

Evaluation of the Cooperation between Region Värmland and Karlstad University



FINAL REPORT

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Executive Summary

In our literature and policy review we summarised both the broadly based role of universities in regional development in the round and the need for sharply focussed mechanisms to deliver impact. Through consultations and interviews with a wide range of stakeholders we have also identified a number of specific areas to build on and issues that may need to be addressed going forward in the collaboration. Overall it is our finding that Region Värmland and KAU have together made great progress by focussing on regional competitiveness in key business clusters. We strongly support the continuation of this programme.

Key insights from literature and the policy context

Successful regional collaborations to promote innovation involve an interactive learning process between companies, universities and governmental agencies within and beyond the boundaries of the region. It is important to note that innovation takes place not only in high-tech industries but in all sectors of the economy, and policy therefore needs to be ‘fine-tuned’ to the needs and demands of different industries and reflect the varied role of universities in working with them.

While Värmland’s regional development strategy and the current agreement for collaboration between Region Värmland and Karlstad University are in accord with a systemic and broad-based view of innovation, there is potential for better fine-tuning the policy mix to the specificities of the regional business structure. Service research and service innovation also have an important ‘cross cutting’ role to play.

A key challenge (and indeed, opportunity) for Region Värmland is to align its policy tools and programmes with the wider policy framework set on the supranational level through Europe 2020 and Horizon 2020 and on the national level through the ‘The Swedish Innovation Strategy’.

It is our view that the collaboration agreement between Region Värmland and Karlstad University (RegionVärmland and KaU 2010) and the cluster strategy ‘Värmland model 2.0’ fit well within the policy framework of European and national innovation strategies. More specifically the recent success of one of the clusters in VINNOVAS’s Vinnväxt competition can be interpreted as an indicator for a good alignment of the regional development strategy with the national policy agenda.

Key insights on the specific activities of the collaboration

There are good levels of trust and interaction between the regional stakeholders and strong support overall for the collaborations, though there is some variability in certain areas that should be addressed. There is a need to find mechanisms to resource and ‘scale up’ some of the activities going forwards. One way this could be achieved would be in more strategic use of (post-graduate) students in collaborative activities between the university and firms.

There has been a mix of internal and external candidates appointed to the '10 Professorships' part of the programme. Internal candidates tend to have stronger local networks, while external candidates can bring connections from other places. There should be more mechanisms for professors to share learning and experience between themselves in order to maximise the benefits of these local and external connectivities.

Links between the university and the cluster organisations are overall very good, with evidence of high levels of trust in the relationships. However lack of absorptive capacity in SMEs, visibility of the professors among companies and (at times) a mismatch of expectations act as constraints.

There is a clear need to define 'success' for the collaboration more explicitly, and in doing so, this may address some of the issues around expectation management. We strongly feel that academic and regional economic success is not an 'either or' choice but can be constructed to be a 'win-win' situation once this is explored and made more transparent among the partners. Linked to this, there is a need to communicate success to inspire others and encourage peer learning. Defining what success 'looks like' will help in this, and it is our strong view that the success of 'Paper Province 2.0' in its competitive bid for VINNVÄXT support provides an excellent case study to start this process.

There is some variety in terms of the operational context for the professors, with some being part of large and relatively well resourced research groups, while others work in more isolation, or may lack the infrastructure/equipment necessary to attract businesses to collaborate. Encouraging businesses and cluster groups to work with the university on research funding proposals may help to address these (real or perceived) imbalances.

Without employing heavy handed bureaucracy, there should be some more formalised systems and processes around the management of the collaboration, to ensure that all involved are clear on roles, responsibilities and expectations. We recommend the institutionalisation of the collaboration mechanisms between the professors, between the professors and KaU leadership, between professors and cluster organisations, as well as between the Region Värmland, KaU leadership and the cluster organisations. For example, regular occasions for feedback, exchange of experience, learning and adjustment of expectations should be introduced. In addition, the steering group could meet more often and take a more 'hands on' approach to the management of the project.

Regional engagement is a challenging task for universities and therefore it makes sense to make full use of the research capacity available locally that can inform university and regional practice. Social science professors working in this field need an appropriate institutional setting and support. It is our recommendation that the university in partnership with the region should review how the university's role in region building might best be organised going forward. For example such a review might ask who is responsible for developing a set of indicators to evaluate the impact of current policy interventions, identify success stories that can be diffused widely within and beyond the region and ensuring that both the university and the region continue to be at the heart of regional development policy making in Europe.

LC, JG, LK, RM & MG - Newcastle and Lund, December 2013

Overview of the Research Project

In June 2013 the **Centre for Urban and Regional Development Studies (CURDS)** was commissioned to carry out an evaluation of the cooperation between Region Värmland and Karlstad University from 2010 to 2014. CURDS is part of Newcastle University, a top 20 UK university part of the 'Russell Group' of research intensive universities. CURDS was established by John Goddard in 1977 and has developed a worldwide reputation as a centre of excellence for the study of local and regional economic development. To date over £30m has been generated through research grants and policy research for regional and national governments, EU, OECD etc. CURDS' partner in the project is the **Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE)** part of Lund University, one of Europe's oldest universities and one of Scandinavia's largest institutions for education and research, consistently ranked among the world's top 100 universities. Established in 2004, CIRCLE is an interdisciplinary research centre spanning several faculties at Lund University. In July 2006, CIRCLE was awarded a prestigious 10 year Linnaeus Grant by the Swedish Research Council.

The **purpose** of the evaluation was to address the following questions:

- Whether the various initiatives to facilitate co-operation between Region Värmland and Karlstad University have been **correctly designed** to contribute to the objectives that were formulated in the declaration of intent
- Whether **implementation** has been 'fit for purpose' in order to achieve the objectives of the partnership
- How the collaboration in the areas of research, innovation and coordination can most **effectively progress** in the years after 2014

The **methodology** for the study was as follows:

- Review of a wide range of **academic literature** covering 'state of the art' on regional development, universities, clusters and emerging literature on 'smart specialisation'
- Analysis of the **policy environment** for research, innovation and territorial development (current and emerging) at local, national and international (esp. EU) levels
- Review of various **strategic and operational documents** (past and present) relating to the cooperation, regional development in Värmland generally and the University as well as evaluations of previous projects and programmes (e.g. SLIM)
- **Face to face interviews** (often more than once) with key university, region and cluster organisation staff at both strategic and operational levels
- Underpinned by **ongoing and close communication** with the evaluation steering group in Region Värmland and KaU, and between the team members

Section 1 – Literature Review

1.1 Clusters and regional development

It is generally acknowledged amongst scientists and policy makers that innovation is the key driver for sustainable economic growth and job creation, and that the region is a key arena in which the translation of knowledge creation into innovation takes place (EU 2011a; OECD 2011). Recognising this fact, the region of Värmland is designing and implementing policy strategies led by territorial innovation models such as clusters and regional innovation systems (RIS) (Porter 1998; Moulaert and Sekia 2003; Asheim and Gertler 2005).

The literature on clusters and RIS has in common that the region is seen as important arena for policy intervention, and that innovation is seen as outcome of the interplay between innovating companies and their external environment, including other companies, public and private research organisations, and governmental agencies (Lundvall 1992; Edquist 1997; Fagerberg 2005). The cluster literature thereby stresses the benefits that arise from co-location of companies active in a similar or related business field. Clusters are commonly defined as geographical concentrations of interconnected companies and other knowledge-producing organisations in a particular field (Porter 1998). Following a similar argument but taking a broader perspective, the concept of RIS considers the whole range of economic activities in a region (Cooke 1992; Asheim and Gertler 2005). A RIS is commonly understood as a set of several RIS elements that are embedded in a common region-specific socio-institutional and cultural setting. RIS elements include all private and public organisations that are involved in innovation processes, that is, companies, public research organisations, technology transfer agencies, educational and training bodies, workforce mediating organisations and finance providers. Also, regional policy actors are recognized to be an important element of RIS as they can play an essential role in shaping and facilitating innovation. A well-functioning RIS is characterised by intense collaboration and interactions between various organisations in the regional environment, but also with organisations outside the system. Relations within the RIS play an important role, though knowledge exchange and collaboration also crosses regional and national boundaries (Bathelt, Malmberg and Maskell 2004). Furthermore, the RIS literature highlights that innovation-based regional growth is not only driven by R&D intensive and high technology sectors, but by all sectors of the economy, including medium- and low-technology sectors. Regional competitiveness depends on continuous innovation in all parts of the economy, and different industries can rely on different modes of innovation. While high-tech industries rely more on a science and technology (STI) mode of innovation which is characterised by the production and use of codified scientific and technical knowledge, medium- and low-tech industries build more on a doing, using and interacting (DUI) mode that is based on informal processes of learning and experience-based know-how (Jensen et al. 2007). Regional innovation policies today increasingly take a broad-based view on innovation and target a wide range of activities in order to support and secure innovation based regional economic growth (EU 2011a; OECD 2011).

Recent research on RIS stresses the need to draw attention on industry specific differences that exist within regions and to design policies according to the specific needs and demands of particular industries or clusters (Asheim, Boschma and Cooke 2011; Martin, Moodysson and ZuKaUskaite 2011). It is argued that industries can be classified based on the type of knowledge that is critical for innovation. Three types of knowledge base can be distinguished; namely, analytical (i.e. science-based), synthetic (i.e. engineering-based) and symbolic (i.e. art-based) (Laestadius 1998; Asheim and Gertler 2005). Innovation in science-based industries aims at the development of new knowledge by applying scientific laws and models. Examples for science-based industries are biotechnology, life science and ICT. Innovation involves strongly codified and universally valid knowledge, which is often sourced from universities and exchanged between research units on a global scale. Engineering-based industries innovate by applying existing knowledge in new ways in order to solve concrete, practical problems. Examples for engineering-based industries are plant engineering, industrial machinery or food processing. Innovation takes the form of interactive learning with customers and suppliers, where both the regional and the national level play an important role. The knowledge dealt with is partially codified, but involves a stronger tacit component. Innovation in art-based industries aims at the creation of meaning, desire and aesthetics, and is a creative process often taking place in short-term projects with small project teams. It is present within a variety of industries such as advertisement, music, fashion, new media and design, sometimes also labelled as creative industries. Interpretation and cultural knowledge is pivotal and is to a high degree determined by the regional context, therefore knowledge exchange in the regional and local milieu is particularly important.

Industries with different knowledge base differ also with regards to how regional innovation policy should be designed and implemented. Table 1 provides an overview on key elements of a regional innovation policy approach that is fine-tuned to the needs and characteristics of science-, engineering-, and arts-based industries (Martin and Trippl 2013). In addition to policies addressing particular knowledge bases, policies should also allow for combinations of knowledge bases, as dynamic innovation processes can occur at the intersection of science-, engineering-, and arts-based knowledge. In Värmland, policy approaches that target distinct knowledge bases are already in place, while some activities (such as service innovation) can serve as cross-cutting themes to bridge between different sectors of the economy

Table 1: Regional innovation policies for science-, engineering-, and art-based clusters

	Analytical (science-based)	Synthetic (engineering-based)	Symbolic (art-based)
Network initiatives	Promotion of university-industry partnerships Promotion of international networks	Promotion of inter-firm collaboration and user-producer partnerships Promotion of national and regional networks	Promotion of project-based collaboration between firms and with public and private customers Promotion of regional and local networks
Research and education infrastructure	Higher education in fields of natural and formal sciences (e.g. chemistry, physics, mathematics) Support of top research milieus and global centres of excellence	Higher education in engineering based fields and applied sciences (e.g. mechanical and electrical engineering) Support of polytechnic schools and technical colleges with focus on applied science	Higher education in creative and arts based fields (e.g. architecture and design, visual & performing arts, humanities) Support of cultural and creative infrastructure (e.g. theatres, concert halls, exhibitions)
Innovation support for start-ups and SMEs	Science and technology parks Technology brokers and transfer agencies Public-private-partnerships for innovation Industrial PhDs	Innovation vouchers Life-long learning schemes Schemes for worker participation in innovation	Business support and coaching Provision of meeting places (e.g. conferences, fairs) Public procurement
Mobility and talent attraction schemes	Attraction of star scientists through promotion of business and people climate	Promotion of business climate (laws, regulations, tax incentives, etc.)	Promotion of people climate (diversity, tolerance, quality of place, etc.) Regional branding and place marketing
Anchoring projects	Big science projects and large scale research facilities	Attraction and retention of large anchor firms	Architectural landmarks and urban planning projects

Source: Martin and Trippl (2013)

1.2 Universities and regional development

Introduction

Universities have a potentially pivotal role to play in the social and economic development of their regions. They are a critical 'asset' of the region; even more so in less favoured regions where the private sector may be weak or relatively small, with low levels of research and development activity. Successful mobilisation of the resources of the university can have a disproportionately positive effect on their regional economies and achievement of comprehensive regional strategies.

