countries show a much lower rate of participation. While some give a prominent role to public institutions in organising and delivering training, others rely on private training providers or transfer responsibility to social partners. Some countries finance training through payroll tax and make training compulsory for workers. Others promote a market-oriented approach. (OECD, 2006h.)

The strategic importance of skills upgrading is felt most urgently at local and regional level and this is also where the majority of initiatives embracing a wide range of stakeholders have taken place (OECD, 2006h). Adult learners, which have established links in a specific locality, are less mobile than younger students. Upgrading their skills will thus have a more direct effect on the region's economic performance. As local initiatives are insufficient, upgrading the skills should become a strategic objective of national governments. In mature higher education systems, access needs to be expanded to include individuals of all ages. In general, higher education institutions are often more strongly oriented to meet the needs of traditional students than those of non-traditional learners. The provision of programmes should be flexible taking advantage not only of work-based learning but also e-learning and distant learning opportunities in order to take account non-traditional learners, those who combine work and study, and the needs of the employers. They also need to allow attendance on the basis of non-formal and in-formal learning. (See Box 6.4, and *Thematic Review of Tertiary Education*, OECD, 2008, forthcoming.)

Some governments have signalled their intention to rationalise their higher education systems through a process of mergers that will lead to a reduction in the number of independent higher education institutions (see also Chapter 3). These mergers have as their main objective to strengthen the national research environment. This trend is motivated not only by the ageing process in the population and the perspective of smaller cohorts of students in the year to come but also by the need to develop internationally competitive and stronger higher education institutions. Scaling down the higher education sector may work against widening participation and geographical accessibility if at the same time distance learning, e-learning and lifelong opportunities are not stepped up.

Conjoint action of higher education institutions to widen access

Within the scope of the current OECD study, there was limited evidence among the higher education institutions and their regional stakeholders of shared commitment to address hard-core problems of a low skills base and

Box 6.4. **Widening access through distance education in remote areas**

In 2002, the four higher education institutions in the sparsely populated northern part of Finland established a consortium entitled *Provincial University of Lapland (Lapin maakuntakorkeakoulu)* with the aim to support the development of the region, to widen access to higher education, to increase co-operation between educational institutions and to foster innovation. The consortium provides degree and non-degree education at bachelor and masters levels reaching out to remote communities with the help of a combination of distance learning and contact education. It has recently expanded its services and now has a portfolio including open education, professional development courses, expert and R&D services as well as foresight and evaluation services. Learning and development needs have been mapped in each of the four sub-regions in co-operation with a wide range of public and private stakeholders. Higher education institutions are engaged in strategy development and implementation at the regional and sub-regional levels. Provision of services and education is based on regional needs which focus on upgrading the tourism industry. The network takes advantage of already existing facilities in the sub-regions and web-based services. Similar initiatives have emerged in other Finnish regions, spurred by the Ministry of Education, and taking advantage of the extensive adult education framework of the higher education institutions and folk institutions.

In 2001, the ITESM – Monterrey Institute of Technology launched *Community Centres of Learning* throughout the state of Nuevo León to serve the geographically isolated areas which lack traditional educational services. Community centres are supported by many partners and draw massive financial support from international foundations and the private sector. Programmes using modern technologies are flexible and interactive. They include basic literacy, IT and other adult learning and programmes for youth which will improve the quality of life of marginalised communities. A website provides academic content and support services. There are now centres not only in every municipality in the State of Nuevo León but also in more than 700 other localities throughout Mexico. The aim to target the poorest micro-regions in Mexico is facilitated by the agreement with the federal Social Development Ministry. With the help of new information and communication technologies Community Centres of Learning are now being emulated in other countries in the wider American region.

Box 6.4. **Widening access through distance education in remote areas** *(cont.)*

In Estonia, ane-University consortium, which works through 10 study centres in remote areas, is targeting people living outside the two university cities. In *Iceland,* the University of Education and the University of Akureyri are dual mode establishments, combining both on-site teaching with distance education. For the University of Education, distance teaching follows a centre-periphery model with national standards being projected into the region. For the University of Akureyri, the distance education works through 8 Life Long Learning Centres, each located in a small community across the country and linked to the university via Internet and video conferencing facilities. 35% of the University of Akureyri's studies take advantage of distance education. See *Thematic Review of Tertiary Education* (OECD, 2008, forthcoming).

inter-related worklessness. The portfolios of higher education institutions did not generally include a systematic approach to raising aspirations and widening access to higher education within the region and its excluded communities. In the North East England, however, the national widening access agenda backed up by funding from HEFCE and the region's low levels of educational attainment have contributed to a collaborative action from higher education institutions (Box 6.5).

