The Northern Powerhouse Independent Economic Review

Final Executive Summary Report

24 June 2016

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Contents

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The Northern Powerhouse . . . at a Glance

Key Findings
Independent Economic Review

'Performance Gap'

The North's **'performance gap'** (measured by GVA per capita)' is persistent, averaging about **25%** below the rest of England, and 10-15% when London is removed.

Which factor(s) matter most in causing the North's 'performance gap'?

1. Productivity

Productivity accounts for the largest proportion of the 'performance gap' (17pp), and is also associated more closely with the widening of the gap in the post-recession period.

2. Employment

Employment rate gap accounts for 5pp of the 'performance gap'. Gap has been relatively stable but persistent.

The North

Growth opportunities

'Prime' capabilities

Identified by the Review as differentiated and distinctive at a pan-Northern level, highly productive, and able to compete at national and international scales.

The North's four 'Prime' capabilities are:

- **Advanced Manufacturing** with a particular focus on materials and processes
- **Health Innovation** with a focus on Life Sciences, Medcal Technologies/ Devices, e-health and devolution of Health and social care
- **Energy** in particular expertise around generation, storage, and low carbon technologies and processes, especially in nuclear and offshore wind
- **Digital** focusing in particular on computation, software tools/design and content, data analytics, and simulation/modelling, and complementing strengths in media.

What factors are driving the 'productivity gap'?

- Skills gap – the most important factor
- Technology gap
- Investment gap
- Poor connectivity and transport
- Lack of agglomeration
- Low enterprise rates

'Enabling' capabilities

These 'Prime' capabilities are supported by three 'Enabling' capabilities which will play a critical role in supporting the growth and development of the 'Prime' capabilities. These are:

- Financial and Professional Services
- Logistics
- Education (primarily Higher Education)

What might a 'transformed' future for the North look like?

A 'transformational' economic future for the North, in which there are substantial improvements in the skills base, innovation performance, and transport connectivity, might be expected to have the following effects by 2050:

GVA ↑15% — GVA is projected to be 15% (£97bn) higher than 'business as usual' projection by 2050

Productivity ↑4% — Productivity substantially higher (4%) than 'business as usual' projection

Jobs ↑850,000 — Jobs 1.56m higher in 2050 than in 2015, and some 850,000 higher the 'business as usual' scenario in 2050

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Source: SQW

1. Introduction

The North of England is home to 16m people (nearly one quarter of the UK population) and 7.2m jobs, and generated an economic output of around £290bn of Gross Value Added (GVA) in 2015, about one fifth of the UK's total. The area has a wealth of high profile and growing businesses, and rich sets of expertise creativity, and assets. But, there remain persistent gaps in GVA per capita and productivity performance compared to the rest of the UK. HM Treasury analysis has showed that if the North's economy grew as quickly as the UK average to 2030 instead of at the slower rate experienced in the past two decades, its economic output would be £37bn higher in real terms[1].

It was with this opportunity in sight that the Chancellor set out a vision in August 2014 to better connect the North and for it to become 'one Northern Powerhouse', acting together to drive economic outcomes greater than the sum of its parts. The Chancellor's announcement was followed by HM Treasury's 'Fixing the Foundations' report in 2015, which committed to devolve further powers to the North (and elsewhere). The Autumn Statement in late 2015 then defined a range of investments in the North's science and business base to boost productivity performance and encourage a 'rebalancing' of the UK's economy.

Introducing the Independent Economic Review

Against this background, in late October 2015, SQW Ltd and Cambridge Econometrics Ltd (CE), supported by Steer Davies Gleave (SDG) Ltd, John Jarvis Consulting, and (as peer reviewers) Professors Philip McCann (Groningen), Ron Martin (Cambridge) and Roger Vickerman (Kent), were appointed by Transport for the North (TfN) on behalf of wider partners, to undertake **an Independent Economic Review (IER) of the Northern Powerhouse (NPh).** Partners' intentions in commissioning the IER were threefold, namely to provide:

- **Data, evidence, and intelligence to underpin TfN's Northern Transport Strategy in Spring 2016**, as an input to the Spring 2016 Budget, and subsequent proposals for transport investment.
- The evidence and arguments around **which the 'narrative' for the NPh** could be forged and developed.
- The **analytic bedrock on which subsequent NPh development** – including, but not limited to, strategy and action planning – could be built and progressed for the future.

