



**Unesco Forum Research and Knowledge: Research in Diverse Social Contexts –
Tensions, Dynamics and Challenges**

**ORGANISING RESEARCH IN CHALLENGING GEOGRAPHICAL CONTEXTS –
WHAT CAN WE LEARN FROM THE OECD REVIEWS OF HIGHER EDUCATION IN
REGIONAL AND CITY DEVELOPMENT**

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and

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Abstract

With the process of glocalisation, the local availability of knowledge and skills, and the transfer of technology and innovation to industry, small and medium-sized enterprises and the wider society have become increasingly important not only in the OECD countries, but also in emerging economies and low income countries. In recent years there have been many initiatives to mobilise higher education to support these goals. Drawing the lessons and key conclusions from the OECD reviews of higher education in regional and city development, this paper discusses how universities and other higher education institutions can organise their research and other activities to address local economic and social development needs. It argues for a stronger focus in low income countries on broader forms of innovation and for the adaptation of already existing technologies. It discusses the four pathways to innovation, identifies limiting factors and constraints for more responsive research and knowledge transfer at national, regional and institutional level and finally suggests how these constraints can be removed.

Growing importance of knowledge

In the globalising knowledge economy, countries face competition in a number of markets. They are turning to knowledge-intensive products and services, which increases dependency on access to new technologies, research results and knowledge and skills. As a consequence, recent decades have witnessed increasing investments in innovation, R&D and human capital development in the OECD countries. (OECD, 2007a)

Globalisation and ICT revolution have brought along “death of distance” where, in principle, any place with internet connection can participate in the knowledge economy (Friedman, 2005). Still, innovation continues to cluster around specific regions, notable those with

vibrant communities, skilled people and universities (Asheim and Gertler, 2005; Boucher et al., 2003). Even though high technology companies can now move their production to anywhere in the world, they still need to base key parts of their operations in knowledge and innovation-intensive regions with concentration of research, skilled and creative labour, and infrastructure to innovation (Lord Sainsbury, 2007). In effect, globalisation has increased the competitive advantage of regions that create the best conditions for growth and development and the gaps between the regions are growing.

Innovation is vital for social and economic development not only in the OECD countries and rapidly emerging economies, but also in low income countries. To be globally competitive, countries need to invest in their innovation systems not only at the national, but also regional and local levels. In this context, the role of higher education institutions is of growing importance.

Large emerging economies are mobilising foreign direct investment and human capital to transform universities into engines for technology based innovation. Low income countries face greater difficulties due to inadequate framework conditions and limited human and social capital for reproducing, disseminating and using knowledge. There is an urgent need to focus on broader forms of innovation, taking account also low technology and non-technological fields and to adapt existing technologies to address local social and economic development needs. (OECD, 2009 forthcoming)

The OECD reviews of higher education in regional and city development

Reviews of higher education in regional and city development are the OECD's main vehicle to mobilise higher education for regional and city development. These reviews of policy and practice in selected regions in and outside of the OECD area were launched in 2004 to help capacity building at the national, regional and institutional level and to make higher education institutions more open, active and responsive in their cities and regions.

The reviews focus on regional engagement of higher education institutions through a number of dimensions, including (1) knowledge creation through research and its exploitation via technology transfer (spin-out, IPR and consultancy); (2) knowledge transfer through human resources development, education, localising the learning process by work-based learning, graduate employment in the region, continuing education and professional development; and (3) cultural and community development creating the milieu, social cohesion and sustainable development on which innovation depends. (OECD, 2007b) In each of the dimensions research plays a role.

The reviews follow the OECD review methodology. Each region conducts a self-evaluation process following the OECD guidelines. An important step in each region is to establish a regional steering committee of representatives from the higher education institutions and public and private sectors to oversee the review process and "take ownership" of the self-evaluation report. International experts visit each region led by the OECD and bring together their findings and recommendations in review reports which are published on the OECD website for shared international learning. Knowledge sharing meetings are an important mechanism for bringing together the regions participating in the reviews, as well as others who are interested.

The first set of regions in 2005-07 included Atlantic Canada; Busan Metropolitan City in Korea; Canary Islands in Spain; Jutland-Funen in Denmark; the Jyväskylä region in Finland, the North East of England; the State of Nuevo León in Mexico; the Sunshine-Fraser Coast Region in Australia; Trøndelag in Norway; Twente in the Netherlands; the region of Valencia

in Spain and Värmland in Sweden. In addition, the cross-border region of Öresund between Denmark and Sweden and Northern Paraná in Brazil, the only region outside the OECD area, were reviewed between 2005 and 2007.