Improving the balance between labour market supply and demand

Balancing the aspiration of individuals and the needs of the regional economy poses a major challenge to higher education institutions and regions working to enhance their stock of human capital. In a lagging region with a low demand for graduates higher education can legitimately provide a ladder of opportunity for young people that in the short run inevitably leads them out of the region.[4] On the other hand, gearing teaching and learning towards the needs of established and possibly declining sectors to ensure graduate retention is no service to either the learners or the regional economy unless it is designed explicitly to raise competitiveness of these sectors by up-skilling. The obvious implication of these concerns is that research-based measures designed to stimulate the different categories of business innovation must be linked to teaching-based initiatives designed to enhance the regional skills base.

The impact of higher education institutions on their regional labour markets is significantly affected by the extent to which the knowledge

Box 6.5. **Widening access in the North East England**

The North East of England is below the national average for educational attainment. The performance gap widens at tertiary compared with school levels. The gap is wider in literacy and numeracy, including adult literacy. Historically, the absence of strong labour market demand for graduates has held back rather than driven up demand for investment in higher education (CURDS, 2005).

The five universities in the region support the national widening participation agenda (AimHigher) individually and collectively through building links between different levels of educational institutions in order to change the culture and to raise aspiration in predominantly working class communities and neighbourhoods where going to university is rare. At the same time they seek to persuade the dominant SME part of the private employment sector that graduates can be an asset to their firms.

Different universities employ different techniques to raise their profile with non-traditional learners and their communities. These include: *a)* partnership with further education colleges; *b)* non-threatening access and engagement strategies taking advantage of sport and culture; and *c)* student volunteering participation in community activities that has a direct educational purpose for the students and a community inclusion intent. For example, Teesside, originally a new opportunities university, is leading a longstanding partnership with eight further education colleges known as the Higher Education Business Partnership. It has developed a collaborative strategy to meet the needs of disenfranchised learners in innovative ways, tackling the deprivation of the area.

A special committee of the regional higher education association Unis4NE is facilitating the co-operation in the widening participation agenda. As a result, the universities in the region are able to come together in raising funding streams for this work. For example, as a response to the HEFCE initiative for Lifelong Learning Networks the North East came forward with a single region-wide network proposal in contrast to other regions where local competition between higher education institutions resulted to several individual bids.

developed within students and graduates drawn on and can be applied within the region. There are examples of institutional inertia within higher education institutions. In some cases they prefer to provide courses with relatively low investment costs over expensive but potentially more regionally relevant technology and engineering courses (*e.g.* private higher education institutions in Brazil). The labour market mismatch can often be attributed to the

following: First, there may be a lack of labour market intelligence and knowledge gaps between higher education institutions/graduates and regional employers. Second, there may be inadequate co-operation between higher education institutions and employers. Third, there may be inadequate support for new enterprise.

Creating labour market intelligence

Brain drain and skill shortages are not a challenge for lagging regions only. Metropolitan regions often face skill gaps and shortages because of insufficient or maladjusted local skill supply or brain drain. In specific industrial sectors employers cannot find suitably qualified workers. Cities and their higher education institutions can gather intelligence on educational needs and identifying how these needs can be met. They also possess information, expertise and knowledge necessary to anticipate future skill demands which is increasingly needed by the business sector that is willing to settle and expand locally. These demands are likely to increase as city labour markets become more complex and the need for highly skilled workers more crucial.

Graduate databases, graduate progression surveys, alumni surveys, graduate vacancy lists and employability audits are used to varying degrees but are often limited in their scope to the level of a single institution (or discipline) and fail to develop a comprehensive regional picture. The most

Box 6.6. **Balancing between labour market supply and demand**

In Toronto, the City has prepared a *Labour Force Readiness Plan* for the period 2001-2010 in partnership with the business community, labour representatives, the education sector and all levels of government. The plan provides an overview of labour market issues in the city region and detailed action plans for three clusters. The labour market forecasts are prepared on the basis of disaggregated data by a team including the University of Toronto.