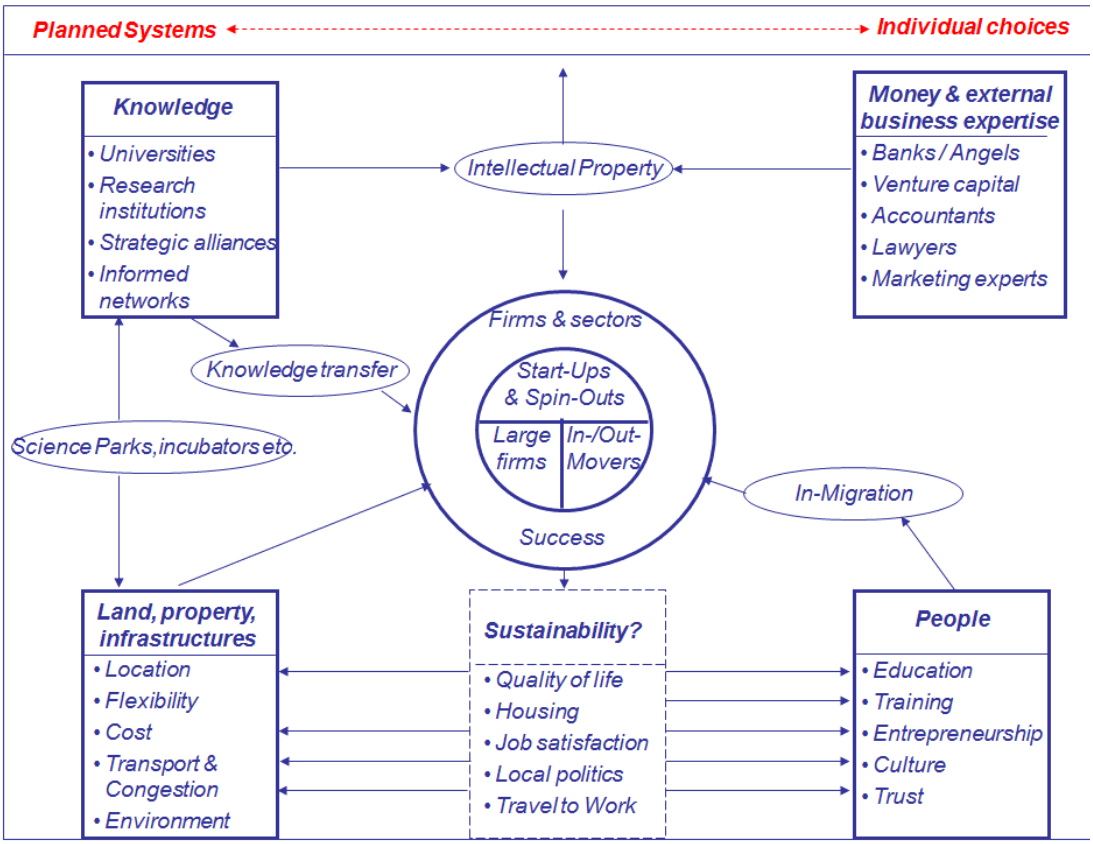
What the Review was . . . and what it was not

The Review sought to characterise the North's economic position and the drivers underpinning its performance, and identify opportunities where 'pan-Northern' effort can sensibly support existing 'local' activities. Whilst key elements of the work drilled down into transport specifics, the Review as a whole was intended to reflect on the wider economic

[1] https://www.gov.uk/government/speeches/chancellors-speech-at-the-cbis-2015-annual-dinner.

'ecosystem' in the North of England, of which transport is a vital part. Figure 1-1 introduces the concept of the broader 'economic ecosystem', which has underpinned thinking throughout the IER, and recognises the relationships and interplays different parts of the economy.

Figure 1-1: A depiction of the components of an 'economic ecosystem'