Nine out of the fourteen reviews took place in Europe and five of them in the Nordic countries. To widen the evidence base OECD has launched a new set of reviews in 2009-2010 that reach out not only to the G8 countries but also to rapidly developing economies. Two regions in the United States – Southern Arizona and the Paso del Norte Region, a cross-border region with Mexico – will be reviewed in 2009-2010. There are also regions in Australia (Victoria State), Chile (Bío Bío Region), Brazil (Campinas and the State of Parana), Mexico (Veracruz), Malaysia (Penang) and Israel (the Galilee) that will participate in the reviews as well as European regions and city regions including Andalusia, Amsterdam, Catalonia, Berlin, Lombardy and Rotterdam.

The regions and city regions that participate in reviews represent different regional and national contexts, and range from institutionally thin rural and peripheral regions to fragmented metropolitan regions. Some regions are declining, some dynamic. The universities and higher education institutions in these regions include not only research intensive, but also vocational and professionally oriented institutions. Some regions have a rapidly developing private higher education sector, but many rely only on public provision. At the national level, the reviews embrace both highly centralised as well as devolved governance systems.

While the reviews do not provide one-size-fits-all solution, they point to important general lessons that can help countries, regions and higher education institution in knowledge creation and transfer and also organising their research to better respond to the needs of the economy and society.

Innovation-led growth in region: four pathways

Innovation is increasingly seen as a key catalyst for productivity and economic growth in the knowledge-based economies. Between 1970 and 1995 more than half of all total growth in output across the developed world resulted from innovation; as economies restructure, this proportion is growing (Simmie et al., 2002). As a consequence, OECD countries are increasingly investing in the science base. A considerable part of this investment finds its way into higher education institutions which are expected to contribute not only to knowledge creation, but also to knowledge exploitation. (OECD, 2007b)

Most countries are therefore investing in making universities engines for technology based innovation with focus on few high technology fields. But innovation is often incremental, rather than radical and takes place in low technology and non-technology fields too.

Countries that want to be globally competitive need to invest not only in the national, but also in regional innovation systems. In regional innovation systems, “triple helix” collaboration between higher education institutions, government agencies and business sector can provide the framework for sustained interaction (Etzkowitz and Leydesdorff, 1997).

Generally, four local pathways of innovation-led growth have been identified, each involving a different role for HEIs and their research activities. These are: (1) indigenous creation of new industry; (2) exogenous creation of new industry; (3) diversification of existing industry into new; and (4) upgrading of existing, mature industry (see Lester, 2005).

Indigenous creation of new industry relates to the development of a new industry that has no technological antecedent in the regional economy. Most local industry links with higher

education institutions, particularly with research-intensive universities, are in high technology sectors. Consequently, a number of Silicon Valley type of activities with focus on nanotechnology, biotechnology and ICT have emerged throughout the world in different regions. While this approach is popular among many national governments, research-intensive universities and regional development agencies, it normally requires new venture capital and considerable investments in the commercialisation of research results and ideas. This approach is also challenging, because of overemphasis on the same few fields, growing importance of the service sector (70% of OECD workforce is employed in the service sector) and limited critical mass and/or presence of knowledge-based industries in many non-metropolitan regions.

Exogenous creation of the industry relates to the development of a new industry that is based on foreign direct investments and hence imported to the region from elsewhere. Many emerging economies are implementing this strategy. The success in this area can be shortlived if at the same time there is no investment in building on the existing strengths and competitive advantage of the region. With the growing labour costs in many countries and regions, the creation of a new industry based on foreign direct investment is feasible mainly in knowledge-intensive sectors. Successful implementation of this pathway requires support structures and talent attraction programmes as well as considerable negotiating power from the regional and local governments as it has implications to a number of policy areas which fall under the national government. Sotarauta et al., (2006)

The diversification of existing industries refers to a process in which the core technologies of the declining industry are redeployed to provide a basis for the emergence of a new industry. In regions which lack knowledge-based industries one of the main obstacles to implement this pathway is the limited basis on which to draw for diversification.

Finally, upgrading the existing, mature industry entails the introduction of new production technologies or product and service enhancements. For example, in the Province of Castellón in the Spanish autonomous region of Valencia, the ceramics research institute of the local university Jaume I has helped to transform the traditional tiles industry into a global leader. This has required close links between the higher education institutions and small and medium-sized enterprises. The co-operation has been facilitated by an association which has acted as a broker and brought together the needs of the small businesses in a collective manner. (Zepeda et al., 2006.)