In the United States *the Great Cities Universities Skill Enhancement Partnership Initiatives (SEPI)* aims at creating a roadmap of educational and training programmes targeted at closing the gap of employees in the technology sector. In the United Kingdom two initiatives from London have similar objectives: *The London Higher Education Consortium* aims at creating a forum and also at providing a body from which higher education representatives can be drawn to serve London's new agencies and boards. *The Thames Gateway London Partnership* is a sub regional alliance of local authorities, universities and the London Development Agency designed to deliver with the private sector the socio-economic regeneration of the Thames Gateway.

effective ones develop region-wide graduate labour market systems through creating, disseminating and using the labour market intelligence:

- Creating data on labour market intelligence: undertaking comprehensive regional level surveys of graduates, graduate employment opportunities, graduate employability and employer demands, and matching the demand-side information to the supply-side in terms of the courses offered by institutions in the region;
- Publicising data on labour market intelligence: bringing the data together in a single place so that students can make rational decisions about the choice of subjects given their desired employability outcomes and to help graduates and employers come together and for students to move into employment;
- Using the data on labour market intelligence strategically: analysing the emerging data and to identify regional priorities for development and change, and at an institutional level, responding to that data both in terms of course provision and the provision of employer specified skills.

Improving links with the employers

The supply of skills seldom matches the regional demand of both small and larger firms, thus reducing the innovation potential of the region. Improving and adapting the skills profile of local graduates is therefore a key issue for many OECD countries. The focus of policy here ranges from improving the quality and applicability of the curriculum to regional users, enhancing work-based learning and placement programmes through which students can acquire employability skills and build links with regional businesses, and providing programmes for continuing education and upgrading the skills level of the existing workplaces. The concept of work-based learning has received particular attention from central governments in the OECD countries. (See Box 6.7)

Higher education institutions are under pressure from a range of directions to develop their teaching activities. Some of these pressures can encourage increased regional impact, particularly in ways that generate new income streams. Thus, higher education institutions have designed bespoke short courses for regional businesses or to support regional industrial policy priorities such as clusters or sectors. For example, degree and further education programmes have been designed in the Nordic universities of Karlstad and Jyväskylä to support the development of the paper technology sector in their regions and in Trondheim to support the oil industry.

Many individual institutions are committed to promote graduate employability and use stakeholders in curricular development. They also run alumni networks to gain feedback on their course provision (*e.g.* HEIs in Nuevo

Box 6.7. **Work-based learning**

Work-based learning involves a type of "person-embodied transfer" of knowledge between higher education institutions and local firms. In France, a government scheme, *Conventions CIFRE*, supports the recruitment of PhD candidates by private enterprises. The recruited students do their PhD work on an applied topic in enterprises under the supervision of a university or a public laboratory.

In the United Kingdom, the *Knowledge Transfer Partnership* (Former Teaching Company Scheme) provides a grant to cover part of the operation cost to transfer and embed knowledge into a business via a strategic project. SMEs represent about 90% of the industry partners.

The concept of "*cooperative education*" was developed in universities in Canada (*e.g.* the Co-op programme in Waterloo University). It helps students complete work terms in industry as part of their curriculum. Each of these initiatives have been evaluated and judged successful in job creation.

León in Mexico). They operate "Science Shop" arrangements, where firms can come to the higher education institution with potential questions which can be taken forward in student projects. Low threshold knowledge transfer systems have been developed not only in high technology sectors but also in other types of industries and services involving students and businesses. These arrangements include web-based "market places" between enterprises and students, *e.g.* Idea Portal of the Norwegian University of Technology (NTNU) in Trøndelag.

Higher education institutions can also provide structured and targeted teaching and learning programmes that address specific regional development needs and which go beyond responding to demands to upgrade their vocational skills. They also link students and graduates with the local employers. Examples include University Professional Services AB at the Karlstad University which also serves the development in public sector and the Dongseo University's Family Firm System which is mentoring SMEs in Busan, Korea (Box 6.8).