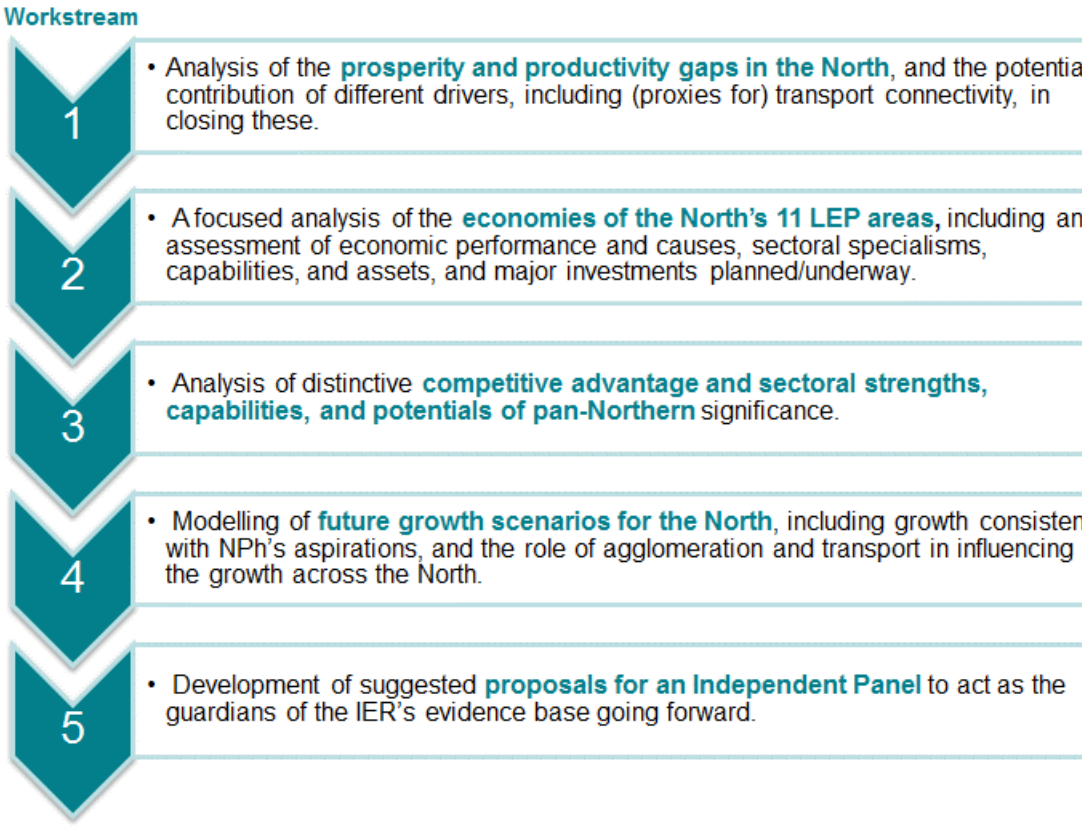
Source: SQW

Importantly, the Review was not intended as a fully-dimensioned 'economic baseline' for the North – it focused on five specific Workstreams, detailed below, which covered a range of domains. Equally importantly, the IER was not about developing the NPh strategy or action plan, nor was it concerned with any NPh governance arrangements. Rather, it relied heavily on a review and synthesis of existing literature and evidence, with additional modelling work by Cambridge Econometrics, building on analysis of the North's prosperity and productivity gaps, and sectoral performance, as its key evidential foundations.

Approach

The IER was undertaken between late-October 2015 and March 2016. It focused on five clearly defined but interrelated Workstreams which sought to understand the **scale, nature and causes of the North's 'performance gap', distinctive sectoral strengths and capabilities at the level of the North, and future growth prospects for the North** (see Figure 1-2 below).

Figure 1-2: The five component work streams of the IER



Source: SQW

The IER study was a strong example of partnership working at a significant scale, overseen by the TfN Partnership Board and northern Leaders, who have broad political and business membership from across the North. The project was commissioned and managed by TfN, supported by an Economic Reference Group, comprising economic leads from all 11 Local Enterprise Partnerships (LEPs) across the North. The work commenced with a Call for Evidence in early November 2015 via the Economic Reference Group, academic networks, and key stakeholder groups. Evidence was assessed according to its relevance, and almost 200 documents, covering some 8,000 pages, were subsequently reviewed to inform Workstreams 1-3[2]. Alongside this, Cambridge Econometrics analysed the North's GVA and productivity performance and sectoral profile – both historically and into the future – using their Local Economy Forecasting Model (LEFM)[3]. In mid-December 2015, draft findings from Workstreams 1-3 were presented to the Economic Reference Group and a meeting of the North's Leaders and LEP Chairs, before being presented to the TfN Executive and Partnership Boards just before Christmas.