There is a growing body of theory and practice about the role of universities in regional development. This has been summarised by OECD in its 2007 report Higher Education in Regions: Globally Competitive, Locally Engaged. This has identified why regional authorities across the OECD countries are seeking to mobilise universities in support of their regional development strategies and why, for their part, many universities are engaging with the development of their regions (the drivers).

A key message from OECD is that successful partnerships depend on both universities and regional authorities understanding each other's barriers and drivers. Too often partnerships fail because university managers do not understand the challenges of regional development and regional authorities do not understand the core mission of universities and the constraints within which they work. However, once mutual understanding is reached it is possible to put in place structures and procedures which overcome the barriers to collaboration.

Potential contributions to regional development

At the most basic level, universities can be anchor institutions in local economies as major employers across a wide range of occupations, purchasers of local goods and services, and contributors to cultural life and the built environment of towns and cities. Regional investment in the infrastructure of a university to support its core business of research and teaching can therefore have a significant *passive* regional multiplier effect even if the university is not *actively* supporting regional development.

But universities can and do play a more active role in the development of their

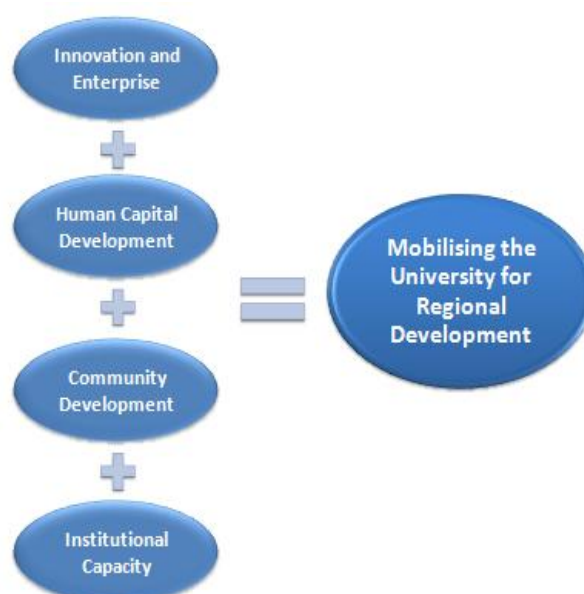


Figure 1

regions. As Figure 1 suggests this can be broken down into four areas – **business innovation** which is closely linked, although not exclusively, to the research function of the university, **human capital development** linked to the teaching function and **community development** linked to the public service role of universities. The fourth area is the contribution of the university to the **institutional capacity** of the region through engagement of its management and members in local civil society. Where these four domains are integrated, the university can be seen to be occupying a “proactive” and not just “passive” role in the regional development process. In the case of Värmland and KaU the focus has been on innovation and enterprise and this has been the concern of this evaluation. However it should be noted that there are other examples of focal points for collaboration, such as the research centres R & D Welfare Värmland, the Centre for Climate and Security and the Centre for Research on Child and Adolescent Mental Health.

Barriers and challenges

While the potential contribution of universities to regional development is considerable, realising this potential is another matter as there are many barriers in the way. On the university supply side, higher education and science and innovation policy does not have an explicit territorial dimension. Academics and their universities are rewarded on the basis of the scientific excellence of their research and where they collaborate with business there are strong incentives for this to be with leading companies in the field regardless of their location. While university technology transfer offices are dedicated to the



Figure 2

commercialisation of research, including spin outs, they are generally not resourced to support regional development where the outcomes such as job generation may be outside the domain of higher education. The consequence of all of this is that the national and international rankings of universities are by and large correlated with the hierarchy of regions. However

when it comes to Värmland and Karlstad University this is

not the case. The Grants & Innovation Office (GIO) at KaU is not setup to act as an TTO, the ambition and strategy with GIO at KaU is to act as an Knowledge Exchange Office which means that GIO are working with both push and pull activities and thus is an driving actor in the regional development

On the regional demand side while a region might possess a strong university or universities there might be limited absorptive capacity in local enterprises, especially SMEs or the

branches of multinational companies with no local in-house R&D. On the institutional side local governments may be fragmented and unable to act beyond their immediate boundaries. The entrepreneurial environment, including venture capital funding, may be inimical to university spin outs. In such circumstances the bundling together of demand for university services will be challenging. The outcome is a 'disconnected' region as described in Figure 2

Drivers for increased university/region cooperation

Notwithstanding these barriers, and as the Barca Report (2009) makes clear, the implementation of effective regional development strategies requires "the explicit spatial targeting of bundles of public goods tailored to the local context and specifically designed to foster local development by encouraging the maximum engagement of all stakeholders and parties in local development issues". Universities working with regional authorities have the potential to move from being located in regions to being part of regions through contributions to the design and implementation of smart specialisation strategies in a local learning and capacity building process.

There is increasing prominence given to role of universities beyond 'just' core functions of teaching and research by national, regional and local governments as well as supra-national bodies such as the European Commission and the OECD. This trend is likely to continue as the on-going global economic crisis is putting governments under enormous pressure to respond to the challenges of public and private debt at the same time as competition is intensifying. Meanwhile, local communities and taxpayers facing difficult economic situations are questioning the 'value' of universities, especially where the benefits may appear less obvious, for example in regions with high unemployment. Public funding for higher education is therefore coming under increasing scrutiny, resulting in a growing requirement for universities to demonstrate their value, contribution and benefit to society and the economy. However this may be less the case in Sweden and Värmland than in other places because of the relative strength of the public sector economy. Furthermore there is no conflict between local tax payers and funding of the university in the region because the funding for the university comes from the central / national state.

While the landscape of higher education in Europe remains heterogeneous the last 10 years following the Bologna initiative have seen significant changes in cooperation between universities and business (Technopolis, 2011) and there is a growing acceptance across member states of the "new relevance" of universities to social and economic development (EUA, 2006). This is underpinned by the Europe 2020 Growth Strategy and especially the developing 'smart specialisations' strategies across the European Union in preparation for the next round of structural funds, which gives increasing prominence to the role of universities not only in terms of the supply side (i.e. of research and skills) but also in supporting the demand side through capacity building and supporting the governance of regional innovation (Goddard et al, 2013).

In response, universities are rethinking their role and responsibilities, and engaging in learning and co-production of knowledge beyond the campus walls, resulting in discoveries which are useful beyond the academic community and that directly benefit the public. There is a growing recognition between universities and local/regional leaders of the potential for mutually beneficial relationships, and the active role of universities in terms of their contribution to local and regional development and innovation has gained a new salience in the context of 'smart specialisation' as a future focus for European regional policy.

In many ways the links between Region Värmland and Karlstad University can be seen as an *exemplar* of this approach. Following the OECD Review of the contribution of universities to regional development in 2005-6, the region and the university have sought to work more and more closely. One notable example was the SLIM II (Systematic Leadership and Innovation Management), project, funded through local and European structural funds, which supported the development of effective business networks and clusters to help promote existing and new collaborations between businesses using the university to coordinate and build linkages. The explicit acknowledgment by the regional authority of the university as a key player was one of the primary drivers of the success of the project, which went on to win its category at the prestigious pan European RegioStars awards in 2011.

1.3 Smart specialisation

As already noted, universities have long been seen as important actors in regional innovation systems, and the emerging literature on smart specialisation reinforces and even amplifies this role. However there are some key underpinning principles that make smart specialisation distinctive from previous iterations of regional innovation strategy development, and it will be necessary to understand the implications of these for the actors in the process, including universities. Adopting the principles of Smart Specialisation will not be straight forward. The method in its purist form proposes a new and more leading involvement of different actors in what has been termed an 'entrepreneurial discovery' process. It demands a level of global awareness and partnerships beyond regional boundaries. It also introduces the concepts of embeddedness (industries that are in tune with the relevant socio-economic conditions in the region and can rely on a trained labour force and a history of cooperative relations with other regional actors), relatedness (the potential diversification of firms into related areas based on innovative techniques or processes) and connectivity (links to suppliers and R&D activity within the region and beyond). It calls for evidenced identification of competitive advantages around which inputs of regional stakeholders and resources can be concentrated. Furthermore, it asks for measures to strengthen regional innovation systems in order to maximise knowledge flows and spread the benefits of innovation throughout the entire regional economy (Foray et al, 2012).

Entrepreneurial discovery can be defined as a “collective strategy formation process focused on the identification of science and technology areas with distinctive market potential in the region” (Goddard et al, 2012). The intention is that this process is ‘bottom up’ in nature, arising from collaborations and discussions within the region, mobilising a broad range of participants and actors including universities. In fact it can be argued that universities in many cases are already well established entrepreneurial actors in their local and regional economies through activities such as research commercialisation, enterprise formation and spin outs.

However it is important that this role is not too narrowly defined and that policy makers and universities themselves recognise the broader role they can play in providing expertise and intelligence in domains such as regional development, education, business etc. The potential for universities to play a more ‘developmental’ role (Gunasekara, 2006) in shaping and supporting regional institutions, supporting the creation of networks and other capacity building activities should also be recognised and valued, particularly in ‘institutionally thin’ regions.

While this developmental role may have a less direct link to a process of ‘entrepreneurial discovery’, it will help to build the regional institutional capacity upon which a successful S3 will depend. Therefore policy makers must consider this broader, more supportive role alongside the potential ‘generative’ role that universities can play, and universities need to be willing to ‘step up to the plate’ and take on a wider, developmental role that might not directly contribute to traditional research and teaching success measures.

Ensuring that regional businesses have the necessary capacity to absorb and understand the relevance of university research is a critical stage in the process of implementing S3, and where this capacity is lacking, it will need to be built. Otherwise the best research will leak out of the region to places where absorptive capacity is sufficient, thus creating the ‘innovation paradox’ whereby the regions most in need of strengthening their innovation system have least capacity to achieve this with the effect that the already most innovative regions becoming even stronger while the weaker regions fall further behind (Oughton et al, 2002).

Some of the mechanisms that universities and regions can deploy in the capacity building process include (but are not limited to): Ensuring that business and cluster organisations are represented in the regional partnership, establishing neutral places and events for personal contact/networking between university researchers and businesses, sharing resources and equipment to facilitate knowledge exchange, perhaps in the form of a ‘market place’ linking knowledge supply and demand and regional need.

Unlike RTD organisations, universities through teaching can build capacity on the demand side – by attracting, training and retaining the skilled people that will create demand in the future through new business formation, student enterprise, graduate placements etc – establishing the social relations which underpin the regional innovation system.

The university can be seen as a relatively neutral actor in regional collaborations. As actors in (usually) a national higher education system they can remain detached from local political

tensions, and without facing the same commercial pressures of private sector firms, they can avoid being accused of being motivated solely by self interest.

