THINKING SMART

Toolkit for the engagement of HEI in regional growth

Newcastle University

WP3 - Entrepreneurial Discovery in HEIs

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1. Introduction

This report provides an account of a collaborative process that investigated the potential for Newcastle University to enhance its contribution to the development of smart specialisation in the North East of England. It is an output of the Eramsus+ funded Thinking Smart project under the work package 'Entrepreneurial Discovery in HEIs'. The overall goal of this work package is to identify gaps, challenges and opportunities regarding the role of higher education institutions (HEIs) in regional growth. In doing so, it also aims to help promote deeper cooperation between these HEIs and regional actors based on an increased awareness of their respective drivers and barriers. The approach taken in this work package was to concentrate on single universities within their regions in order to allow a more intensive investigation of institution-specific issues and the internal changes needed to increase external engagement and alignment with the existing Research and Innovation Strategy for Smart Specialisation (RIS3). In addition to Newcastle University, four other HEIs in different parts of Europe (also partners in the Thinking Smart project) participated in this exercise. A summary and synthesis report of the findings across all five institutions is also available.

For Newcastle University, the focus of this collaborative process was two 'mind-setting' workshops held on the same day (20th of July 2017) and attended by 29 people from the University and region. In the first workshop, presentations were given by representatives of the Higher Education Funding Council for England (HEFCE), the North East Local Enterprise Partnership (NELEP), and Newcastle University. Each of the presentations was followed by questions and discussion. During the second workshop, the participants were split into two groups who were collectively tasked with identifying the challenges and opportunities involved with Newcastle University assuming a greater role in the further development of the regional RIS3. These ideas were fed back to the whole group before the workshop concluded with a final collective discussion to identify

potential next steps and actions. The workshop was preceded by an online survey of academics in Newcastle University which received 20 responses (17 people completed the full survey). Results from this survey were presented during the workshop to inform the subsequent group discussion. A summary of these survey results can be found in the appendix to this report. The contents of this report also build on earlier work as part of this project that identified good practice in the prior contribution of Newcastle University to the design of a RIS3 in the North East.

The main part of the report consists of 5 further sections. Section 2 provides a brief overview of the development and content of the RIS3 in the North East of England (which here refers to the geography covered by the North East Local Enterprise Partnership). Section 3 reviews the ways in which Newcastle University has previously supported the design and early implementation of this RIS3. Section 4 identifies the major resource gaps, institutional barriers and strategic challenges to the implementation of RIS3 in the North East and to the engagement of local universities in this process. Section 5 introduces and discusses the opportunities for Newcastle University to help address these challenges that emerged from the collective discussion in the mind-setting workshop. Section 6, by way of conclusion, analyses the actions that would need to be taken by the University and other actors in the region to be able to respond to these opportunities.

2. Overview of the North East England RIS3

In the UK, separate Research and Innovation Strategies for Smart Specialisation (RIS3) were submitted to the European Commission for England, Scotland, Wales and Northern Ireland. This means that, in contrast to most European countries, there was not a formal RIS3 at the regional level within England. However, Local Enterprise Partnerships (LEPs), now the main form of economic development policy vehicle at a sub-national level in England, have been given a central role in delivering the strategy by identifying opportunities at the local level that could be aligned with national research/innovation and industrial priorities. This was to be done through the requirement to "prepare Strategic Economic Plans which include proposals to support innovation" (BIS, 2015, p.5). The strategy is also connected to the decision that most of the European Structural and Investment Funds (ESIF) funding allocation for England will be devolved to LEP areas, with the LEPs themselves given a role in administrating the funds.

The North East Local Enterprise Partnership (NELEP), that covers Newcastle upon Tyne and six other local authority areas, embraced this role within smart specialisation. This was partly in response to an Independent Economic Review of the North East led by a former government minister that called for the region to become an 'international exemplar in smart specialisation, open innovation systems and culture' (Adonis et al., 2013, p.16). NELEP commissioned a smart specialisation report (prepared in-part by members of Newcastle University) that was published in December 2013. The analysis in the report focused on four areas of economic activity in which the North East had existing strengths or strong potential for growth: passenger vehicle manufacturing; subsea and offshore technology; life sciences and healthcare; and creative, digital, software and technology based services.