With the evidential foundations in place, in January 2016 the IER's focus moved on to modelling future growth scenarios for the North, including a 'transformational' scenario for the North which was ambitious but at the same time credible (Workstream 4). Concurrently,

[2] This included a range of evidence from academic and policy research, think pieces, and LEPs' Strategic Economic Plans and underpinning evidence bases. Sources included prominent academics in the fields of economic/spatial growth, productivity performance, Smart Specialisation, and transport economics, N8, SERC, HM Treasury, BIS and DfT, IPPR, Centre for Cities, RSA City Growth Commission, The Northern Way.
[3] LEFM is a comprehensive database of economic, labour market and demographic data developed by Cambridge Econometrics, and is a stand-alone model providing forecasts of local economic and labour market indicators linked explicitly to national and regional forecasts.

proposals for an Independent Panel to act as 'guardians of the North's evidence base' going forward were developed and tested (Workstream 5). Again, draft findings from Workstreams 4 and 5 were presented to the Economic Reference Group and the North's Leaders and LEP Chairs, and then the TfN Executive and Partnership Boards in February 2016. Feedback from all stakeholder presentations was taken on board, and a final presentation was made to the North's Leaders in April 2016.

Talking Terms

Throughout this report, performance is defined through a general measure of prosperity, **Gross Value Added (GVA) per capita**, the measure most commonly used when comparing the economies of different regions. This is for two reasons. First, GVA per capita can be decomposed into drivers of interest such as productivity, employment and dependency rates, and performance gaps in each of these can be analysed. Second because, taken alongside population assumptions, there is a close link to the output growth aspirations and associated scenarios, which allows us to quantify future potential growth outcomes.

When defining the performance gap, the Reviewers used **two alternative comparators: the rest of England minus London, and also with London included**. Both comparators are of interest. On the one hand, London's unique characteristics as a global city and financial centre, which are unlikely to be replicable elsewhere in England, mean that it may not be a relevant benchmark for the Northern Economy. On the other hand, one of the aims of promoting better connectivity across the Northern economy has been to create an economy of sufficient scale to realise some of the advantages that a city of London's size enjoys, which suggests that the comparator should include London. The gap was also compared to **European benchmarks**, including the Rhine/Ruhr region (Germany), the Randstad (Netherland), and Lombardy (Italy).

Report Structure

This report is a summary of the findings from the IER's workstreams. It is structured as follows:

- **Section 2** summarises evidence on the scale, nature and causes of the North's 'performance gap' (Workstream 1)
- **Section 3** presents the key sectoral strengths and capabilities of pan-northern significance (Workstream 3, drawing on the findings of Workstream 2)
- **Section 4** sets out the future growth scenarios for the North, and compares a 'business as usual' forecast to one where the North's future is transformed by tackling the wide range of factors that are responsible for the 'performance gap' observed in the past (Workstream 4)
- **Section 5** outlines further evidence needs and options for 'guardians' of the North's evidence base looking forward (Workstream 5).

This summary report is supported by three annexes: Annex A offers some instructive learning lessons from a similar preceding initiative, The Northern Way; Annex B presents illustrative

maps of the north's 'Prime' and 'Enabling' Capabilities; and Annex C provides a short glossary of acronyms.

Detailed reports for each Workstream are available separately from http://transportforthenorth.com/.

2. Understanding the North's Prosperity and Productivity Gaps

Key Messages

The North's 'performance gap' (measured by GVA per capita)' is persistent and entrenched. Its GVA per capita has consistently been some 25% below the rest of England average, and 10-15% below the average when London is excluded. Having been on a downward trend since the early 2000s, the gap has widened since the 2008/09 recession.

Productivity accounts for the largest proportion of the 'performance gap', and is also associated more closely with the widening of the gap in the post-recession period. Nonetheless, the employment rate gap has also been persistent, and largely stable over the past decade.

The North's skills gap appears to be the most important factor driving the overall 'performance gap', as it influences both productivity and the employment rate. This has worsened since the recession, in part due to out-migration of skilled workers to the southern regions where employment prospects are better. Other important causes of the North's productivity gap include under-investment (a gap which has widened notably since 2008), low enterprise rates, a lack of agglomeration and poor connectivity, compared to benchmarks. The North's sectoral mix accounts for very little of the productivity gap.