But universities need to ensure that partners can ‘reach in’ as well as staff being supported and encouraged to ‘reach out’. ‘Reach in’ can be promoted by providing access to existing university and regional infrastructure (e.g. laboratories) on a commercial basis and using their own funds and resources to establish special purpose vehicles (e.g. intermediate organisation for co-production of knowledge). At KaU, the establishment of the GIO and how this differs from ‘traditional’ technology transfer offices (as outlined earlier) plays an important role in facilitating reach out/reach in activities.

In terms of ‘reach out’ universities need to actively develop (and reward) ‘boundary spanners’ – people who can work across the boundaries of academia, business and civil society – and equip them with the skills (problem solving, communications, internal and external networking, project management, financial management, persuasion, team building etc.) that they will need.

The ‘connected’ region – strong partnerships based on shared understanding of the challenges and how to overcome them

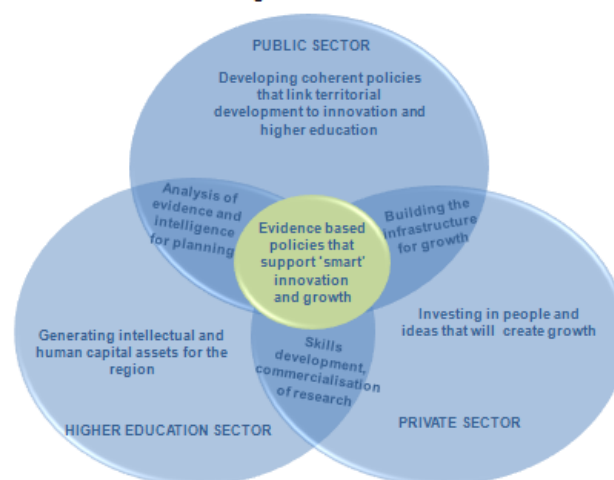


Figure 3

The university can contribute to the development of leadership capacity in the region by supporting the development of a ‘place based’ approach to regional leadership and the creation of a shared vision rooted in the uniqueness of the place. This ideal model is described in Figure 3.

The university can play a specific role in supporting the development of a regional learning partnership by creating a sustainable learning organisation (perhaps with a physical presence) bridging all three partners which can work together to develop a portfolio of university products endorsed by the partnership e.g. industrial PhDs; student internships; lifelong learning; ‘silver academy’ involving senior citizens, contributing to the development of ongoing leadership capacity in the region.

Universities can play a key role in defining a regional S3 by contributing to a rigorous assessment of the region’s knowledge assets, capabilities and competencies, including those embedded in the university’s own departments as well as local businesses. Universities can contribute to the regional entrepreneurial discovery process by bringing global awareness and partnerships across regional borders into the frame through evidenced based identification of competitive advantage around which regional strategies and resources can be concentrated. They can provide specialist research expertise and links to national and international networks of knowledge, becoming critical agents in the entrepreneurial

discovery process and establishing whether a region has the assets needed to specialise in particular areas.

Working together with the public sector, business and other social partners could provide exiting opportunities for universities to broaden their role locally and contribute not only to their 'engagement' mission, but also enhance the impact of their teaching and research, something governments and funding bodies are increasingly looking for.

The ongoing cooperation between Region Värmland and Karlstad University has provided some good building blocks for a regional smart specialisation strategy. The explicit linkages between research activity at the university and the local economic landscape through the '10 professors' programme creates an important mechanism for both 'reach in' and 'reach out' activities. The appointment of a professor of regional development is an important step in ensuring a holistic approach to the collaboration (rather than a set of isolated initiatives) and the establishment of a regional learning platform.

1.4 Conclusions

Some key messages for Värmland's regional development strategy can be drawn from the literature on clusters and regional innovation systems. First, innovation should be seen as interactive learning process between companies, universities and governmental agencies within and beyond the boundaries of the region. Hence, the role of policy is to support collaboration and knowledge exchange between the various RIS elements. Second, innovation takes place not only in high-tech industries but in all sectors of the economy, including science-based, engineering-based, and art-based industries. Accordingly, regional innovation policy should be fine-tuned to the needs and demands of different industries that are present in the region (Tödtling and Trippel 2005; Martin, Moodysson and ZuKaUskaite 2011). Likewise, the role of universities varies between industries. Science-based industries benefit most from higher education in fields of natural and formal sciences (e.g. chemistry, physics, mathematics) and the provision of top-research milieus, while engineering-based industries benefit more from higher education in technical fields (e.g. mechanical and electrical engineering) and a focus on applied sciences (Benneworth et al. 2009; Martin and Trippel 2013). Even though Värmland's regional development strategy and the current agreement for collaboration between Region Värmland and Karlstad University go well in line with a systemic and broad-based view on innovation, there is potential for better fine-tuning the policy mix to the specificities of the regional business structure. Service research and service innovation also have an important, 'cross cutting' role to play. KaU (and Värmland) have a significant 'USP' in this area with the internationally esteemed Centre for Service Research (CTF) based at the university.

As highlighted earlier, there are a range of ways in which universities can and do contribute to regional development and smart specialisation. However within each of these roles there are a range of mechanisms which can be employed, either as individual projects or collectively as part of a wider programme or strategy to support a regional development agenda. In reviewing these

mechanisms it is important to make a distinction between the regional impact of ‘normal’ university activity financed as part of the core business of teaching and research and purposive regional interventions initially funded from a source outside higher education and then hopefully ‘mainstreamed’. As summarised in Table 2 below, individual mechanisms can vary in their complexity. At one end of the spectrum are fairly straightforward ‘transactional’ services in response to a stated need or demand; at the other end of the spectrum are more developmental or transformational activities which recognise latent or unstated needs. (The different mechanisms that fit within this table are elaborated upon in Annex VI.)

Table 2 Varying complexity of universities contribution to regional growth

	‘Transactional’ services	Transformational activities
Type of need / demand	stated need or demand	latent or unstated needs
Type of approach	<i>output</i> driven approach	<i>outcome</i> driven approach
Type of objectives	clear objectives	less explicit objectives
Link to time	usually time bound	less clear timelines

In considering these interventions it is important for both Region Värmland and Karlstad University to recognise the challenge of appropriate indicators to measure their regional impact. Certain types of intervention may be preferred simply because it is relatively easy to count the **outputs** such as joint publications, patents registered or new business spun as compared with interventions that support capacity to build long term **outcomes** and which are more difficult to measure. Investment to achieve longer term capacity to realise innovation outcomes through collaboration between the university and business might be needed in order to achieve regional development goals.

Section 2 – Policy Context

2.1 European policy

Europe 2020, the European Commission's 10 year strategy for growth launched in 2010, reflects the findings of Foray, Barca and their collaborators by setting out a streamlined set of objectives focusing on 'smart, sustainable and inclusive growth'. Innovation Union is one of the three flagship initiatives for 'smart' growth. Its publication in 2010 saw the adoption of 'smart specialisation' as a key element of a Europe wide approach to promoting innovation and growth over the next decade.

Horizon 2020 is one of the key financial instruments implementing the Innovation Union. Running from 2014 to 2020 with a budget of just over €70 billion, the EU's new programme for research and innovation is part of the drive to create new growth and jobs in Europe. Horizon 2020 provides a major simplification over its predecessor Framework Programmes through a single set of rules. It will combine all research and innovation funding currently provided through the Framework Programmes for Research and Technical Development³, the innovation related activities of the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

Taking a 'smart specialisation' approach to innovation is one of the ten conditions for well performing places. 'Smart specialisation' (also known as Research and Innovation Strategies for Smart Specialisation, or RIS3) will be a key underpinning concept governing European Structural Fund investments in research and innovation in the 2014-2020 programming period. It is defined by the European Commission's Smart Specialisation Platform (hosted by the Joint Research Centre IPTS in Seville) as "a strategic approach to economic development through targeted support to Research and Innovation". Innovation Union sets out a self assessment tool for national and regional research and innovation systems.¹ Further detailed guidance for preparation of smart specialisation strategies can be found on the Smart Specialisation Platform website². Particular attention should be paid to Annex III, which sets out the approach to self assessment for RIS3 which was updated in June 2013.

The concept was first aired by Foray and Van Ark in 2007, in a policy briefing (no. 1) prepared for the Knowledge for Growth Expert Group, an independent advisory group to the European Commissioner for Research and Innovation. While Foray and Van Ark were primarily concerned with developing strategies aimed at addressing the transatlantic gap in R&D investment, the Barca Report (Barca, 2009) looked at the territorial dimensions of cohesion policy, making a number of recommendations for the post 2013 programme, including the need to focus on fewer priorities and better coordination of place-based policies across the Commission. This facilitated the transition of Smart Specialisation from a wholly sectoral concept to one that is also applicable to regional policy (McCann and Ortega-Argilés, 2011).

¹ http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf

² <http://s3platform.jrc.ec.europa.eu/s3pguide>

The regulations governing the EU SIF funds will require a more rigorous approach to the selection of innovation projects within the smart specialisation policy framework. This concept emphasises the extent to which proposed investments in innovation: are 'embedded' properly into the local economy in relation to existing physical and human assets, and within and into the local economy and supply chains; provide new opportunities to transfer technology into 'related' sectors, thus building more resilient economies with 'diverse specialisms', especially through the use of Key Enabling Technologies; and are properly 'connected' with similar activities in other parts of the global economy, especially in relation to information, financial and trade flow connections. Rather than the 'top down' public authority led process for developing previous regional innovation strategies which is heavily critiqued in the emerging literature on smart specialisation, the role of public authorities in Smart Specialisation should be one of creating the right conditions for and supporting the entrepreneurial discovery process.

Horizon 2020 will cover the whole spectrum of frontier and fundamental research, technological development, demonstration and tackling non-technological barriers prior to market-implementation. To this end the proposed support for RD&I under Horizon 2020 will be aligned with three strategic policy objectives: supporting excellence in the science base, tackling societal challenges and securing industrial leadership.

Although simplifying and broadening of participation rules are in general being perceived as advantageous, the potential downside for industry and academia could be increased competitiveness, as the entrance hurdle for (new) participants will be lowered. Due to announced changes in the cost reimbursement model, academia for example need to adjust their financial planning with the modified financial administration rules, especially since there is a re-shift from funding indirect costs to funding direct costs. Furthermore Horizon 2020 can pave the way for companies to take new roles in international collaborations due to its simplifications and its increased focus on industrial leadership.

Compared to its predecessor FP7, Horizon 2020 – as a single portal of a wide range of European funding programmes – enhances major simplification participation rules, making it accessible for a wider range of organisations all over the world. This implies broader opportunities for participation, but also increases international competition for available funding, therefore driving the need for organisations to review their funding strategy on RD&I. Besides technical factors such as an organisations' research agenda, quality of the research facilities and the international reputation of scientists and the institute, the economic and social factors like strategic partners, expected (short and long term) outcomes and social impact, become more and more important. Quality, external profiling and knowledge transfer are becoming increasingly relevant in order to qualify for funding under Horizon 2020.

Horizon 2020 asks for a high level of creativity and entrepreneurship. To ensure optimal participation and revenues, organisations need to develop a coherent RD&I strategy and execute this consistently on regional, national and international level.