An important labour market interaction between higher education institutions and local firms is the use of local private sector employees as instructors. In Nordic countries, for example, higher education institutions often take advantage of high-skilled personnel from industry and society as part time teachers and adjunct professors. This can have benefits for both the higher education institutions and the firms concerned, but the incidence of this type of relationship is relatively low and the impacts are difficult to assess. The movement

Box 6.8. **Targeted development programmes in response to regional needs**

Karlstad University Professional Services AB was established in January 2005 to handle the business side of all commissioned training and education given by the university to companies and public organisations. The company has five staff and organises courses using Karlstad University staff and external experts from Sweden and beyond. The arrangement complements the traditional course delivery within the university and contributes to the general development of more applied and regionally-relevant curricula. It allows university lecturers to make external contacts, giving them experience of other kinds of teaching, and providing them with interesting and well-worked case studies for inclusion in their regular teaching activities. Clients include County Council of Värmland and other public organizations, such as the municipalities of in the region; Paper Province and other non-profit trade associations; companies such as AstraZeneca, Ericsson, MetsoPaper, SkiStar. It also has international clients *e.g.* Jiangxi University and several Norwegian counties. Courses given have the overall goal of strengthening research and teaching. Major areas include culture and learning, management, business and administration; health care, industry, IT and technology. Course examples include Pulp technology; Production management; MBA; Tissue technology, Business administration; Computer vulnerability analysis.

Family Firm System was launched by *Dongseo University in Busan* in 2004 after a 4-year development phase. Under the system, a senior academic mentor is designated to five companies which offer students and graduates internship and job opportunities. The Family Firm system has attracted 556 companies which have benefited from the close co-operation through reduced recruitment and induction costs. The system has enabled the university to: *a)* develop courses reflecting company needs; *b)* effectively utilise internship programmes; *c)* share equipment; *d)* conduct joint projects with business; *e)* increase job opportunities for graduates; *f)* improve the university's reputation; and *g)* improve to university's contribution to the regional community. The existence of the Family Firm System was an important factor in enabling Dongseo University to win five projects from the national New University for Regional Innovation scheme (NURI) competition in 2005.

by researchers/teaching staff on a temporary basis to the private sector mainly concerns larger companies that can involve academic staff in development work through formal agreements with higher education institutions. The opportunities for researchers to work in the private sector on a temporary or contract basis varies greatly from country to country. In central and southern Europe mobility is lower. In Spain, studies show that there are few incentives for

teaching staff transfer. Transfers are not valued and receive little external recognition. There are also legal barriers which work as strong disincentives.

A number of higher education institutions have taken steps to embed employability and transferable skills and thus mainstreaming regional engagement in their core curriculum. See Box 6.9.

Box 6.9. **Embedding regional engagement in core curriculum**

Project-Organised Problem-Based Learning: Aalborg University was established in 1974 after years of popular campaign to establish a university in northern Jutland, Denmark. The campaign formed the basis for a close dialogue with the surrounding society relying on cooperation with the business sector, trade unions and cultural life. An important early decision was to base research and educational activities on inter-disciplinary integration, problem orientation and group work. In *Project-Organised Problem-Based Learning* study programmes are organised around interdisciplinary project work in groups. Up to 50% of the study work is problem-oriented project work: students work in teams to solve problem areas which have often been defined in co-operation with firms, organisations and public institutions. At any one time there are 2 000 to 3 000 ongoing projects that ensure a high degree of co-operation with the society and private sector. The Aalborg model provides students with transferable skills and authentic work experience; enterprises benefit from a clearer picture of what the university stands for and how the students might fit in as prospective employees; and the university gains feedback and access to instructive cases and ideas for research and teaching.

"*Experts in team*": The University of Science and Technology (NTNU) in Trondheim, mid-Norway, is the second largest of the Norwegian universities, and was created in 1996 through a merger of two much older institutions, the Norwegian Institute of Technology and the Academy of the Sciences. Its semi-independent Foundation for Technical and Industrial Research (SINTEF) plays an important liaison role, helping NTNU to develop linkages with existing regional industries and to support the development of a new industrial base, *e.g.* the offshore engineering sector following the discovery of North Sea oil in the 1970s. NTNU has introduced an institutional innovation, "*Experts in team*" (interdisciplinary team work) which is a project assignment for all Master's students. It is organised as project work in teams of five students from different disciplines, where the professor operates as facilitator. Each team member ensures that his/her know-how and expertise contributes to the mutual problem-solving process. Many of the projects carried out have a specific regional focus. Between 2001 and 2005 the number of students attending the programme grew from 780 to 1 300. It is the largest pedagogical development project in the history of the university.