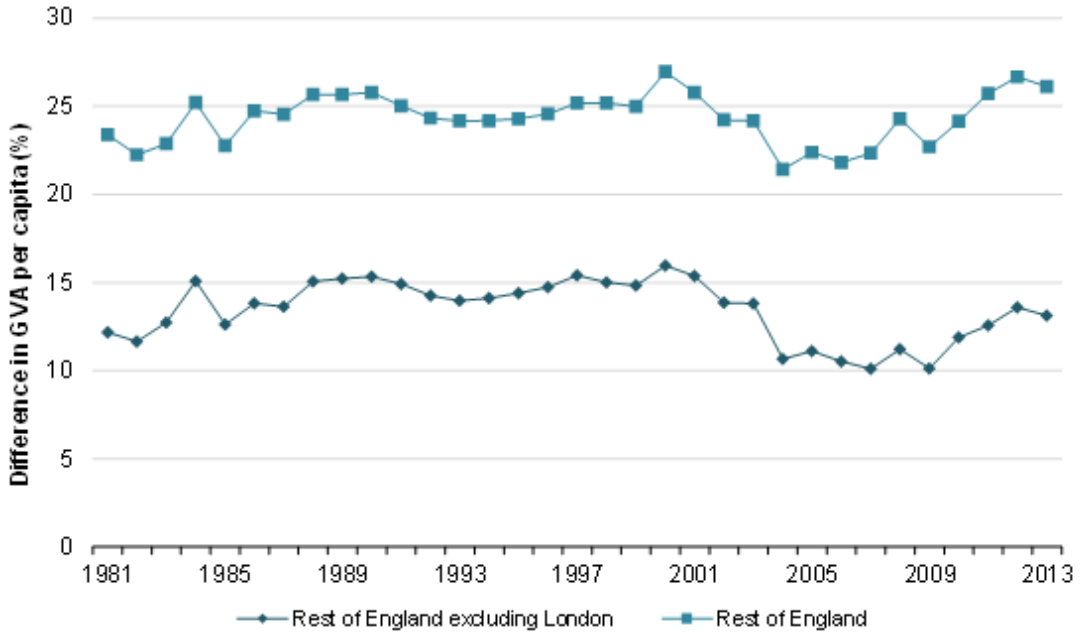
This Section summarises the nature and causes of the North's 'performance gap', which is defined through a general measure of prosperity, Gross Value Added (GVA) per capita compared to the rest of England minus London (and with London included for an alternative perspective). Specifically, the headline **GVA per capita figure is decomposed into four constituents** to show which contributes most to the GVA per capita gap: productivity, employment rates, jobs per worker and the age structure[4]. Building on this, attention is then given to the productivity gap, with an **analysis of underlying drivers of productivity** highlighted in the literature and adopted by HM Treasury[5] as key indicators, such as skills, innovation, agglomeration, and connectivity, to review the extent to which they play a part in explaining the 'performance gap'. The material presented here draws on Cambridge Econometrics' in-house LEFM and the wider IER literature review, and provides the evidential foundations for subsequent analysis presented in this report.

The scale of the North's 'performance gap'

The North's GVA per capita, has over the last thirty been consistently about 25% below the average for the rest of England, and 10-15% below the England average excluding London. The gap narrowed a little during the early 2000s but has widened since the 2008/09 recession, as illustrated below. Prices are typically lower in regions with lower income per capita, but latest ONS data suggest this only explains about 3-4 percentage points of the gap. The 'performance gap' compared with comparator geographies – Rhine Ruhr region of Germany, the Randstad region of the Netherlands and the Lombardy region of northern Italy – is larger still (30-35%).

[4] Definitions: Productivity - GVA per (workplace) job; employment rate: the proportion of the working-age population that is in work; jobs per worker: the ratio of workplace jobs per residence-based worker; and age structure: the share of working-age population in total population.
[5] ONS (2007) 'Productivity Handbook', chapter 3: Productivity Theory and Drivers.

Figure 2-1: The North's prosperity gap (GVA per capita) over time



Source: Cambridge Econometrics

The North's 'growth gap', that is the rate of growth in terms of GVA, jobs, and the population relative to the benchmarks – also matters. The data indicate that **in the case of GVA, the 'growth gap' has opened since the recession**, despite temporarily closing from the mid-1990s through to the onset of the recession due to stronger performance in private services. **The picture is similar for employment** (although the growth gap started to widen slightly earlier, from 2005 onwards) **and the working age population** (and, worryingly, the working age population started to decline in 2011).

What is driving the 'performance gap'?

GVA per capita performance depends on the following factors: the share of the population of working age (WAP), what proportion of the WAP are in work (employment rate), and how productive those in work are (measured by the number of jobs per worker and GVA generated per job). The question that follows is '**which factor(s) matter most in causing the North's 'performance gap'?**' If the gap were mostly explained by the employment rate, then policy would focus on getting more people into work (including addressing the reasons why people are unemployed or not in the labour market at all). If the gap were mostly explained by differences in productivity, policy would focus on the various drivers of productivity, including skills and transport connectivity.