2.2 Swedish national policy

In 2004, the Swedish Ministry of Industry, Employment and Communications (predecessor of the current Ministry of Enterprise, Energy and Communication) and the Ministry of Education and Research jointly published a first national strategy for innovation and economic development termed 'Innovative Sweden' (Regeringskansliet 2004). The strategy has been developed by a working group of representatives from several ministries and included recommendations from the business sector, the trade union movement, governmental agencies, and the higher education sector. The strategic document emphasized Sweden's strong position in knowledge creation and innovation while drawing attention to potential challenges and opportunities resulting from a changing global economy. It proposed an agenda for securing long-term economic growth and prosperity in Sweden through improved conditions for innovation. The strategy's coverage focussed on four priority areas that were mainly related to issues in the field of education, research, trade and industry policy, and advocated a policy framework with emphasis on promoting innovation in all parts of the economy and society. The strategy emphasised the need to concentrate research and education efforts in national 'profile areas', defined as globally 'attractive environments' with future prospects. At the same time, it stressed the necessity to promote regional specialisations complementing the outlined national profile areas. The strategy remained vague in identifying particular strategic areas and on the details of implementation. Overall, the national strategy was widely welcomed, but follow-up measures did not fully meet the expectations (OECD 2013).

During 2011-2012, the Ministry of Enterprise, Energy and Communications orchestrated a process of broad consultation that resulted in a new national innovation strategy termed 'The Swedish Innovation Strategy' (Regeringskansliet 2012). This new strategy was set up with the aim to address major societal challenges through better coordination between actors in different parts of the society. Based on the European growth and jobs strategy, Europe 2020, and later clarified by the EU Council in the regulation of establishing 'Horizon 2020 – The EU Framework Programme for Research and Innovation (2014–2020)', a number of societal challenges were highlighted, amongst others 'health, demographic change and wellbeing', 'secure, clean and efficient energy', 'smart, green and integrated transport', and 'climate action, resource efficiency and raw materials' (EU 2011b; Regeringskansliet 2012).

In order to improve the innovation climate in Sweden and meet the major societal challenges outlined in Horizon 2020, the following six policy priorities were defined: 1) 'Innovative people', aiming to promote the capability and willingness of people to innovate, 2) 'high quality research and higher education towards innovation', where excellence in research and higher education is seen as important driver for innovation; 3) 'frameworks and infrastructure that create innovation', with the focus on institutional conditions to motivate and enable individuals, companies and other organisations to engage in continuous innovation; 4) 'innovative businesses and organisations', with the aim to support companies to offer innovative solutions on the global market and to foster social innovations; 5) 'innovative public sector', with the intention to create public services that are legally secure, effective, and have a high degree of quality, service and availability; and 6) 'innovative

regions and environments', with the goal to increase the innovation capacity of regions based on their unique conditions and to develop regional innovation strategies with focus on business clusters and strong innovation environments.

Even though the new national innovation strategy remains broad in its formulation, it still offers some orientation for regional innovation policies in Sweden up to the year 2020. By emphasising the interplay of various actors in the public and private sector and on the institutional framework conditions, the strategy clearly advocates a systemic view in line with regional innovation systems theory. It emphasises the need to go beyond traditional science- and technology policies and to take a broad-based view that combines science- and technology with more user-driven and interactive modes of innovation. Furthermore, it emphasises the need to align regional and national innovation strategies, and to support regional innovation systems and clusters in all parts of Sweden (Regeringskansliet 2012; OECD 2013).

2.3 Regional policy context in Värmland

The region of Värmland is situated in the western part of Sweden along the border of Norway. The region has a total population of 273,000 and the capital city Karlstad a population of 87,000. Karlstad University is a relatively young university with around 12,000 students and a large distance learning component. Like many other non-metropolitan regions in Europe, Värmland is facing socio-economic challenges related to its peripheral location, such as a business structure dominated by traditional industries, weak endowment with research organisations, a negative demographic development, and a relatively low participation in higher education. In order to counterbalance these challenges, regional authorities have made considerable efforts to support innovation-based regional development. Strengthening the regional innovation system and upgrading the existing industrial structure through promotion of clusters has been of high priority for many years. Linked to the promotion of innovation, regional policy makers have been strongly engaged in fostering knowledge exchange between Karlstad University and local businesses.

Several policy projects addressing the regional innovation system have been designed and implemented in the recent years.

In 2012, Region Värmland published its new regional cluster strategy 'Värmland model 2.0' which sets up priorities for cluster development for the years 2013-2017 (RegionVärmland 2012). The cluster strategy can be seen as a sub strategy to the broader regional development programme (Värmlandstrategin 2014-2020), and as an input for the integration into various EU regional support programmes (in particular the European structural funds ERDF and ESF). The strategy builds on previous successful cluster policies carried out in the region and aims at accelerating the development of existing clusters, strengthening their global visibility, and providing long-term perspectives to the cluster organisations. The following four activities have been listed as most important for achieving the objectives: 1) Increasing cooperation with Norway through export relations and business

partnerships, 2) stimulating inward investments, especially Norwegian, 3) increased local cooperation between the cluster organisations, the local administration and the local businesses, 4) support of each cluster's strategic goals for industry renewal and growth. Another main objective is to increase international competitiveness of the region by actively supporting cluster organizations which fulfil certain criteria. The Paper Province meets the formal requirements already now, Compare and Steel & Engineering are expected to be eligible very soon. A management committee representing Karlstad University, public actors and the cluster organisations are in charge of implementing the strategy. The impact and success of the strategy is evaluated bi-annually.

Together with the collaboration agreement between Region Värmland and Karlstad University (RegionVärmland and KaU 2010), the cluster strategy 'Värmland model 2.0' constitutes the main innovation strategy of Värmland today.

2.4 Implications for Region Värmland and Karlstad University

A key challenge for Region Värmland is to align its policy tools and programmes with the wider policy framework set on the supranational level through Europe 2020 and Horizon 2020 and on the national level through the 'The Swedish Innovation Strategy'.

In terms of European innovation policy post 2013, smart specialisation calls for evidence-based identification of competitive advantages around which inputs of regional stakeholders and resources can be concentrated. On top of this, it asks for measures to strengthen regional innovation systems in order to maximise knowledge flows and spread the benefits of innovation throughout the entire regional economy. Arguably Värmland is well placed to build on the work that is already taking place in order to align with a 'smart' approach, although some work may need to be done in coordinating the evidence base to justify the selection of specific sectors and industries to focus on.

Horizon 2020 may be a more attractive prospect for Karlstad University and local businesses than previous framework programmes (FP) with its increased emphasis on collaborative and multidisciplinary working, framed within a 'grand challenges' approach. With relationships already established, and some significant good practice to build upon the region could find itself on the 'front foot' in tapping into the opportunities that Horizon 2020 could bring.

The national innovation strategy emphasizes the need to support regional innovation systems and clusters in all parts of Sweden and offers orientation concerning major societal challenges to be addressed by innovation policies at the national and the regional level. And yet, it remains broad in its formulation and leaves enough scope for the design and implementation of regional development strategies which are place-based and fine-tuned to the characteristics of the regional innovation system and the local business structure.

Regional Värmland's development strategy supports a number of clusters which are based on existing competencies in the region, such as paper and pulp, packaging, steel and engineering, ICT, and tourism. Those clusters have been selected in a long-term and bottom-up process starting already before the year 2000. Recent policy efforts have been concerned

with upgrading existing competencies through increased regional, national and international cooperation, and, as central element of the current regional strategy, an increased collaboration between the local business structure and Karlstad University. The collaboration agreement between Region Värmland and Karlstad University (RegionVärmland and KaU 2010) and the cluster strategy 'Värmland model 2.0' are well in line with the policy framework outlined by the European and national innovation strategies. The recent success of one of the clusters in VINNOVAS's Vinnväxt competition can be interpreted as an indicator for a good alignment of the regional development strategy with the national policy agenda.

Section 3 – The Värmland Story of University/Region Cooperation

3.1 Karlstad University

Karlstad University is one of the youngest universities in Sweden, gaining university status in 1999. It has 12,000 students and 1,200 staff. According to its prospectus, Karlstad University seeks to contribute to the development of knowledge both at the international, national, regional and individual level. To achieve this teaching and research is underpinned by a close dialogue with private companies and public organisations. In fact Karlstad University has an explicit aim “to become one of the best universities in Europe with regard to external cooperation”.

The University has strong connections in its research and teaching with regional innovation business clusters. This is reflected through research funding partnerships, professional up-skilling programmes, degree programmes including work-based learning, and close matching of university courses with regional needs. For example, KaU offers a number of engineering programmes whose connection to regional business needs is reflected in the high number of applications for these courses.

The University continues to develop research centres and research with the capacity to enhance innovation as part of its goals of being a “modern university”. Among others, one of the most notable is the Service Research Centre (CTF) – one of the world’s leading interdisciplinary research centres focusing on service management and value creation through service. CTF, has, for example, over 60 researchers drawn from business administration, working-life science, sociology and psychology. Given that servicing of products is a key long term business opportunity for most manufacturers as well as the service sector itself this capacity is relevant to all of the region’s clusters

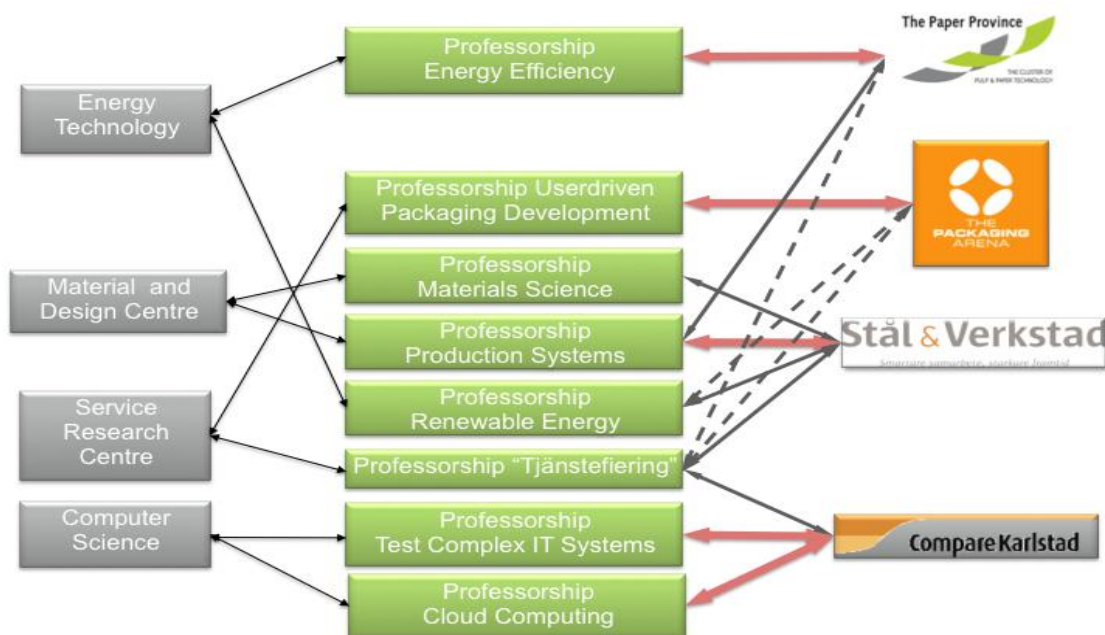
3.2 Description of the collaboration between the region and the university

During 2005-2006, a study on regional development in Värmland has been carried out in connection to the OECD initiative ‘Supporting the Contribution of Higher Education Institutions to Regional Development’ (OECD 2006; TietoEnator et al. 2006). The purpose of this study was to draw implications from past and present experience with collaborations between regional bodies and universities/colleges in several OECD regions. The review drew on a self-evaluation process initiated and led by Karlstad University and conducted by a steering committee representing the main regional and national actors. The resulting report had strong consequences for the regional policy strategy in the subsequent years. It led to a first formal agreement for collaboration between Region Värmland and Karlstad University for the period 2008-2010, which laid the ground for intense collaboration between the two parties up to today.