Supporting new enterprise formation

As noted in Chapter 5, higher education institutions and regional development authorities have invested heavily to support new enterprise formation. The United States is leading the way with its 400 chairs of entrepreneurship compared to 100 chairs in Europe. For example, Massachusetts Institute of Technology has been developing graduate entrepreneurs for over 40 years. In general, however, there has been only modest success in this area. Limited success may be linked to the nature of entrepreneurship provision which is mainly focused on add-on provision. There is growing evidence (Gibb, 2005; Binks, 2005) that most effective results are achieved when entrepreneurial learning is embedded in the core curriculum.

The most common model is the *self-elected add-on provision* offered through enterprise centres, business start up programmes and networking groups. These programmes provide generic start-up advice and guidance for students from all disciplines. They may also offer a range of services including training, one-to-one advice, legal start-up costs, business competitions and incubation. Higher education institutions have also introduced *entrepreneurship within curriculum through distinct elective modules* on enterprise where students learn about business disciplines such as planning, marketing and finance. This type of provision follows the model of traditional business school enterprise modules sometimes with limited effort to adapt it to the disciplines or to link with the world of practice.

The experience of higher education institutions and regions suggests a shift towards embedding business innovation and new enterprise formation in the heart of the academic endeavour – within the research of individual departments and generic and subject specific education programmes. In such programmes students are offered situated learning experiences and access to in-house learning experiences where students are able to undertake project work to gain knowledge and confidence.

Attracting talent to the region and retaining it

A number of OECD countries have designed policies for attracting various types of talent (students, researchers, IT specialists, research scientists, etc.). These policies have included tax incentives, repatriation schemes and improving the attractiveness of academic careers. Talent attraction of top flight academics, researchers and highly skilled knowledge workers is increasingly replacing inward investment attraction as a key task for regional development agencies (Young and Brown, 2002). In Quebec, for example, the government is offering five-year income tax holidays to attract foreign academics in IT, engineering, health science and finance to take employment

Box 6.10. **Enhancing entrepreneurship**

Established in 1993, the *Team Academy* is a special unit at the Jyväskylä University of Applied Sciences in Central Finland. It aims to increase student and graduate enterprise formation, to enhance enterprising attitudes and to help SMEs and other companies to access university expertise in marketing, management and entrepreneurship. It also acts as a learning laboratory, where new learning methods and models for business life are developed (*e.g.* building effective teams, learning organisations and modern marketing). Team Academy offers a special three and a half year educational stream which provides a dedicated intake of students with bespoke education. Each student takes intensive training in leadership and marketing as a member of a team through situated learning and project work. The Team Academy is only open to business students, but the institution has used this resource to develop a set of courses promoting entrepreneurship available to all students, under the title "the path for nascent entrepreneur". During the last ten years, the Team Academy has served the needs of the business life through 1 750 projects. It has provided entrepreneurial education for more than 500 BBA graduates and given birth to 17 companies in addition to the cooperatives that operate during the study time. About 15% of the Team Academy graduates are active entrepreneurs especially in the service sector and consultancy. The Teach Academy has received a number of national awards for its innovative learning methods and its proven track record in the enhancement of entrepreneurship.

The Monterrey Institute of Technology and Higher Education Studies (ITESM) launched a programme on entrepreneurship 20 years ago. It is a compulsory course for all undergraduate students provided by the Directorate of Entrepreneurial Leadership within the Entrepreneurship Development Centre. *The Entrepreneurial Development Centre* also embraces a Directorate of Company Incubation which promotes the creation and development of nationally and internationally competitive companies with high growth potential and social commitment. The incubator has two sections – one devoted to technological projects based on university research and the other for all other projects. In addition to the development of generic entrepreneurial skills the university ensures that promising students and ideas are supported through the critical initial incubation stages.

in the region's universities. In Finland, Nokia invests in the cultural adaptation of foreign IT workers as a way to improve productivity, but also to help to retain this talent (OECD, 2004). The policies need to be carefully developed as the different categories of migrants respond to different types of incentives. Regional policy makers need to work closely with local higher education

institutions to formulate the appropriate package to attract high potential individuals or groups of academics. Further, the attraction policy needs to be customised for each country and region. Since the key industry clusters tend to be territorially based, talent attraction initiatives may be better designed by regional bodies that have strong industrial connections and knowledge of the local labour market.