Most regions have an industrial and economic base with small and medium-sized enterprises as major employers. The predominance of small enterprises in many local economies suggests that economic growth will depend not only on fostering the growth in new knowledge-intensive sectors, but also on the continued upgrading and strengthening of the current industry strengths and technical capabilities of the manufacturing and service sectors. For many non-metropolitan regions, the appropriate strategy appears to be one which allows for incremental change. In low income economies one solution could be adopting existing technologies to local economic and social development needs.

Small and medium-sized enterprises often face difficulties in accessing universities' knowledge base. Universities and higher education institutions throughout the world have experimented with one-stop-shops. In some regions, they have come together to pool their knowledge and expertise for the benefit of the regional economy.

Knowledge House – an entry point for SMEs to the university knowledge base

Established in 1995 Knowledge House is a joint effort of the five universities in the North East of England (Durham, Newcastle, Northumbria, Sunderland and Teesside) along with the Open University in the North through the universities regional association, Unis4NE. It

helps companies access university skills, expertise and specialist resources. It offers expert solutions for developing ideas and solving problems through collaboration, consultancy, training and research. Knowledge House has a central Headquarters and staff distributed at the partner sites. The network and its operations are supported by a web-based enquiry handling/project management and client relationship management system.

Knowledge House receives over a thousand enquiries from client companies and delivers around 200 client contracts on an annual basis. Business growth averages 25%. The cumulative economic impact of the Knowledge House activity has been estimated as being in excess of GBP 35 million (a six fold return on the investment).

In contrast to networks providing only signposting services, Knowledge House offers a cradle-to-grave service, stretching from the receipt and circulation of enquiries through project management and delivery to post-completion evaluation. It is also playing its part in the integration and consolidation of the business support services in the North East through formal agreements and joint appointments with other, non-university, business support agencies such as the Business Links service and the Regional Development Agency. (Duke et al.,2006)

What are the constraints and how to remove them?

What is then preventing the higher education institutions from becoming more active and responsive to regional needs and what can be done to change this? In practice, there are both external and internal barriers for higher education institutions to become more regionally engaged. The following section discusses what the barriers are and how they can be removed.

Limitations and barriers at the national level

The national systems may impose regulations that reduce the capacity of higher education institutions to engage locally and limit their institutional autonomy and flexibility. Higher education systems may have limited scope to decide on their programme offer and the use of their human, financial and physical resources, leaving little room for responsiveness in directing their research or other activities. There are often no major incentives or funding streams to support this goal.

International comparative and competitive league tables rank higher education institutions on integrated scales with focus on research performance based on a limited number of internationally recognised journals. The reputation race has encouraged many governments to invest in a small number of research-intensive universities to become “world class”. In this context, regional engagement and research activities that help local and regional development can be seen as a useless distraction. (Hazelkorn, 2007)

Mobilising higher education for more responsive research or regional development requires strengthening the institutional autonomy of higher education institutions by increasing their responsibility over the use of their key assets including human, financial and estate resources. Still, international experience shows that enhanced autonomy does not necessarily guarantee stronger engagement of higher education institutions with research or other activities that help the region if these aims are not conceived as a part of a overall strategic regional development agenda, and supported at the same time by appropriate incentives and accountability schemes.

Limitations and barriers at the regional level

Barriers at the regional and local level relate to the fragmented local governments, competition within and between the regions and also the fact that higher education institutions are often not part of the design and implementation of regional strategies.

Permanent partnerships structures, which bring together higher education institutions and their regional stakeholders from the public and private sector can facilitate continuous dialogue and mobilise the resources of higher education institutions to regional development and to help them gear their research towards development goals.

Joint investments by higher education institutions and regional development authorities can bring specific benefits to regional businesses and the community. Collaborative actions include investments in translational research facilities, advisory services for small and medium-sized enterprises, professional development programmes, graduate retention programmes and cultural facilities and programmes.

Limitations and barriers at the institutional level

At the institutional level, there are barriers within the higher education institutions themselves. Despite the importance of framework conditions created by national and regional governments, local and regional engagement strategies of higher education institutions depend on the role the institution chooses for itself and the leadership role it adopts. The local and regional agenda is a challenging task particularly to traditional research-intensive universities which often have a stronger focus on national and international excellence than local utility and may have limited management capacity. It is also challenging to smaller institutions with limited human resources and capital infrastructure. There may also be resistance in the academic community against research that is geared to respond to the local and regional needs and regional engagement in general because it is assumed that this may limit national and international engagement.