These four areas have subsequently been adopted and promoted as smart specialisation priorities by NELEP. This signals an explicit commitment to smart specialisation in the North East, stemming from the Independent Economic Review. According to Marlow and Richardson (2016), the North East was one of only a handful of LEP areas in England that chose to develop their own local RIS3. NELEP have also taken the position that the focus on smart specialisation is not just integral to their innovation programme, but should also be in embedded in their other core programmes focused on Business Growth and Skills. Despite this, however, NELEP has been slow in moving beyond the initial analysis stage and translating the priorities into a strategy that pulls different stakeholders together around a set of potentially transformative actions for the regional economy. This can largely be attributed to the limited resources and powers available to LEPs in highly-centralised England when compared to the corresponding development agencies for regions in the rest of Europe. Another important factor is that NELEP was only established in 2011 following the abolition of Regional Development Agencies. This lack of institutional continuity has meant that, despite publishing a Strategic Economic Plan (SEP) in 2014, NELEP has still been at a stage of building relationships within the region, and therefore their capacity to push ahead with implementation of their plans has been constrained. NELEP has, however, set up working groups related to each of the four smart specialisation priorities that include representatives from across the 'triple helix' (including from Newcastle University). These groups will identify more specific priorities in their respective domain and make recommendations for the strategy to develop that area.

Recently, NELEP have also been in the process of reviewing the SEP, which has involved consultation through smart specialisation priority themed workshops with key stakeholders in the region. An updated version of this was published in March 2017, which retained the smart specialisation approach as central to its innovation programme. In a presentation during the workshop by the Innovation Director of NELEP,

smart specialisation was positioned as one of three strands (with Ecosystem Development and Innovation Infrastructure) of this programme. The new SEP includes a commitment that by 2018: "Partnership based strategies will be in place for each of the North East's areas of smart specialisation, with implementation plans agreed and leads identified and recognised" (NELEP, 2017, p.30). The four smart specialisation areas remain basically the same in the new SEP, with the exception that the passenger vehicle manufacturing area has been broadened to 'Automotive and medicines advanced manufacturing'. These four areas were described in the workshop as having "the potential to strengthen the long term performance of our economy delivering industrial growth and focus for innovation and productivity and growth in employment" [Presentation by Head of Strategy and Policy].

The process reported on in this document took place shortly after the publication of the updated SEP and was shaped by this particular context. At the time of the workshop (July 2017) only the sub-strategy for life and health sciences (Health Quest North East) had been delivered (and an appointment made of a person to lead on its delivery). The other three sub-strategies – Tech North East, Making the North East's Future, and Energy North East - were scheduled to be developed over the forthcoming year. Hence, smart specialisation was described at the workshop as still an "emerging intervention framework" for the region by the Innovation Director of NELEP.

3. The role of Newcastle University in RIS3 design and implementation

As mentioned above, Newcastle University made a significant contribution to the identification of the region's research and knowledge strengths as part of the RIS3 development process through their input into a 2013 analytical report for NELEP. The team that produced this report was led by Newcastle Science City - an economic development partnership vehicle between Newcastle University and Newcastle City Council. It also involved researchers from two parts of the University - the Centre for Urban and Regional Development Studies and the Business School - and a consultancy firm. However, despite the involvement of researchers from the HEI in this way, it should be noted that they were not formally representing Newcastle University in this capacity, nor were they requested to participate in this exercise by the institution. Instead, this was a case of the university researchers helping to supply an analytical capability at a time (when NELEP was still in the early stages of becoming operational) that this was lacking in the relevant regional authority. Correspondingly, this process was not directly plugged into the management of the University as a whole.

This report drew on previous research and studies to identify actual or potential economic strengths in the North East that had a good fit with: national industrial and innovation priorities, the initial strategic interests of NELEP, and evidence of public and private investment (Fisher et al., 2013, p.18). The four areas of economic activity focused on in the report - Passenger Vehicle Manufacturing; Subsea and Offshore Technology; Life Sciences and Healthcare; and Creative, Digital, Software and Technology Based Services – were subsequently adopted by NELEP as the smart specialisation priority areas for the region. These four areas were then subject to further analysis through desk-based research, secondary data, semi-structured interviews and workshops, and a business survey. Feedback was also sought from the four universities in the region covered by NELEP (Newcastle, Northumbria, Durham and Sunderland universities).