During 2009-2010 and as a follow up to the previous OECD project, Region Värmland and Karlstad University participated in an evaluation project named PURE (PURE 2010). PURE was intended to provide a new agenda for the future development of the regional economy. Based on the results of PURE, a number of goals were set in order to improve the functioning of Värmland's regional innovation system, amongst others a stronger internationalisation of the regional economy, stronger connections between the clusters and the education system, fostering of creative entrepreneurship (e.g. fashion, film, art, drama, music, museums), better regional branding and place-marketing in order to increase the global visibility of the region, and a stronger participation in national and European decision making processes.

In 2010, a new agreement was signed between Karlstad University and Region Värmland which was intended to guide the collaboration between the university, the regional authorities and the local businesses during the period 2010-2014 (RegionVärmland and KaU 2010). Four cluster organisations (Compare, Steel & Engineering, The Paper Province and The Packaging Arena) participated in designing the content of the agreement, and the directors of local municipal schools were also involved in the development of school research. Purpose of the current agreement was to 1) increase the joint production of knowledge by Karlstad University, local business and clusters, regional authorities and the local school system, to 2) build strong research environments at Karlstad University, and to 3) contribute to innovation and growth. The current agreement comprises the installation of ten new professorships at Karlstad University in subjects in demand from the cluster organisations and regional leaders. Eight of the ten professorships are defined in the intersection between the university's strategies and the development areas of the cluster organisations in Värmland (and their member companies). The research areas that these eight professors cover include: production technology, improved energy efficiency, the development of services in the engineering sector, user-focused packaging development, renewable energy, testing of software systems, materials science, and cloud-based IT services. The other two professors are linked with municipal school development and regional development in general. By the end of 2013 all but one of the professors are in place and recruitment is ongoing for the final one.

The following diagram shows how the 8 professorships linked to the regional industrial specialisms act as a bridge between the university research centres and the four cluster organisations.



In addition to the ten new professorships, the new agreement also includes a leadership programme for the period 2012-2014. The program aims to support the development of potential future research leaders, identified for key strategic areas within Karlstad University and within the agreement with Region Värmland. It provides education and competence development for such leaders along four main tracks: personal development, leadership development, strategic intelligence with respect to developments and trends in business, public sector and academia and, finally, increased capacity to address professional leadership issues and questions within academia as well as in interaction with business and public sector on all levels including regional, national and international. The program deals with concrete topics such as research collaboration, external research funding, exploitation of research & innovation as well as communication of research and research results.

The third largest initiative within this research collaboration concerns principal financing of CERUT, a research centre that conducts research in regional development with a national and international (EU) perspective. This research has been performed over many years and can be viewed as an inheritance for the current research agreement. In addition to Region Värmland financing this research, the regional association and associated municipalities provide research resources in connection with data collection or other form of development activity. CERUT's activities are characterized by a multi-disciplinary approach and a strong engagement with society. In doing so, it seeks to have an active and ongoing dialogue with, among others, municipalities, national public bodies, regional authorities, firms, associations, NGOs and research organizations. In general, CERUT can be considered as illustrative of KaU's strategy to engage with the region (see also below under 5.1)

It was announced in June 2013 that the regional business cluster The Paper Province has received SEK 130 million from the Swedish research and innovation agency Vinnova, as one of three winners of the highly competitive Vinnväxt competition. The grants will secure the financing of The Paper Province for the next ten years. The funds will be used to research, develop and commercialise new products and services in the bioeconomy, mainly for the

forest industrial sector. Significantly this form of innovation bridges several cells in the framework introduced in Table 1. All partners acknowledge that this outcome would have been unlikely without the cooperation agreement between the region and Karlstad University. This demonstrates a major success outcome for the collaboration and shows what can happen when regions and universities act together in 'smart' ways.

Section 4 – Key Findings

4.1 Collaboration between the regional stakeholders

The preparation of research & innovation project proposals has so far been a central activity in all professorships. In several cases, the professors have engaged with regional actors to prepare project proposals. The most important initiative was the successful Vinnväxt proposal 'Paper Province 2.0' to which several professors contributed with ideas and insights from their respective fields, ranging from social sciences to engineering. Over time, the initial fragmentation of ideas, which is not unusual in such multi-disciplinary endeavours, was overcome and a more holistic and integrated approach achieved. For the process of integrating the various perspectives, the professorship for regional development was considered to be important. This professorship deals with aspects that cut across different sectors of society including civil society, businesses, universities and the public sector. Important policy terms such as living labs or the quadruple helix were introduced, which most likely had an effect on the evaluation. In general, all professors reported on various activities with regional stakeholders aimed at identifying opportunities for joint project applications. Some of the project applications have already proven to be successful. The extent to which professors have collaborated with regional stakeholders has depended on various factors. The number and competencies of potential collaboration partners is one very important factor. In fields related to service innovations, manufacturing, and public services there are more opportunities to collaborate with regional stakeholders than in fields where more advanced and specialized technologies are applied. However even in the latter case, where only few companies with relevant competencies are present in the region, the respective professors have identified relevant regional partners and outlined some promising initiatives. These initiatives, however, have frequently included the combination of regional and extra-regional resources. In sum, the preparation of project proposals was an essential part of the work for all professors.

Furthermore, the professors have engaged in various forms of informal knowledge exchange. It was reported for instance that professors have attended meetings at cluster organisations, have regular informal talks with cluster organisations, or have been involved in some activities of Region Värmland such as the collaboration for organising a visit to the open days in Brussels. In this context, students and regional policy makers had the opportunity to directly interact with each other and exchange ideas. Furthermore, study visits were organised together with the cluster organisations. Some professors reported to have collaborated in developing technical education with cluster organisations or to have provided guest lectures in the context of vocational training activities organised by clusters. Partly, these forms of knowledge exchange were appreciated and helped in reducing barriers between professors and their regional environment. Partly, frustration was voiced because the level of these interactions can be quite far from the "research frontier" and there is a lack of a strategic approach for upgrading capacities. On the other side, it was mentioned several times that professors sometimes 'speak a language' that may not be very

relevant for local firms. Some regional stakeholders have also expressed the wish for more frequent interaction with the professors. Overall, however, the feedback from professors and cluster organisations was positive in relation to informal knowledge exchange whereby some adjustments and improvements could be made if professors and clusters aligned their expectations and activities more closely.

The professors have additionally provided support to firms in improving certain aspects of their business functions or in developing innovation capabilities, which included consulting-like activities such as workshops and advice to specific firms. Also the “professor a day” initiative falls into the category of consulting-like activities. This initiative aimed at reaching out to smaller firms and reducing the barriers for them to engage with universities. The feedback for the “professor a day” initiative was mixed. From the side of the professors it was questioned whether one day suffices to make an impact. From the side of the cluster organisations, however, the initiative served an important purpose in signalling to small firms that the university invites for collaborations. Overall the professors have expressed mixed opinions about consulting-type work. While some professors seem to accept respective activities as part of their perceived duties for the professorship, others clearly articulated that consulting-type work could not be the purpose of a professorship. Also the reactions from the cluster organisations have varied. Some cluster organisations acknowledged that the professorships link to regional development on a rather systemic level and through other mechanisms than consulting. However, also the opinion was expressed that professors should engage more in direct support to firms. Hence, it seems that a mutual, more closely aligned understanding needs to be developed to what extent professors are expected and should engage in consulting-like activities.

Another way of upgrading the competencies of local firms is through the work of students. By guiding student work, professors’ knowledge can reach firms while, at the same time, students have more time to exchange on a more regular and intensive manner with firms. Also, this avoids possible issues of unfair competition, which might arise if professors support specific firms directly and if not all firms have equal access to such support. Concretely, professors have mentioned that their students collaborate with firms for final year projects, master theses or PhD theses. It was mentioned that in particular industrial PhDs (‘industridoktorand’) are excellent knowledge brokers between the university and firms. However, only few professors had the possibility to work with industrial PhDs. Such collaborations through the work of students allow for more durable links between the businesses and the university and thereby facilitate interactive learning processes. In addition, students may be offered a job after completing their studies. This will increase the firms’ competencies and in particular it will increase their capacities to absorb scientific and analytic types of knowledge. Furthermore, through existing relationships with professors at the university, experience in the academic system, and exposure to the way of thinking at universities, employment of graduates will facilitate future university-business collaborations. Overall, the professors and also cluster organisations have strongly supported this way of collaboration between the university and regional stakeholders, however, lack resources to scale up this activity.

4.2 Internal vs. external recruitment

While we find that the professors do collaborate to a significant extent with their regional environment, the extent of collaboration depends partly on whether professors were recruited internally or externally. Five professors have been recruited internally. These professors build on existing networks and have found it relatively easy to engage with regional actors. This might also relate to the fact that these professorships largely target industrial fields and economic areas, which are relatively prominent in the region. More critically, one might, however, ask the question about additionality, i.e. whether regional collaboration has increased through the funding of internally recruited professors. The feedback from the professors differed quite substantially in this regard. One professor articulated that the professorship had shifted the priority towards engaging more with regional stakeholders, including for instance the selection of regional firms as collaboration partners or conducting regional case studies. Another professor suggested, however, that s/he would in any case have collaborated at the regional level and that her/his approach had not changed substantially because of the professorship. The externally recruited professors have obviously had a disadvantage as they started to build up networks from scratch. The externally recruited professors, however, have drawn extensively on extra-regional contacts. Through these contacts, external resources and knowledge can potentially be acquired in Värmland. Most of the external professors have been quite active in contacting and approaching local firms. We have received for instance a comprehensive list of companies in the sector relevant for one professor with information on the technological capacities of each firm. Still, some regional stakeholders have criticised that the “new” professors lack visibility in the region. The professors have been supported by the cluster organisations in establishing local networks. However, it seems that the level of support has differed and that an exchange of experience between professors and cluster organisations could improve the networking activities between professors, clusters and businesses. Overall, there are advantages and disadvantages associated with hiring internal and external professors. These advantages and disadvantage were balanced out well by combining internal and external recruitment.

4.3 Relationships with cluster organisations

The four cluster organisations are important intermediaries for the professors to reach out to regional stakeholders. Each cluster is primarily linked to two professorships. However, there are some professors who have links with more than one cluster. The collaboration between the professors and the cluster organisations builds, in general, on a high level of trust. The professors and the cluster representatives communicate in an informal manner, which is an indicator for a high level of trust. The involved stakeholders regard trust as one of the key success criteria for their collaboration. However, there are no regular or institutionalised coordination meetings. Some professors and also some representatives from cluster organisations felt that more institutionalised meetings in addition to the

informal communication could be helpful to align the partnership more strategically. As mentioned before, the extent to which individual professors have collaborated varies. One professor reported to have had 2-3 informal contacts per week while another professor indicated to have hardly had any contact. While, overall, we have received positive feedback from most interviewees, there are some factors hindering the realisation of the full potential of this partnership. First, it was mentioned that there might be an overlap between intermediaries. For instance, the activities of the cluster organisations may partly overlap with the ones of the Material Centre and the Energy Centre. The Material Centre and the Energy Centre have played an important role for some professors to link up with local firms. The additional added value, or the complementarities between these centres and the cluster organisations were not always visible. Second, another important aspect is the alignment of the expectations between the professors and the cluster organisations. The extents to which expectations are aligned differ considerably across respective cluster organisations and professors. While expectations are aligned well between some stakeholders, we have also heard that not all professors know what they can expect from the clusters organisations, and some cluster organisations seem to have expectations that are difficult to fulfil through the professorships. Some cluster organisations, for instance, expressed the wish that the professors should undertake more consulting-like tasks such as engaging with individual businesses as kind of advisor or providing ideas to businesses that they can commercialise. One interpretation was for instance that 25% of the professorship is paid through the region and therefore the professor should reserve 25% of the time for regional companies. While the professorships are supposed to play an important role in exchanging knowledge and upgrading the competencies of firms, the role of the professors can probably not be to provide consulting services. Third, the collaboration between professors and businesses also depends on the extent to which they have acquired and apply different types of knowledge and competencies. Some professors focus on applied research in areas that are relatively close to the knowledge and competencies currently used in firms. In other cases, the knowledge used by professors seems to be more analytical and closer to the technological frontier. In this case, the knowledge gap between professors, cluster organisations and firms is larger, which requires other forms of collaboration, such as a focus on education.