Higher education institutions are increasingly investing in their alumni organisations which have also designed targeted projects to attract alumni to return to the region. In some cases, institutions have also taken steps to provide work-based learning experience for high potential graduates in order to retain talent in the region. The Saxion University of Applied Sciences in the Twente region has organised an educational trajectory "Fast Forward" for high-achieving graduates who undertake an educational track which includes a strong component of work-based learning, (see Box 6.11 below).

Strategic co-ordination of the regional human capital system

The emergence of a regional human capital system as distinct from a number of disconnected components requires some degree of co-ordination and steering, not least between different stages of education. In many countries each stage is managed by a different level of government with varying degrees of input from employers. There are also variations in

Box 6.11. **Fast Forward high potential management development programme**

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

In six years, more than 200 Fast Forward apprenticeships have been completed with about 100 different employers. The programme is successful in retaining graduates in the region: 95% of Fast Forward graduates – now highly qualified – have stayed in the region and work there. The programme has also encouraged new graduates to move to Twente from other regions in the Netherlands.

responsibility between "academic" and "vocational" pathways. Typically, the pattern of higher education programmes is nationally regulated by government or the professions; intermediate or vocational education may have a regional or sub-regional dimension while the education of young people up to the age of 16 or 18 is a local responsibility with all levels operating within a national framework. Finally, continuing professional development either at the initiative of the individual or the employer is typically unregulated, operating in a highly competitive market place. Ensuring that there are progression pathways into higher education and out into the regional labour market allowing easier up-skilling can present a major challenge for higher education institutions. As a consequence there can be a range of barriers which may hinder higher education institutions from fully contributing to human capital formation in the region.

These barriers manifest themselves in many ways. There may be a direct mismatch between the courses offered by higher education institutions and the regional skills needs. There may also be poorly developed progression pathways, including access from secondary/lower tertiary institutions and for non-traditional (distance, mature, lifelong) learners. Divisions of activity and territory between institutions may block progression pathways and create course overlap and gaps in provision. Competition between institutions within a region for students may undermine effective co-operation, specialisation and building critical mass. There may be a failure to engage with and integrate regional businesses into the design and delivery of curricula, and a failure to identify potential employers for graduates, to work with them and willing students in order to increase the aggregate skills levels of regional businesses. Finally, the impacts may be restricted to traditional students and graduate users which does not allow for a transformation increasing the openness of higher education and the knowledge intensity of the regional economy.

The strategic co-ordination between institutions can maximise the regional uptake and benefit of their educational activities. This inter-institutional co-ordination activity involves progressing towards managing the overall regional human capital system with higher education institutions consolidating their strengths and collectively identifying and addressing market failures and system faults. Different types of higher education institutions play different roles in human capital formation. As the World Bank (2002) points out, "the diverse and growing set of public and private tertiary institutions in every country forms a network of institutions that support the production of the higher-order capacity necessary for development".[5] Co-operation and co-ordination between universities and polytechnics/community colleges are increasingly viewed in many countries as a means to develop synergies and improve the offer of services for regional

clients, while collaboration with community colleges or secondary education seems less commonplace.

In regions with a diverse set of institutions, co-ordination can maximise the number of pathways, allowing progression between institutions, and focus on core markets without neglecting hard-to-reach regional student groups, such as remote, distance or part-time students. Where there are similar institutions within one region, co-ordination will allow specialisation between institutions, sharing of best practice and avoidance of harmful competition. In any regional arrangement, co-ordination will also allow the development of institutional capacity between higher education institutions. Co-ordination between higher education institutions can contribute to:

- Critical mass: given increasing inter-regional competition, dialogue between higher education institutions allows for the identification of regional strengths – not necessarily congruent with particular institutional educational strengths – which could be used for talent attraction.
- Multiple pathways: in regions with low levels of educational attainment, the presence of multiple institutions with well-co-ordinated transfer routes and accreditation allows non-traditional students the easiest access to the most appropriate forms of higher education.
- Shared learning: collaboration between higher education institutions could facilitate best-practise sharing and development of supportive regional higher education system to address particular human capital problems.
- Problem solving: where there are identified omissions in higher education provision, partnerships between higher education institutions could work to fill gaps in provision and to better meet the needs of regional stakeholders.
- The development of coherent voice for higher education institutions. (See Chapter 8 for higher education regional associations.)