Informed by this methodology, the smart specialisation priorities contained in this report correspond, to a large extent, with research strengths in these four universities. This continues an existing tendency for regional innovation policy in the North East of England to rely heavily on local academic research capabilities. By contrast, the R&D capacities in other sectors (private or non-university public) in this old industrial region are underdeveloped (see section 4). In particular, this applies to Newcastle University as one of only two research-intensive universities in the region with specialisations in relevant fields of engineering, medical sciences, and computer science. This means that there is a good alignment between three of the four smart specialisation priority areas (Subsea and Offshore Technology; Life Sciences and Healthcare; and creative, digital, software and technology based services) and the research and teaching strengths of the University. In the fourth priority area (passenger vehicle (and other advanced) manufacturing) Newcastle University has certain capabilities, but would not be considered a leading HEI in this field. The life sciences and healthcare area is particularly dependent on the research capability of Newcastle University, as this hosts the only university medical school in the region.

Beneath this high level, however, the smart specialisation priorities promoted by NELEP have not yet drilled down to connect with the more specific research strengths of Newcastle University within their broad areas of excellence. This dimension of the entrepreneurial discovery process was largely beyond the remit of the 2013 smart specialisation report and NELEP only seem to have recently established a mechanism to do this themselves in the form of the working groups for each of the four areas. Individuals from Newcastle University have had some input into these working groups. More generally, Newcastle University is directly represented on NELEP's Innovation Board. Members of other universities in the region also sit on this and other NELEP

Boards or Groups (although the make-up of these are mainly from business and local authorities).

The impact of the adoption of smart specialisation by NELEP on the strategic alignment of Newcastle University has so far been limited. As touched on above, there is some correlation between the areas featured as smart specialisation priorities and the strategic research strengths of Newcastle University (along with the other universities in the region), but this is largely because the selection of these priorities was to a significant extent predicated on these existing research and innovation strengths. The results from our survey of select academic staff in Newcastle University supports this (see appendix). These suggest a low level of awareness of the smart specialisation approach of NELEP (even amongst academics working in fields that would seem to be relevant to the priority areas), and little if any direct involvement in the strategy by those who are aware. This is despite the survey results indicating that the respondents do have a high degree of engagement with industry of different types, including more than a third who indicated that their research is very closely aligned with the current or future needs of the regional economy. A majority of respondents also felt that this alignment with regional economic needs is likely to increase in the future, driven by research funding opportunities and the requirement in the UK for academic research to demonstrate an economic or social 'impact'. Notably, most of the respondents did not, by contrast, see encouraging this alignment as a priority for the management of the University.

4. Gaps, barriers, challenges

The North East of England is an old industrial region that for the past two decades has made the promotion of innovation a centrepiece of its economic development policy (first under the Regional Development Agency and since 2011 by NELEP). Despite this, the region still faces considerable challenges in completing its transition to having an economy built around high-value, knowledge-intensive manufacturing and service industries. These challenges were recognised in the North East Independent Economic Review Report in 2013, which helped to form the strategic direction taken by NELEP. This noted that, despite some notable assets and positive trends, the North East economy was still marked by:

- "Under-performance in GVA per head and productivity, linked to low skills, under-employment, the nature and type of work mainly on offer (lower value added, service functions), low enterprise rates and a low innovation intensity.
- A high dependency on the public sector for employment (a consequence of the low private sector job density) and investment capital; and an associated need to stimulate more private sector growth".

(Adonis *et al.*, 2013, p.11).

These concerns are, for instance, hinted at in the title (and core objective) of the updated SEP document being 'More and Better Jobs' (NELEP, 2017). In a summary of expert papers and evidence produced to support the 2013 Independent Economic Review, a number of more specific factors were cited that could "undermine the growth of the region's innovative activities and capacity":

- **Insufficient capacity**: "Many of the region's innovative activities and companies are small scale and lack the critical mass necessary to succeed internationally".

- **Asymmetrical Information**: "The region's business support providers … may not adequately be aware of or understand the requirements of its innovative opportunities or businesses".
- **Low Productivity Sectors**: "The North East history of undertaking less competitive activities and low productivity may act as a constraint to the development of new growth areas. Some of these activities are facing global decline and others are at significant risk of its resources shifting away from declining areas into new growth areas".
- **External Competition**: "Unless the North East accelerates its innovation activities it faces the risk of being outpaced by competitors that have achieved stronger market positions sooner".