One of the biggest challenges that many of the professors as well as cluster representatives alluded to concerns a lack of absorptive capacity for regional firms. Companies, especially SMEs, experience difficulties making effective use of the professors' knowledge even when they are connected to the university and exposed to its knowledge. According to some of the interviewees, this has to do with the industrial structure in the region which consists predominantly of smaller firms working in service and consulting sectors but lack large firms that have sufficient in-house capacity to conduct R&D. Obviously, this is dependent on the area in which the professor is working where, as we have identified above, in some cases there are many potential industrial counterparts in the region, including large firms, while in some case the amount of relevant firms in the region is very limited. As a result, some of the professors have to look beyond the region in search for suitable collaboration partners at the national and/or international level where they are prone to find larger and more research-intensive firms, for example in the Oslo area. Another, absorptive capacity-related problem that was mentioned concerns the difficulties that SMEs face, not just to make use

of the professors' knowledge, but also to formulate questions or problems that may be relevant for research and that could be dealt with in a collaborative project. Sometimes this may have to do with the different 'kinds of language' that are spoken in universities and business respectively, creating barriers and gaps in terms of effective communication, sometimes the cognitive gap may be deeper and of a more fundamental nature. Finally, there is the challenge of co-financing. Many collaborative research projects and programs require co-funding from business. This can be a critical issue for many SMEs that lack the financial resources to co-fund such collaboration.

Visibility of professors is important – there need to be tools to do this, but a 'one size fits all' approach should be avoided. These difficulties were mainly mentioned by professors that had been recruited externally. Therefore this barrier can often be related to the relatively early stage of the professorship and the little time and opportunity that the professor has had in finding and contacting relevant actors in the region. In some other cases, however, there are only a few interesting regional actors or there has been some difficulties bridging the communicative and cognitive gaps in the relationship between the professor and firms. Similarly, some professors (again, mainly the ones that were recruited externally) found it difficult to find and establish networking opportunities within KaU. In some cases, cluster organizations have been helpful in finding ways for the professors to become more embedded in regional networks of firms, for example by organizing seminars and raising awareness about the professorship or through establishing bilateral meetings between the professor and individual firms. In other cases, professors have articulated a need to become more actively supported by the cluster organizations to find and enter networks in the regions.

4.4 Defining Success

Interestingly, the professors seem not to have been informed clearly about what should be achieved through the professorship except the relatively general requirement to improve the collaboration between the university and regional stakeholders. Hence, the professors defined success individually. In general, success includes a combination of factors relating to the university and academic achievement, project work, support of companies, and regional impact. We present here the variety of definitions for success. Strongly represented was the definition of success through academic achievements such as scientific outputs, the growth of the research group, an increasing number of PhD students and post doc researchers, better conferences and networks, and more generally to become a strong university in the respective fields. In order to achieve these objectives, the professors have expressed a strong need to acquire external funding. Attracting research funds is, thus, considered to be an important intermediate objective and indicator for success. External research funding will be necessary to complement the available resources and to thereby contribute to gaining the critical mass for both research and regional outreach activities. In this regard, professors did communicate the aim to define projects that are of interest from a research perspective and at the same time contribute to regional development, i.e. creating a win-win situation.

In other words, projects should be formulated in such a way that they contribute to generating new knowledge at the research frontier and equally create learning opportunities for companies. Furthermore, it was suggested to include MSc students, PhD students and Post Docs in the projects. Graduate students and junior researchers could then work more closely with regional stakeholders and facilitate interactive learning and knowledge exchange between different sectors in society, including universities, businesses, civil society, or the public sector. Besides research excellence, other definitions of success have been formulated. According to most professors, success of the professorships is also defined by an improved collaboration with companies. For one professor, success is to become the natural speaking partner for companies. This is not necessarily the case now because some companies have strong barriers to contact universities. On the other hand, the companies with a history of collaborating with universities often have established links to older universities in Sweden. In more general terms, success of the professorships was also defined by the extent to which they contribute to the growth and development of local firms and to the extent to which firms will be happy with the collaboration and the knowledge acquired. The professors have also mentioned output indicators for success such as evidence for continuous collaboration activities or the number of industrial partners. Furthermore, success was also defined by the extent to which knowledge is shared in the region and to what extent there is a co-production of knowledge and interactive learning. This implies that the professors and other regional stakeholders work together in generating knowledge that is both relevant for research and regional development. Overall, therefore, the variety of definitions of success seems to cover quite well what the professorships are intended for. However, professors might focus on one or a few aspects and have defined success individually.

4.5 Strategic Issues

As regards the fit of the perceived requirements under the professorships and the strategy of KaU, we have received mixed responses. It seems that the professorships fit well with KaU strategic orientation. The majority of the professorships fall directly within the strategic research environments at KAU., In addition there is a good fit in terms of emphasis on the dialogue with firms and on regional outreach activities, i.e. the typical third mission of universities. Furthermore, moving from an organisation focussed on teaching to one working in the field of applied research, this also fits rather well with the needs of local companies. However, the interviewed professors reported that they have perceived a strategic change at KaU. The focus has become predominantly on research excellence, following trends in research funding coordinated by the national science council. The number of publications and citations seems to be the main indicator in performance evaluations. Since recently, the university publishes yearly publication rankings of all professors. This strategic shift seems to largely neglect local outreach activities because such activities frequently contribute relatively little (or at least less than other academic activities) to the success in publishing articles in highly ranked international journals. The professors criticised that there are different ways of performing well, including education and collaborations with regional

stakeholders. However, there is no scoreboard for instance relating to regional collaboration, which creates a certain strategic clash with the intentions of the professorship. Professors reported that they aim at finding a balance between research excellence and other tasks. The attempt is to be successful in research and regional collaboration. One professor mentioned that s/he tries to deal with these partly conflicting objectives with integrity and adequately consider the various interests. One professor adopted the strategy of creating visibility for his/her regional activities by writing articles for newspapers and by using other means for public relation (e.g. Twitter). Another response was that strategies always change and that focussing on a strong research group will fit with any strategy. As regards funding, research excellence is becoming increasingly important and therefore the strategy of KaU to strengthen this field is understandable. On the other hand, Horizon 2020 and other Swedish funding opportunities (e.g. through the national innovation agency VINNOVA) seem to increasingly emphasise the collaboration of universities with other sectors in society. In this context KaU is closely monitoring developments in the Swedish research and innovation funding landscape. KaU has a good reputation for being strongly linked and integrated in its regional environment. It was reported that a mix of academics and people with industry background at KaU are a considerable advantage in this respect. It was argued, therefore, that it is a good strategy to continue nurturing the regional networks of KaU. In any case, getting appreciation for regional collaboration, outreach activities and third mission tasks seem to be an important issue for the professors, particularly because they are supposed to perform these tasks under their professorships.

4.6 Operational Issues

Moving from a strategic level to the organisational embedding of the professors within the university, we find significant differences. Some professors are embedded in relatively large research groups. These research groups can draw on significant resources. They integrate or connect some of the professorships and thereby creating synergies between the activities. Being embedded in research groups, the professors can also draw on junior researchers, PhD candidates and a significant number of students. The funding of the professorship complements in such cases other available funding such as for instance the Materials and Design Centre, which is funded by structural funds. Other professors have expressed that they work relatively isolated, partly not with full-time funding. Also, the infrastructure and equipment required to perform cutting edge research or to be an interesting partner for larger research projects is lacking for some professors. These professors use some of their time to find resources and opportunities to fund these basic requirements. In the meantime, good opportunities slip away. One professor mentioned that s/he had been contacted by a firm to conduct industrial research but that s/he had to refer to another institutions due to a lack of the required infrastructure. Besides the embedding in research groups, several of the professors mentioned that they lack the resources to employ junior research staff or PhDs. This leads to one important criticism, which was voiced by the majority of the professors. There seems to be little transparency how much funding is associated with a professorship, what the funding is used for and how much is left. Some professors thought that there

should be funds for PhD students as the professorship only finances 25% of the professors' salaries. There was confusion as some professors apparently could fund PhDs from the professorships while other could not. Overall, it seems that some professors have too limited resources and lack critical mass in their research environments in order to exploit their potential, and that more clarity and transparency as regards funding would be appreciated.

An imbalance between some professors and industry areas in terms of resources for research, equipment, staffing etc. is inevitable, but are there ways to balance the field more? Many professors 'complained' about the lack of resources that they experience in order to do the kind of research that they have in mind. While the professorship pays for the professor's salary costs, little additional resources are available for buying laboratory equipment and technical infrastructure. Similarly, it has been noted throughout our interviews that there is little money available for recruitment of junior academic staff (particularly PhD students) while this is often seen as an important asset for the professor, both in terms of research assistance as well as in establishing and maintaining contacts and linkages with stakeholders in the region. This lack of resources runs the risk of creating a catch-22 situation in which the professors are expected to create critical mass by winning competitive research grants but at the same time lack the critical mass in order to put a competitive proposal together.

4.7 The collaborative process between the university and the region

Issues of transparency and clarity on the expectations of the collaborations, available funding, roles and responsibilities etc. need to be more explicitly addressed. This will also go towards managing expectations within and between partners – what are the best tools to achieve this (without creating a heavy bureaucracy). This mismatch may have partly added to the difficulties that some of the cluster organizations and firms experience in terms of a communicative gap with the professors. It also suggests that researchers' and business stakeholders tend to have different time horizons with regard to collaboration and results. Secondly, there has been some confusion with regard to the position of the professors within KaU. To what extent are the tasks, activities and responsibilities of the professors within the regional collaboration program different and/or similar to regular professors at KaU? It seems that part of this confusion could be explained by the fact that most of the negotiations concerning the regional professorships had taken place at a strategic level within KaU while head of departments had been less involved in these negotiations. As a result, some of the regional professorships were not very well embedded in the operational university structures of KaU. A very concrete example of such mismatch concerns the way output and success of the professors is measured and the extent to which such measures go beyond the usual indicators on research productivity (i.e. publications and patents) to also include 'third tasks'. Furthermore, it is somewhat unclear to what extent the regional professors should get involved in teaching duties while some professors noted that they had little visibility with the department and university more broadly.

Section 5 Conclusion and Recommendations

5.1 The Way ahead

The collaboration between KaU and Region Värmland built upon the OECD review process which took a broad view of the role of universities in regional development. The OECD perspective in turn informed the European Commission's Guide Connecting Universities to Regional Growth. This now is one of a family of Guides underpinning the new focus of European regional policy as a contributor to the Europe 2020 vision of 'Smart, Sustainable and Inclusive Growth' in which regional smart specialisation is a key element. In our literature and policy review we summarised both the broadly based role of universities in regional development in the round and the need for sharply focussed mechanisms to deliver impact. Region Värmland and KaU have together made great progress by focussing on regional competitiveness in key business clusters. We strongly support the continuation of this programme. In the paragraphs below we suggested mechanisms by which these relationships can become **transactional** and embedded in the normal processes of both the university and the region. However we would also urge the university and the region to think ahead and consider how the university can once again act as a **transformational** agent within the region. This could be done by mobilising the intellectual resources across the university (not just the new regional professors) to scan the economic, technological, social and political environment to identify the long terms global societal challenges which have a regional dimension and to which the university working in partnership with national and regional actors can make a contribution. This could take the form of regional futures of Foresight exercise. Such an approach would fit well with the perspective being adopted in Horizon 2020 and concerns of the smart specialisation approach with not only technological innovation but also social innovation – for example in terms of new ways of delivering public services and meeting the needs of an ageing population and which also provide opportunities for new business growth. In the paragraphs below we suggest some activities that can contribute to both the transactional and transformational role of the university

5.2 Building on Success

While this evaluation focuses on the specific collaboration agreement in place between the region and university, we suggest that a broader and more holistic perspective on region building should be adopted. Region building relates to creating synergies between the various activities and existing competences in the region. New growth opportunities frequently arise at the intersection between different but related competences

By collaborating with the 'regional' professor in drafting the proposal, Paper Province introduced and employed concepts from state-of-the-art research on regional development and innovation (such as smart specialization, combinatorial knowledge-based innovation,

servicisation of the economy) which provided additionality and legitimacy to the proposal to really engage with regional renewal and transformation processes beyond business-as-usual. The University needs to continue to foster knowledge exchange and learning *within* the region and *between* different sectors of society combining the *generation* of knowledge *about* regional development with the *exploitation* and *dissemination* of this knowledge for regional development.