If a higher education institution intends to play an active role in knowledge transfer at the local and regional level, it may need to initiate a process of internal reform and institutional adjustment to build co-ordination within the university. In order to be able not only to respond to, but also to shape the development of the wider society, it may need to transform itself into an entrepreneurial university with a strengthened management core and fully operational professional management systems, in knowledge transfer, human resources management, financial management and Information systems management (Burton Clark, 1997). It may also need to set up a single access point for businesses as well as a central office to mainstream the research and regional engagement activities and to upscale the work from individual good practice cases to a systematic approach.

Conclusions

Cities and regions can, with the help of universities and other higher education institutions, play a key role in making countries globally competitive. There is also evidence of a positive link between economic competitiveness and investments in regional innovation system which connects higher education institutions, public authorities and business and industry.

Much more remains to be done to take full advantage of higher education institutions and their research in local and regional development. In practice, there are both internal and external barriers for higher education institutions to become more engaged.

There is a need for a stronger focus on broader forms of innovation and for the adaptation of already existing technologies. This need is particularly strong in low income countries.

The national systems may reduce the capacity of the higher education institution to engage with local economic and social development and they may limit their institutional autonomy to decide on their inputs and outputs. In general, outreach work and regional mission is not supported by major incentives or monitoring of the outcomes.

Sustained, long-term collaboration between regional stakeholders and higher education institutions is necessary and needs to be supported by permanent structures, funding and incentives. Finally, as the scope and extent of the engagement of a higher education institution and its research activities depend on the role that the institution chooses for itself.

References

Asheim, B. and M. Gertler (2005) 'The Geography of Innovation', in J. Fagerberg et al. (eds), Oxford Handbook of Innovation. Oxford: Oxford University Press.

Boucher, G., C. Conway and E. Van Der Meer (2003) 'Tiers of engagement by universities in their region's development', *Regional Studies* 37(9): 887-897.

Clark, Burton R. (1998) *Creating Entrepreneurial Universities*, Oxford: Pergamon.

Duke, C., R. Hassink, J. Powell and J. Puukka (2006) 'Supporting the Contribution of Higher Education Institutions to Regional Development', Peer Review Report: North East of England, Paris: OECD. www.oecd.org/dataoecd/16/54/35889695.pdf.

Etzkowitz, H. and L. Leydesdorf (2000) 'The Dynamics of Innovation: from National Systems and "Mode 2" to a Triple-Helix of University-Industry-Government Relations', *Research Policy* 29(2): 109-123.

Friedman, T. (2003) *The World is Flat: A Brief History of the Twenty-First Century*, New York: Farrar, Strauss and Giroux.

Goddard, J. and J. Puukka (2008), *The Engagement of Higher Education Institutions in Regional Development: An Overview of the Opportunities and Challenges*, originally published in *Higher Education Management and Policy*, Volume 20 Issue 2: *Journal of the Programme on Institutional Management in Higher Education - Special Issue: Higher Education and Regional Development*, OECD 2008

Hazelkorn, E. (2007) 'The impact of league tables and ranking systems on higher education decision making', *Higher Education Management and Policy*: 19(2).

Lester, Richard K. (2005) 'Universities, innovation, and the competitiveness of local economies: A summary report for the Local Innovation Systems Project – Phase I', MIT IPC Local Innovation Systems Working Paper 5(010). <http://web.edu/lis/papers/LIS05.010.pdf>.

OECD (2007a) 'Higher education and regions', OECD Policy Brief, Paris: OECD, www.oecd.org/dataoecd/60/51/39311062.pdf.

OECD (2007b) *Higher Education and Regions – Globally Competitive, Locally Engaged*, Paris: OECD.

OECD (2009, forthcoming) *OECD Innovation Strategy*, Paris: OECD.

Lord Sainsbury of Turville (2007) *The Race to the Top. A Review of Government's Science and Innovation Policies*. www.hm-treasury.gov.uk/media/5/E/sainsbury_review051007.pdf

Simmie, J., J. Sennet, P. Wood and D. Hart (2002) 'Innovation in Europe. A tale of networks, knowledge and trade in five cities', *Regional Studies* 36(1): 47-64.

Sotarauta M., P. Dubarle, M. Gulbrandsen and C. Nauvelaers (2006) 'Supporting the Contribution of Higher Education Institutions to Regional Development', Peer Review Report: Trøndelag (Mid-Norwegian Region), Norway, Paris: OECD. www.oecd.org/dataoecd/8/2/37089380.pdf

Zepeda, E., A., F. Marmolejo, D. Matthews and M. Parellada (2006) 'Supporting the Contribution of Higher Education Institutions to Regional Development', Peer Review Report: Valencia, Spain, Paris: OECD, www.oecd.org/dataoecd/20/61/37526515.pdf