(NELEP, 2013, p.17)

These general issues were reflected in the workshop. Participants noted that of the four smart specialisation priority areas, only life and health sciences currently seems to reached a 'critical mass' of innovation activities in the region. However, this case is an exception in that it is anchored by very strong relationships between Newcastle University and the public sector National Health Service (NHS) around clinical research (Goddard and Vallance, 2013). The other sectors do not have a clear equivalent to this public sector presence around which a cluster of activity could be built. Several other key challenges for the regional innovation strategy were raised during the project workshop that complement the above analysis:

- The Innovation Director of NELEP emphasised the relative thinness of the innovation infrastructure in the North East compared to the rest of the UK. The region has only one science park (in Durham rather than Newcastle) and only a handful of business incubators and accelerators (some still emerging). A lack of capacity in this area could restrict the region's ability to translate research into

commercial opportunities through the growth of new enterprises in knowledge-based industries. The North East is, however, relatively well represented in the UK Government's Catapult Programme through four centres of excellence, which are part of national networks in the fields of High Value Manufacturing, Satellite Applications, Digital, and Offshore Renewable Energy.

- Echoing the point above about 'asymmetrical information', workshop participants identified that there are some notable examples of innovation activity in the North East that were not widely known about (for instance, relating to Virtual Reality and Augmented Reality), and therefore the opportunity for further specialisation and growth generated by these niches were not taken advantage of in the region. More frequent and closer monitoring of developments in the regional economy is therefore needed to raise this awareness. The specialist strengths in the region also need to be branded and promoted more effectively to help attract firms and investment. There is, however, currently a lack of obvious mechanisms or actors with the capacity to do this on behalf of the region.
- A continuing lack of regional-level political autonomy and leadership within the highly centralised English system of government was also repeatedly brought up by participants as a broader issue that has a negative knock-on effect upon the ability to support economic development in the North East. Although 'devolution' reforms have been introduced over the past five years (including a Combined Authority operating at the same scale as NELEP), more recently disagreement between local authorities within the region have led to the North East falling behind other major regions/city-regions outside London that have introduced directly elected 'Metro Mayors'. Having a figure occupying this kind of role was felt to be especially important for their ability to raise the profile of the North East on a national level and to directly lobby central government for funding.

Universities are a particularly important component of the North East's innovation system. The evidence base produced by NELEP for the updated SEP highlights that "the North East region has the lowest level of expenditure on R&D of all English regions, equivalent to 1.2% of [Gross Value Added]", and that "Higher Education institutions account for a very high share of total R&D in the North East – 46% compared to 24% nationally" (NELEP, 2016, p.19). This is largely attributable to an underrepresentation of business R&D, but also to the near absence of other public sector expenditure on R&D in the region. As mentioned in the preceding section, Newcastle University will individually account for a substantial share of this R&D capability as the preeminent research university in the region for fields relating to, for instance, medical sciences and engineering. This dependence on academic research is, however, problematic for the region due to the institutional barriers that mean this capability is not necessarily oriented towards supporting innovation activity within the wider regional economy. Newcastle University has strong roots as a 'civic university', which is reflected in the present day by a strong commitment amongst many members of the University to engagement within the region as an integral part of their work. At the same time, however, the contemporary environment in which the University competes does not serve to incentivise this regional engagement over other demands placed on higher education institution. Instead this environment is more likely to prioritise research that is considered internationally excellent through drivers that operate on the level of the institution (e.g. through global rankings of universities), academic departments (e.g. through unit performance on the Research Excellence Framework), and individual academics (e.g. through the criteria used in job appointments and promotion). The introduction of some form of economic/societal impact as one of the criteria for UK Government Research Council funding (as well as in the Research Excellence Framework) has made a difference in countering the narrow focus on contribution to academic knowledge, but there is no requirement that this 'impact' has to be within the

home region or country of the university in question. Indeed, when academics at Newcastle University (and comparable institutions in the UK) do directly work with industry this is as likely to be with companies (often larger corporations) outside the region as those within the North East.

Although Newcastle University is a research-intensive institution (signified by membership of the Russell Group), the position accepted in the workshop was that it arguably makes a more significant contribution to the regional economy through its teaching and education activity than through its research. Again, however, this is despite a national higher education system that makes little explicit provision to ensure that university teaching directly responds to local labour market demand. In England, the funding of higher education teaching has within the past five years shifted to a student fees system, which (as well as being potentially unsustainable in the future) means that the numbers taking different courses are largely determined by student demand rather than societal needs for graduate workers with knowledge and skills in specific areas (apart from in certain cases such as the training of medical doctors). Indeed, for the University it costs more to educate a student through a three year degree in science and engineering based subjects than it does in other fields such as the arts, humanities and social sciences, while tuition fees are currently set at a uniform £9,250 per year. Within the workshop it was suggested that, even if Newcastle University sought to vary its student numbers to respond to specific labour market demand in the North East, there is currently no formal medium through which local industry is able to communicate these needs to the University in a systematic way. There is also no guarantee that graduates from Newcastle University will remain within the region to work. As an elite Russell Group university in England, a high proportion of domestic students at Newcastle University are from outside the region, and therefore are also more likely to move away after completing their studies (most likely to London where graduate employment and career progression opportunities are greatest, or to return to their home region). The

same problem of retention also applies for the large number of international students who also attend Newcastle University (often for shorter postgraduate courses).