Regional engagement is a challenging task for universities and in a number of universities is informed by an internationally recognised research capacity in this field that can inform university and regional practice. The social science professors working in this field need an appropriate institutional setting and support. While CERUT does valuable dissemination work within the region it is not clear to us how this contributes to the needs and opportunities for transformational change. We therefore recommend that the University in partnership with the Region review how the University's role in region building might best be organised going forward. For example such a review might ask who is responsible for developing a set of indicators to evaluate the impact of current policy interventions, identify success stories (such as the successful VINNVÄXT proposal) that can be diffused widely within and beyond the region and ensuring that both the University and the Region continue to be at the heart of regional development policy making in Europe.

5.3 Institutionalising the Collaboration

It is recommended to **institutionalise the collaboration mechanisms** between the professors, between the professors and KaU leadership, between professors and cluster organisations, as well as between the Region Värmland, KaU leadership and the cluster organisations. By institutionalising the collaboration mechanisms, we mean that regular occasions for feedback, exchange of experience, learning and adjustment of expectations should be introduced. By doing so, the 10 professorship programme will become more effective and the impact is expected to increase significantly because of several reasons.

- First, the professors share similar challenges in developing linkages with other regional stakeholders. Externally recruited professors face more difficulties than internally recruited ones in establishing such linkages. Also, the challenges differ depending on the field. Still there is substantial potential in learning from each other's experience.
- Second, the professors equally share similar challenges as regards mobilising sufficient resources to work effectively. Again, it is clear that the resource situation differs between professors. However, we came across some innovative ideas for funding the required infrastructure and mobilising the needed resources. Exchange of experience will also be very valuable in this regard. Possibly the 10 professors could also lobby together for sufficient resources to fulfil the mission of the programme.

- Third, growth potentials often arise at the interface between different disciplines. Also, societal challenges are frequently multidisciplinary problems. By integrating and probing common interests and promising overlaps in scientific specialisations (or the discussion might lead to a referral to other professors), these growth potentials are more likely to materialise.
- Forth, professors are partly funded through the professorship programme and partly through other funds of KaU. The KaU strategy focuses on research excellence but also refers to third mission tasks and to reaching out to regional actors. Hence, by providing a mechanism of coordination between KaU leadership and the professors, the expectations for the professorships can be better aligned. As there are multiple objectives relating to among others academic achievement and outreach activities, strategic coordination will help to find an appropriate balance between the different objectives. Also, this allows viewing the 10 professorships as a whole providing opportunities for a certain specialisation depending on the competences of the professors and the specific context conditions.
- Fifth, although the collaboration between professors and clusters works well overall, there are differences as regards the extent of collaboration. Also expectations are not always aligned. By explicitly discussing expectations and what both professors and clusters can reasonably contribute and expect, the collaboration can be further improved. By explicitly addressing these issues, there is a baseline with which the actual collaboration can be compared. Consequently, it can be identified what worked well and what worked less well allowing for better feedback mechanisms and learning possibilities in the future.
- Sixth, there were intense discussions between Region Värmland, the clusters and KaU leadership to prepare the 10 professorship programme. However, this dialogue stopped after the programme was agreed. We suggest that these key stakeholders engage in a continuous dialogue, for instance by setting up a strategic board for the professorship programme. This strategic board can meet at regular intervals. At the meetings the progress towards the strategic objectives of the programme can be discussed and corrective action taken when necessary. As the clusters as well as KaU leadership will be in touch with the professors, these corrective actions can be directly fed-back to the operational level.
- Finally, improving coordination mechanisms shall not lead to an extensive administrative burden. The intervals of these formal meetings should be regular but don't need to be very frequent as there is a good informal collaboration. It seems that well prepared coordination meetings once or twice a year should suffice. These meetings need to be organised well and follow-up needs to be ensured so that the meetings create value.

5.4 Outreach and Impact

In order to increase outreach and impact of the professorship programme, it is suggested that linkages are established and cultivated with related research institutes and activities. For instance, the SP Technical Research Institute of Sweden has recently established a new office in Karlstad focussing on service research and service innovation. The activities of SP in Karlstad are therefore closely linked to the Service Research Centre (CTF) located at KaU. As the professorship programme also finances two professors in this area, a good collaboration between KaU and SP can therefore increase the impact and sustainability of both the professorships and SP. It has to be noted that it was not the objective of this evaluation to examine the collaboration with such related centres and activities. What we suggest is that professorships should be anchored and linked strategically to related institutes and activities. For this to happen, an institutionalisation of the coordination mechanisms as suggested above is important.

While this evaluation focuses on the 10 professorships, we suggest that a broader and more holistic perspective on region building should be adopted. Region building relates to creating synergies between the various activities and existing competences in the region. New growth opportunities frequently arise at the intersection between different but related competences. Hence, to link and connect different elements in Karlstad's regional innovation system is of high importance. CERUT together with the professorship for regional development as well as the professorships for education can potentially play a central role for region building. CERUT and these two professorships cut across the various sectors in the region. Hence, they are ideally situated for fostering knowledge exchange and learning *within* the region and *between* different sectors of society. CERUT already now combines the generation of knowledge *about* regional development with the exploiting and disseminating this knowledge *for* regional development. We suggest that the potential from such crosscutting activities are exploited more and that if required additional resources are provided for region building. For instance, it would be useful to develop a set of indicators that help evaluating the impact of policy measures and to identify success stories (such as the successful VINNVÄXT proposal) that can be diffused widely within the region.

5.5 Collaboration with SMEs

There is a need to intensify and improve the collaboration with SMEs in particular. Here, support for research and innovation is most needed as these firms are too small and lack resources to carry out these tasks on their own. The cluster organizations are an obvious intermediary to establish, strengthen and consolidated linkages between the professors and SMEs. Through the cluster organizations, SMEs are able to build collaborations that could jointly benefit from cooperation with the professors, e.g. by sharing a particular Industrial PhD at KaU or addressing problems / developing and formulating research projects that are shared among a group of firms and, thus, transcend the individual firm level. Some

professors emphasized the need to engage more strongly in the co-development of knowledge between firms and university rather than having a more linear approach through commissioned applied research. In this, the triple helix collaboration around the VINNVÄXT initiative 'Paper Province 2.0' could act as a good example or inspiration. Cluster organizations could also be used more actively to design and set-up competence development programs for SMEs aimed at improving the absorptive capacity within these firms. In general there seems to be a wish for more regular and intensified contact between cluster organizations and the professors.

5.6 Peer learning

There is a need among the regional professors to make better use of each other's experiences in engaging with the region. In other words, the exchange of practices among the professors could be improved and intensified. Concrete suggestions to do so are more frequent meetings among the professors and network-building across the professorships. It should at the same time be acknowledged that it would not be effective to aim for a one-size-fits-all support structure for the professorships. Rather a tailored approach is needed that takes into account the specific needs of the professors and their counterparts in the region. There is considerable variation across the professors in terms of network linkages and opportunities, resource availability, embeddedness within the university, research interests and specific skills and competences. Expectation concerning the professorships should to some extent be in line with the resources (both tangible and intangible) available to the stakeholders.

5.7 Communicating success

Most stakeholders, both at university and in the region, agreed for a need to create and communicate 'success stories' that help to inspire others to engage in regional collaboration. This also helps shift focus away from a narrowly defined concern with research excellence measured in publications and citations to a more 'realistic' scoreboard that also takes account of 'soft' measures of success in regional research and innovation collaboration such as shared agendas, informal knowledge exchange and awareness creation in the region.

Annexes

I. Terms of reference

Purpose of the evaluation

The purpose of the evaluation is to produce information to make an assessment whether the various initiatives are correctly designed to contribute to the strategic and other intentions that were formulated in the declaration of intent and if implementation has been in line with the strategic intentions outlined in the declaration of intent.

Another purpose is to produce information to give guidance for how the ongoing collaboration will take form in the final year, 2014.

The third and most important purpose is to produce information that will give guidance for the long-term collaboration between Karlstad University and Region Värmland in the areas of research, innovation and coordination in the years after 2014.

The following issues shall be addressed in the information produced: the conditions necessary for KaU to perform activities that are relevant for businesses and the public sector, the interests and requirement of businesses and the public sector in the region, and relevant policies and programmes at regional³, national⁴ and European⁵ level.

Target group for the evaluation

The steering group for research collaboration, i.e. the university management team comprising the chancellor and vice-chancellor for collaboration and the university director, regional advisory board and the regional directors. The secondary target group is the chairpersons of the cluster organisations and the chairpersons of the school boards in the municipalities of Värmland.

The information should also be useful for policy makers at national and EU levels.

The evaluation assignment

The evaluation shall describe the results of the collaboration to date and the results that can be expected with good reason to occur after the completion of the projects. The results and effects that the collaboration may produce over a longer perspective should also be described.

The evaluation shall also address the supporting processes and routines such as how the steering groups and working groups perform, reporting, financial management, how KaU's other strategic work matches the intentions of the collaboration, the formulation of the declaration of intent itself, the strategic significance of collaboration based on how

³ For example, the regional development programme and the regional development strategy.

⁴ For example, the FoI proposition and the national innovation strategy.

⁵ For example, Horizon 2020 and EU 2020.

development of research environments was chosen, and the contribution to the know-how of the parties involved (cluster organisations and public institutions).

The evaluation shall also address the following issues:

How can this initiative act as a good example of triple helix collaboration in a European perspective?

Is the composition of resources appropriate with regard to the statements in the declaration of intent?

How should the agreement be considered with regard to trust and the shared agenda between the actors involved?

The views of the Swedish Education department and Trade and Industry department concerning the triple helix collaboration.

The evaluation shall lead to recommendations for activities in the final year (2014) of the current agreement and recommendations for future forms of collaboration.

Relevant EU policies, e.g. within areas such as business development, research, innovation and the triple helix collaboration model shall be considered along with empirical knowledge and proven experience within these areas available at the time the recommendations are made.

II. Information about the evaluation team

John Goddard

John will be overall leader for the project. John is Emeritus Professor of Regional Development Studies at Newcastle University where he is leading a Civic University Study Programme sponsored by the Vice Chancellor. John founded and led the University's Centre for Urban and Regional Development Studies (CURDS) from 1977 to 1998 and was then appointed Deputy Vice Chancellor until his retirement in 2008. In that role he had special responsibility for the University's city and regional engagement and chaired the group of six English Science Cities. John received the Sir Peter Hall award for distinguished services to the Regional Studies Association in 2011. In 2012 he was awarded The Lord Dearing Lifetime Achievement Award for his contribution to Higher Education.