Conclusions: managing the regional human capital system

Depending on the retention rates of graduates in the region, higher education institutions can provide crucial human capital inputs for regional and local labour markets. By supplying knowledge in the form of educated people, higher education institutions increase the region's capacity for generation and absorption of knowledge and innovation. The presence of an educated labour force is instrumental in nurturing a specialised labour pool and helping to attract and retain firms. For this purpose, the demand orientation of higher education should be improved not only through full time courses, but also work-based learning and further education which helps to repair the educational deficit resulting from brain drain and low education

participation especially in less advanced regions. Appropriate fiscal incentives could make business more eager to obtain adjustments in the higher education provision reflecting regional needs. It could also help higher education institutions diversify their funding streams. Given that one-third of working age adults have low skills, a particular challenge is up-skilling and lifelong learning.

National governments have an important role to play in facilitating regional co-operation. The functional separation is a critical challenge for regional engagement of higher education institutions. In many instances, higher education institutions in the region have to work around functional stovepipes of national regulations which create inconsistent timescales, spatial boundaries and output measures.

Notes

1. In Norway, the expansion of higher education has been used to help preserve the geographical distribution of the population and to increase tertiary education in the non-urban regions, especially in the northern part of the country. Sweden has had a distinct regional dimension to higher education which has brought higher education institutions to each county. Despite the increase in enrolment, regional differences remain between rural and urban areas and at the municipality level. Finland has doubled its higher education sector through the establishment of polytechnics.
2. For example the Finnish comprehensive education system has been successful in producing good learning outcomes and little variation in performance between and within schools. It has been particularly successful in its ability to prevent students from falling behind. (PISA). Differences, however, 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 higher education institutions has also expanded access to higher education. At the national level, this channel was used in 2004 by 28% of polytechnic's new students and 5% on new students at universities. These figures show remarkable scope for improvement.
3. In Sweden, each higher education institution must use 0.3% of the public funding it gets (except for doctoral training) to provide support to disabled students (*e.g.* sign language interpretation and help with taking notes). In addition, the State contributes additional funding for expenses not covered by the ear-marked funds.
4. In the long run these graduates may return with enhanced skills and financial capital to contribute to the regional economy or, if they remain, contribute to a skills pool that attracts inward investors operating in tight national or international labour markets.
5. Research-intensive universities influence regional development through the recruitment of graduates and postgraduates and increasingly foreign students.

They also have a key direct role in upgrading the skills of both large firms and SMEs through student placements and industrial fellowship schemes. When regions are urbanised, retention effects (for students) are stronger but relatively variable. Polytechnics or new universities have usually a more local recruitment base and higher retention rates. They also provide dedicated degrees and certification courses to suit the needs of local employers and R&D services. Technical colleges provide vocational courses as well as generic training. Their role in helping local firms is often underestimated. For example, they provide training for technicians, an employment category with an important role in innovation (Rosenfeld, 1998).

ISBN 978-92-64-03414-3
Higher Education and Regions:
Globally Competitive, Locally Engaged
© OECD 2007

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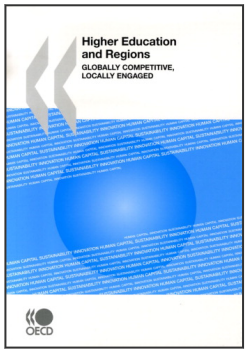

From:
Higher Education and Regions
Globally Competitive, Locally Engaged

Access the complete publication at:
https://doi.org/10.1787/9789264034150-en

Please cite this chapter as:

OECD (2007), "Contribution of Higher Education to Regional Human Capital Formation: Overcoming the Barriers", in *Higher Education and Regions: Globally Competitive, Locally Engaged*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/9789264034150-8-en

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