A further challenge raised in the workshop is the highly decentralised (or 'loosely-coupled') structure of Newcastle University (as is characteristic of research-intensive universities more widely). As well as presenting difficulties for external actors seeking to engage with the University, this also limits the power that the management of the institution has to steer the work of academic employees towards strategic goals they have adopted. This is significant in the context of smart specialisation as it means that increasing the alignment of the University to certain regional priorities will require more than obtaining buy-in from executive management. Indeed, a specific issue identified in the workshop was that while NELEP have sought to involve the University in its activities (e.g. through inviting representatives to sit on its boards) this has mainly been limited to relatively senior members of staff: academics and other employees at lower levels within the University's three faculties have by contrast not been extensively consulted, although these individuals are often crucial to the actions that are needed to ensure any desired change is realised within the institution. As a result, mechanisms such as the smart specialisation working groups for the four areas are not embedded back into the University structures. On the part of the University, this kind of engagement by the 'rank and file' of the institution is acknowledged to be restricted by their capacity and resources to operate beyond the boundaries of their core tasks. As one workshop participant described it "there is no bandwidth".

5. Opportunities for further/future involvement of Newcastle University

During the workshop a number of opportunities through which Newcastle University could become more closely involved with supporting the local innovation strategy around smart specialisation were identified. These opportunities, which relate to currently unexploited capabilities within the University and emerging developments in the wider policy landscape, are outlined in this section.

- Within the last few years Newcastle University has been awarded the right to host two major national innovation centres: the National Innovation Centre for Ageing (NICA) and the National Innovation Centre for Data (NICD). NICA was announced in 2014 (originally called the National Centre for Ageing Science and Innovation) with a £20 million investment from the UK Government (match funded by the University), and NICD in 2016 (originally called the National Centre for Smart Data Innovation) with a £30 million investment. The award of both the centres are based on leading research strengths in Newcastle University. In relation to NICA, the University's Faculty of Medical Sciences already contains the Institute of Ageing that has pioneered scientific research and social engagement around the ageing process and an ageing population. For NICD, the University has (amongst other computer science capabilities) particular strengths in Cloud Computing and Data Analytics based in the Digital Institute. These national centres will be in areas that also resonate with two of the broad smart specialisation priority areas identified by the region: respectively, life and health sciences, and creative, digital, software and technology-based services. Indeed, the selection of these smart specialisation areas (particularly health and life sciences) were in-part predicated on the underlying research strengths in Newcastle University (see section 3). Both of the national centres involve multiple local stakeholders in addition to Newcastle University. NICD is the

product of a collaboration with an industry-led network organisation focused on growing the technology sector in the North East of England (Dynamo) and Newcastle City Council. NICA will further deepen the already strong relationship of Newcastle University with local National Health Service trusts, and also be focused on working with business and the public as part of the innovation process. The two centres will be located together in a new building on Science Central - a major site development near to the centre of Newcastle upon Tyne, which has mainly been developed as a partnership between Newcastle University and Newcastle City Council. Through these different participating organisations, both of the centres have interlocking governance links into NELEP and its structure of boards.

These centres clearly have a national orientation and respond to priority sectors and technologies identified in national research and industrial strategies (within which the RIS3 framework for England is positioned). Despite the broad overlap with the widely defined smart specialisation priorities in the region, local economic development strategy was not the major driver of these developments: the existing strengths of Newcastle University in these areas were more important. The physical location of these centres in the North East and their relationships with local organisations, however, means these centres clearly represent an opportunity to support future economic development in the region. While the Science Central development is not a science park *per se*, both centres have a remit to work with businesses. In this respect, they may be able to help fill the gap in 'innovation infrastructure' identified in the previous section, and form an opportunity for Newcastle University in particular to strengthen its alignment with the smart specialisation strategy led by NELEP.