Lars Coenen

Lars will oversee and coordinate the inputs of the Swedish research team. Lars is Associate Professor at the Centre for Innovation, Research and Competence in the Learning Economy (CIRCLE) at Lund University. With a background in both economic geography and innovation studies he has substantial experience in regional innovation systems and cluster research. More specifically, Lars has conducted a number of studies on the role of universities in regional innovation strategies with a focus on the Skåne Region. Lars has extensive experience with participation and management in (international) research projects. His most recent project concerns a FP7 project on smart specialization for regional innovation.

Louise Kempton

Louise is a Senior Research Associate at the Centre for Urban and Rural Development Studies (CURDS) at Newcastle University. Her current work is focussed on the relationship between universities and regions and the nature of the 'Civic University'. Prior to this she was a manager in the Strategic Economic Change team at the regional development agency for the North East of England, One North East where she led a study into the role of universities in regional development. Louise is co-author (with John Goddard) of the EU Guide 'Connecting Universities to Regional Growth'.

Markus Grillitsch

Markus Grillitsch joined CIRCLE, Lund University, as Post-Doctoral Researcher in August 2012. From 2009 to 2012, he was affiliated with the Vienna University of Economics and Business. Since 2005, Markus has worked at ATC Consultants as partner and consultant. With ATC, he has focused on EU-funded regional development projects, including assignments to formulate, monitor and evaluate such projects in the context of several framework programmes. Markus has a comprehensive background in regional development in different institutional contexts including new and old EU member states, transition economies and developing countries.

Roman Martin

Roman Martin is a Post-Doctoral Researcher in Innovation Studies at CIRCLE, Lund University Sweden. His research lies in the area of regional innovation systems and innovation policies with an empirical focus on the life-science, food and new media industries in the regional innovation systems of southern Sweden. Emphasis has been on patterns of collaboration and networking between triple-helix actors (i.e. firms, universities and governments), and the role that governments and universities play for regional innovation and growth in different industries.

III. Description of methodology and activities

STAGE 1 - PLANNING

Step 0 Inception

Meeting in Värmland of the project team and the project steering group to discuss the project plan and make any adjustments as needed. At this stage we will also finalise with the steering group a list of key documents/policies and other published materials that will be reviewed in Step 1 and a list of individuals and organisations that should be consulted in Step 4. At this stage we will also review all project documents and other relevant background reports as suggested by the steering group e.g. the OECD Review in order to ensure the research team is fully conversant with the origins, aims, objectives and activities of the collaboration programme.

Step 1 Desk research

In-depth analysis of relevant local, national and EU policies within areas such as business development, research, innovation and the triple helix collaboration model in English and Swedish. These will be considered in line with empirical evidence and latest international academic research. From this we will produce a synthesis document outlining current thinking and international 'good practice' as well as an analysis of policy drivers and direction of travel in the coming years.

Step 2 Sense Checking

Draft documents produced in Step 1 will be shared with policy makers at the local, national and European levels to ensure they are robust in their conclusions. We will consult mainly via email and telephone, although there may be opportunities through other activities for face to face interactions.

Step 3 Primary Research Design

Using the findings from Step 1 and also based on discussions with stakeholders at the inception meetings (Step 0) we will refine our methodology for Step 4, including finalising the list of people to be interviewed and the structure and format of interviews.

Stage 2 - ACTION

Step 4 Interviews and Consultations

As has already been outlined, the list of people and organisations to be interviewed will be finalised in the planning stage. However we anticipate it including (but not being limited to) the following: the university management team comprising the chancellor and vice-chancellor for collaboration and the university director, regional advisory board and the regional directors, chairpersons of the cluster organisations and the chairpersons of the school boards in the municipalities of Värmland.

We will explore the value in widening the consultations to include some of the project 'beneficiaries', e.g. individual academics, students, business owners etc. This might be handled through focus groups or workshops rather than individual interviews.

The views of the Swedish Education Department and Trade and Industry Department will be sought as well as other relevant directorates of the European Union, (e.g. DG Regio, DG RTD, DG EAC), particularly in relation to the questions of future planning for the collaboration project post 2014. We will also explore how this initiative can act as a good example of triple helix collaboration in a Swedish and European perspective.

Questions will be finalised during Stage 1, but will include issues such as

- » What have been the results of the collaboration to date (outputs)?
- » What results are expected to occur after the completion of the projects (outcomes) ?
- » A description of the supporting processes and routines and how 'fit for purpose' they have been e.g. steering groups and working groups performance, reporting, financial management etc.?
- » How Karlstad University's other strategic work matches the intentions of the collaboration, and the strategic significance of collaboration based on how development of research environments was chosen?
- » What has been the main contribution to the knowledge and skills of the parties involved (cluster organisations and public institutions)?
- » Are the resources allocated enough? Have they been allocated in the right proportions to various projects?
- » Degrees of trust and shared agenda between the actors involved – how these have been established and maintained?
- » What have been the primary drivers of success?
- » What barriers have been encountered (if any) and how were these addressed or overcome?
- » Key learning points from the collaboration to date and ideas/recommendations for the future

Step 5 Workshop/Seminar

This will be a workshop with the steering group and other stakeholders as required. This step will address the forward looking aspect of the study and recommendations for future collaboration 2014 and beyond. This will be in the context of 'good practice' and policy drivers identified in Step 1 and feeding in some initial findings from Step 4.

Stage 3 - REFLECTION

Step 6 Analysis of findings

Step 7 Interim/Draft report

Stage 4 - DELIVERY

Step 8 Delivery of final report

IV. List of interviewees

The following people were consulted/interviewed during the project – several of those listed were met/spoken to more than once

Anders Olsson (Region Värmland)	Lotta Braunerhielm (Karlstad University)
Anders Wickberg (MCZ)	Magnus Lindh (Karlstad University)
Ann Otto Nemes (Region Värmland)	Margareta Dahlström (Karlstad University)
Birgitta Wall (Karlstad University)	Maria Hollander (Paper Province)
Björn Arvidsson (Karlstad University)	Maria Hollander (The Paper Province)
Bo Edvardsson (Karlstad University)	Markus Rinio (Karlstad University)
Christian Lundahl* (Karlstad University)	Mikael Lundström (Compare)
Curt Räftegård (Karlstad University)	Mikael Lundström (Compare)
Elisabeth Nyberg (Karlstad University)	Patrik Larsson (Karlstad University)
EvaLena Östlin (Region Värmland)	Pavel Krakhmavel (Karlstad University)
Gunnar Tideman (Region Värmland)	Per Kristensson (Karlstad University)
Håkan Spjuth (Karlstad University)	Sandra Eriksson (The Packaging Arena)
JanErik Odhe* (Steel & Engineering)	Sandra Eriksson* (The Packaging Arena)
Kenneth Nordgren (Karlstad University)	Sigrid Eldh (Karlstad University)
Lars Christensen (Region Värmland)	Tomas Riste (Region Värmland)
Lars Nilsson (Karlstad University)	Ulf Lidberg (Compare)
Lars Witell (Karlstad University)	Ulf Lidberg (Compare)
Leo de Vin (Karlstad University)	Åsa Bergenheim (Karlstad University)

*by phone

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VI. Mechanisms to support university/region collaboration

Mechanism	Most effective when	Least effective when
1. Less complex, tend to be transactional and time bound with clear outcomes		
Consultancy services	High levels of demand among local businesses, ability to absorb and understand research, clear access points to request university expertise, strong links between university research specialisms and local industry focus	Local businesses have limited absorptive capacity, unclear access points, inflexibility and lack of understanding between the private sector and universities
Student Volunteering and Community Work	There is an understanding of the power of 'living laboratories' in driving social innovation, makes linkages to local private sector solutions to societal challenges, engages local communities effectively which leads to increased demand for teaching and research, makes links between academic research within the university and public policy and practice	Designed primarily to enhance the student experience, local communities are guinea pigs rather than active participants, no mechanisms for follow up once the project is finished, poor links to the academic research base
Graduate enterprise programmes	Programmes have good links to 'mainstream' business support in the region so there is a clear 'move on' strategy for graduate businesses, graduates are encouraged to consider businesses which link back to teaching and research strengths of the university	Businesses started are low growth, 'lifestyle' businesses with little added value, they cause displacement and distortion effects on existing regional businesses, there is no alignment between the university programme and local/regional business birth strategies
2. More complex, outcomes are longer terms and less tangible		
Staff spin outs	Universities incentivise and support staff to spin businesses out, regulations around ownership of IP are not onerous, spin out companies are in technology areas where there is already a regional critical mass of companies and expertise	Universities see spin outs as a threat and high risk activity, academics are preoccupied with teaching and research, regional industrial clusters do not map onto university research specialisms
Workforce Development	Responds to current and future employer demand in terms of achieving 'smart' regional specialisation and innovation strategies, mechanisms are in place to encourage private sector engagement in programme design and delivery, university staff are well connected to local employers and local businesses can easily engage with universities, links with further education and vocational programmes	Emphasis is on delivering off-the-shelf rather than bespoke training, driven by the needs of large employers rather than SMEs, lack of sustainability in delivery models when public funding ends, driven by national rather than regional objectives, inflexible models for course accreditation

Staff Mobility	Synergy and overlaps exist between university research and private sector R&D programmes, university policies encourage and reward collaboration, secondments and other vocational activities	Research overlaps are with companies outside the region, policies and procedures act as a barrier, universities are overly protective of perceived 'IP'
Widening Student Participation	There is a clear focus on driving a local skills development, talent and potential is defined in a broader sense	There is intense competition among universities to attract the 'best' students, league table positions are seen as critical, academic achievement is valued above local impact
Exploitation of IP	Universities have an open innovation policy, there are good collaborative links with local firms especially in areas of future growth	IP is jealously guarded and is expected to become a 'cash cow' for the institution, there is a focus on working with the best companies regardless of their location, quantitative measurements (e.g. patent applications) are more important than outcomes
3. Highly complex activities with potential for transformational change		
Research and Technology Centres	There is a strong link between regional and national innovation policy, objectives and activities, the centres exploit the innovation assets of the region while acting as a channel for national and international linkages, funding strategies are long term	The triple helix partnership is weak or disconnected, national and regional policies are not aligned, short term funding cycles and uncertainty about future public investment drive centres to work with the private sector on 'near to market' technologies rather than seeking to work with universities further down stream on new technologies
Network and Cluster Development	Genuine relationships already exist between the university and businesses in a particular sector or industry, the university seeks to 'add value' to the network through its research or teaching expertise, there are people in the university and private sector who can understand each other	They are predicated on a strategy of 'picking winners', there is little perceived added value from membership, it is seen as a 'talking shop' or becomes dominated by the agendas of a few companies or individuals
International Linkages	Universities research strengths and academic profile internationally acts as a 'hook' for inward investment and helps tie companies down in the region, universities work with the public and private sectors in showcasing the region around the world	Research is conducted in isolation from regional development strategies, there are no joint working agreements in place within the 'triple helix', links with companies and researchers outside the region are only pursued for the objective of academic excellence
Talent Attraction and Retention	The university has a national or international reputation for excellence in teaching which attracts students from other regions and countries,	The university does not exploit its alumni network to connect talented people to businesses in the region, the core mission of the university is to

	there is a strong and specialised industrial base for graduates to move into, there are minimal constraints on graduates taking up employment in the region (e.g. visa restrictions etc.), university specialisms make the region an attractive place for world class students and academics to come to	ensure optimal job outcomes for its students regardless of the location of opportunities, universities in the region lack distinction in the disciplines that are most needed for the regional economy to develop
Cultural Development and 'Placemaking'	Investments in buildings, activities and other infrastructure by universities help to foster a creative and cultural 'buzz' which makes the region attractive to other talented individuals	The region is perceived as a cultural 'desert', or one where intellectual and cultural pursuits are only for the benefit of the 'elite', cultural buildings and activities are difficult to access by outsiders and there is little diffusion of benefits into local society