- As mentioned in the previous section, one of the challenges identified during the workshop was the need for better monitoring of the regional economy that could be used to inform policy on an ongoing basis and help to promote little known about innovation success stories. NELEP has responded to this challenge by recently supporting the creation of the North East Innovation Observatory, which is hosted within Durham University's Business School. This Innovation Observatory is still at an early stage of becoming operational, but part of its remit is to work with other universities in the region and Newcastle University has existing capabilities in this area that could be drawn upon to support a distributed rather than centralised approach to gathering intelligence about the regional economy. For instance, Newcastle University has recently won funding for the National Institute for Health Research Innovation Observatory, which will be hosted in-part by NICA and NICD on the Science Central site. Like NICA and NICD there is no indication that this national institute will have a specific spatial focus on the North East, but its presence could create opportunities for the capabilities to be drawn on by the region. As demonstrated by the role of Newcastle University researchers in the analytical report that informed the smart specialisation approach taken by NELEP (section 3), other parts of the University are active in this area.

- As presented in the workshop, Newcastle University has recently been involved with European Structural and Investment Funds (ESIF). Through this route it currently has two approved projects, one awaiting approval, and a further one in development. Three out of four of these projects are in collaboration with one or more of the other universities in the North East region. All the projects are, in different ways, focused on supporting SMEs within the North East. However, the presentation also acknowledged that the impact of these projects on the smart specialisation strategy of the region was uncertain. There is, therefore, a

potential opportunity here for Newcastle (and the other universities involved) to work with NELEP to determine how these projects could feed into supporting the strategy.

- As mentioned in the previous section, amongst the current barriers to regional engagement by Newcastle University is the absence of any kind of formal mechanism through which firms within the region can communicate their labour needs to inform teaching provision within the institution. Although smart specialisation focuses primarily on research and innovation, the further development of the strategy within the North East could provide a focus around which these conversations about the alignment of teaching can take place. This will particularly be the case as the sub-strategies for the four priority areas are delivered over the coming year and through this more specific needs and opportunities for the regional economy are brought to the fore. The workshop also identified the value of, from the perspective of the University, taking a holistic view of the potential contribution that can be made by teaching. Much of the initial discussion in the workshop revolved around the need in the region for graduates in Science, Technology, Engineering, and Maths (STEM) subjects. These are vital to all four of the smart specialisation areas adopted by NELEP. These subjects are also heavily represented in the profile of Newcastle University: one of the three faculties that make up the University is the Faculty of Science, Agriculture, and Engineering. However, later in the workshop, the potential value for local firms of transferrable skills more likely to be acquired by graduates in subjects such as the arts and humanities (also well represented in the University's profile) was also asserted. This may apply particularly (but not exclusively) to the 'Creative, digital, software and technology-based services' priority area. A recent research project (Creative Fuse North East) examining the creative, digital and information technology (CDIT) sector in the North East

highlighted the trend towards the increasing 'fusion' of creative/artistic and digital/programming skills within regional businesses (Butt *et al.*, 2017). The next phase of this project (funded partly through ESIF) will concentrate on facilitating a series of 'innovation pilots' with firms in the CDIT and other sectors to further encourage these creative and digital crossover practices within the North East economy. These new activities are intended to be particularly oriented in relation to the region's smart specialisation priority areas.

- A challenge identified in the workshop was that for Newcastle University to engage more effectively as an institution within the region stronger coordination would be needed between its various academic departments and research centres or institutes. A mechanism that has been in place for around five years is a series of cross-faculty societal challenges themes. The themes selected for this were ageing, sustainability, and social renewal. These are, however, currently under review and their focus are set to be modified in the near future. Nevertheless, the chances are there will be some overlap between these themes and the broad S3 priority areas in the region – for instance, between the ageing theme and health and life sciences priority. Therefore there may be an opportunity to use these themes, and the supporting administrative structures that have been grown around them, as a vehicle to connect more strongly with the regional S3.

- The funding by businesses of professorships within universities was discussed during the workshop as a possible way of bringing research carried out in universities closer to industry needs. While this was cited as a practice in leading U.S. research universities, it was believed to be less common in the UK because of the reluctance of the private sector to invest in the forms of basic or applied

research carried out in universities that are not likely to result in a direct commercial return within an acceptable timeframe. Newcastle University has, however, in the past employed a somewhat similar model. As part of an earlier economic development initiative (Science City), four 'Professor of Practice' posts were created for individuals with industry experience relating to selected research themes (Energy and Environment, Ageing and Health, Stem Cells and Regenerative Medicine, and Molecular Engineering) (Goddard and Vallance, 2013). The Professor of Practice label is still used in the institution, typically for visiting professors with a background outside of academia. In theory, therefore, to strengthen the alignment of Newcastle University research to the strategic focus of the regional economy this existing template could be built on by appointing Professors of Practice in each of the four priority areas. This still raises the significant question of how these posts would be funded, as NELEP does not have the resources to support this kind of investment. To reduce costs, however, the posts could be for visiting or part-time rather than full professorships. The exact role of these professors would also have to be decided, particularly in terms of whether they would be involved in carrying out industry-relevant research themselves or rather just act more as bridges from industry into the University to facilitate the exchange of knowledge.

- While NELEP has reaffirmed the place of smart specialisation at the centre of its approach to innovation and economic strategy with the updated SEP, it is not clear if the same level of commitment to this concept will exist within central government going forward. At this national level (within England), the response to smart specialisation was arguably always driven more by the need to conform to the EU ex-ante conditionality than by any potential strategic benefit from adopting this new approach (Marlow and Richardson, 2016). Now this requirement has been fulfilled, and with the UK on course to leave the EU in the

next two years following the June 2016 referendum vote, the continuing position of smart specialisation as part of UK Government policy is vulnerable. There are, however, other policy developments within the UK context that may prove important in providing longer-term support for a smart specialisation related agenda. Notable here are a programme of Science & Innovation Audits (SIAs) commissioned by the Department of Business, Energy & Industrial Strategy (BEIS), which aim to map and analyse research and innovation capabilities (both local and sectoral) within England. This programme has explicitly been linked to supporting the delivery of England's smart specialisation framework and has involved input from the Smart Specialisation Hub set up by government. Newcastle University has already been involved in this programme through their role in leading a SIA for Off-Shore Energy (also a smart specialisation priority for NELEP). Unlike other regions within England, however, there is yet to be a SIA with a geographical focus specifically on the North East. The UK Government has also in the past year pushed a much stronger domestic industrial strategy agenda than has been the norm over recent decades. Unfortunately, the Green Paper published to outline this new Industrial Strategy makes no reference to smart specialisation (BEIS, 2017). Nevertheless, this is still a highly salient area of policy for innovation strategy at the local as well as national level within the UK. The first of ten guiding pillars for the strategy is around investing in science, research and innovation. An accompanying Industrial Challenge Strategy Fund has been set up that will provide substantial funding for universities and businesses around six areas (including healthcare and medicines, clean and flexible energy, and driverless vehicles). As a substantial proportion of government funding for academic research will be channelled through this route, researchers within Newcastle University will be responsive to these opportunities. Because these challenge areas will overlap in different ways with the priority areas promoted by NELEP, this could also be a route to support the continuing development of

smart specialisation in the region. It remains an open question, however, if this can be done in a coordinated way that maximises the benefit for the strategic goals of the region.

6. Conclusion: future implementation of the RIS3

This section will summarise the actions that can be taken in the region to foster closer collaboration by Newcastle University in the further refinement and implementation of the RIS3 in the North East of England. It should be re-iterated here that smart specialisation in the North East is still developing as what the Innovation Director of NELEP describes as "an emerging innovation framework". Therefore, while the alignment of Newcastle University to the RIS3 has thus far only been on a fairly superficial level, there is arguably still scope to build a stronger connection. The delivery of sub-strategies for the remaining three smart specialisation priority areas (in addition to the already developed life and health sciences sub-strategy) should help this alignment by identifying more specific strengths and opportunities for the region, which in turn will help demonstrate the value of the strategy to the University and allow it to identify where it can best contribute to its implementation. To achieve this, however, will require commitment on the part of both Newcastle University and the regional partners with which it engages. The preceding sections have highlighted some points of intervention around which this stronger connection may be built.

On the part of Newcastle University, there is a need to explore mechanisms through which the institution can engage more deeply with the regional RIS3 strategy in a way that forms a reaches back into the academic heartland. Prospective mechanisms for this, such as the societal challenge themes, professors of practice, and a forum to discuss training/skills needs with regional employers, were discussed in the previous section. This will make it easier to leverage the existing research capabilities that the University have which are of potential relevance to the four smart specialisation areas adopted by NELEP. These capabilities now include the new National Innovation Centres for Data (NICD) and Ageing (NICA) which, although national in focus, will generate opportunities to support the local economy related to these two domains. There is also scope for

Newcastle University to contribute to the development of the North East RIS3 through its teaching and learning functions, particularly given persistent challenges around skills and graduate retention in the region. However, this will require clearer communication with local employers to help articulate their labour needs that can be addressed through specialist training within the University. Again, the clearer articulation of specific priorities for the region will help this process. This alignment of Newcastle University with the regional economy does, however, have to be considered against the dominant drivers for the institution. As covered in section 4, despite the commitment of many people in the institution to engagement with the region, the higher education environment in which the University is based means that these drivers predominately revolve around research excellence, teaching to meet student (rather than local employer) demand, and building international institutional linkages and profile. To be more than superficially embedded within the institution therefore, the above (and any other) measures to increase this regional alignment will have to find a way of working with the grain of these drivers.

On the part of NELEP (and other relevant actors in the region), this report has identified a need to engage with more people within the University and particularly those in faculties and schools further down the organisational hierarchy who may be vital to the practical challenge of mobilising the capabilities the University has towards strategic goals identified in the RIS3. Emerging from the workshop, a need for better ongoing monitoring of developments in the regional economy was recognised, to which people in Newcastle could contribute. This would also help the region to develop 'brands' around specific regional strengths and raise awareness of these amongst potential investors outside the region. With some exceptions (e.g. around research strengths in Genetic Medicine) it was felt that the regions does not currently publicise these selling points very well. Stronger regional leadership (for instance in the form of a Metro Mayor) would also help to raise the profile of the region. Finally, this report has also

noted the vulnerability of the smart specialisation concept within the current policy and funding environment in England. To ensure the continuing relevancy of the smart specialisation approach in the region, and increase the relevance of this for Newcastle University, it is therefore important that this is aligned with the new UK Government industrial policy agenda.

References

Adonis, A., Mottram, H., Curry, D., Hutton, W., Rosewell, B. and Ruffer, J. (2013) *North East Independent Economic Review Report.* Newcastle, NELEP.

BEIS (2017) *Building our Industrial Strategy - Green Paper January 2017*. London, BEIS.

BIS (2015) *Smart Specialisation in England: Submission to the European Commission*. London, BIS.

Butt, M., Cross, E., Holliman, N., Kempton, L., Legget, J., Mackenzie, E., Ross, H., Sapsed, J., Swords, J., Vallance, P. and Whitehurst, F. (2017) *Creative Fuse North East: Initial Report*. Newcastle upon Tyne, Newcastle University.

Goddard, J. and Vallance, P. (2013) *The University and the City*. London, Routledge.

Fisher, B., Goddard, J., Kempton, L., Marlow, D., Robson, L. and Whitehurst, F. (2013) *North East Local Economic Partnership: Smart Specialisation Report.* Newcastle upon Tyne, North East Local Economic Partnership.

Marlow, D. and Richardson, K. (2016) How smart is England's approach to smart specialization? A policy paper, *European Planning Studies*, 24, (8), 1478-1493.

NELEP (2013) *The North East LEP Independent Economic Review: Summary of the Expert Paper and Evidence Base*. Newcastle upon Tyne, NELEP.

NELEP (2016) *The North East Strategic Economic Plan – Evidence Base May 2016*. Newcastle upon Tyne, NELEP.

NELEP (2017) *More and Better Jobs: The North East Strategic Economic Plan – January 2017.* Newcastle upon Tyne, NELEP.

Appendix – summary of the survey results

In February and July 2017 a survey was carried out among senior academics involved in research (and in some cases teaching also) in the smart specialisation priority areas. While the number (20 started the survey and 17 completed it) was relatively small, there were some interesting findings:

- 75% were either not aware or only vaguely aware of the work of NELEP to support a strategic approach to economic development and innovation (i.e. smart specialisation). 15% knew about it but have not been involved directly. 10% have been involved directly.

- Almost 90% report working moderately or extensively with SMEs in conducting their research. More than 60% work with large companies. Just over 20% are working with cluster organisations.

- In working with external partners by far the most popular activities were co-creation of research (over 75%) and development of funding applications (over 80%).

- When asked how important local regional actors will be in shaping their research over the next three years over 40% said they would be critical and almost 50% said they were important.

- 100% of respondents said they saw large companies as potential future collaborators, and over 90% responded the same for SMEs. More than two thirds saw public bodies and not for profit organisations as potential future collaborators. 35% identified cluster or sectoral organisations as potential collaborators.

- When asked how aligned their research is to current and future needs of the regional economy 35% answered 'very closely'. Over 40% said there was alignment, but that this was more by coincidence than an explicit objective.

- When asked the extent to which issues, opportunities or challenges identified by local actors have shaped their research over the past three to five years over 90% answered either 'to some extent' or 'extensively'.

- Over 60% of respondents believe that researchers will need to align their research more closely with local/regional needs in future, though the main reason they give for this is to demonstrate research impact (90%) or identify funding opportunities (73%). Less than 30% saw it as a priority for university management.