The evidence below shows that **productivity – followed by employment – account for the largest share of the North's 'performance gap'**. When London is excluded, the gap with the rest of England is fairly evenly split between productivity and the employment rate. However, when the North is compared to the rest of England *including* London, productivity stands out as the critical factor accounting for the lion's share of the 'performance gap'. This is because of relatively low employment rates and higher productivity in the capital, making productivity more important when London is included in the comparison. Moreover, **the North's productivity gap has remained broadly constant and demonstrated a gradual widening**

from the onset of the recession. These differences in productivity translate broadly into differences in earnings: in 2015, mean earnings of full-time workers in the North were about 5% below those in the rest of England excluding London, and 16% below those in the rest of England including London. **So both the employment rate (more people in work) and productivity (people in higher paid jobs) need to be improved**.

Table 3-2: Contributions to GVA per capita gap

	Contribution to Gap in GVA per capita (%) **with Rest of England (minus London)**			
	1992/2013	1992/1997	1997/2009	2009/2013
GVA per capita gap	**13%**	**14%**	**13%**	**12%**
of which				
Productivity	8%	9%	8%	8%
Jobs per worker	-1%	-2%	-2%	-1%
Employment rate	7%	8%	7%	6%
WAP share	-1%	0%	0%	-2%
	Contribution to Gap in GVA per capita (%) **with Rest of England**			
	1992/2013	1992/1997	1997/2009	2009/2013
GVA per capita gap	**24%**	**24%**	**24%**	**25%**
of which				
Productivity	15%	15%	15%	17%
Jobs per worker	3%	3%	3%	4%
Employment rate	5%	6%	5%	5%
WAP share	1%	1%	1%	0%

Source: CE calculations

Factors driving the employment gap

There are a range of reasons (both individual and structural) why people of working age may not be in employment. These include caring for a dependant, health problems, discrimination, lower skills, or that they cannot find work which matches their skills or pay expectations, often because of the structure of the local economy. There is limited evidence available explaining whether the Northern economy is 'different' from the rest of England in these aspects. Some literature suggest that **large numbers of people in the North have become detached from the labour market**. This is supported by data which show a larger proportion of the North's residents claiming incapacity and employment support, compared to the benchmarks; although the gap has fallen, this decrease has been slowing, and indeed since 2008 has shown signs of rising. This issue is closely related to skills. The Leitch Review (2006) emphasised the importance of skill and qualification levels as a key determinant of whether people are in work, and there are well documented risks **that long-term unemployment** can lead to deterioration of skills, thus reducing the potential supply of labour for many years.

Factors driving the productivity gap

The literature on labour productivity suggests a similarly complex mix of factors in play, these including skills, innovation, investment, enterprise, connectivity, sectoral mix, and governance. Each is explored in turn below.

- ***Enterprise***: **the 'enterprise gap'** (measured by business starts per capita) **is also relatively persistent**. Whilst there are low levels of company failure in the North, some argue this is denying the North the 'creative destruction' needed potentially to introduce more innovative and efficient business and processes.

- ***Sectoral mix***: according to Cambridge Econometrics' analysis, **sectoral mix accounts for very little of the productivity gap**. Differences in productivity *within* each sector matter more than the mix of sectors, and this is determined by the type of functions undertaken *within* a sector (e.g. front vs back-room functions, or global vs national focus) in the North compared to elsewhere.

- ***Skills***: **the North has a gap in skilled people** (i.e. it has a higher share of people with lower skills, and a lower share of people with higher skills), **and this has worsened in the post-recession period**. The low skills story has both supply and demand dimensions: low educational attainment (especially among younger cohorts), limited job prospects, low aspirations on the part of employers (resulting in an entrenched 'low skills equilibrium') and an insufficiently dynamic economy to attract and retain higher-skilled workers all play a part in some areas. This means it is not sufficient to ensure that the skills level of the North's existing population improves – retaining and attracting more skilled individuals from other places is equally important, through continued investment in jobs, infrastructures, and innovation to create an environment in which the highly skilled want to live and work.

- ***Innovation and Technology***: across the North as a whole, **there has been a persistent 'technology gap'** (measured by Patents per Worker and R&D spend), **although this gap has stabilised since the early-2000s**. This has led, potentially, to opportunities going missing, good ideas not being exploited, and assets being utilised sub-optimally. There is a need to drive the North's science, research, and innovation base and ensure innovation and technology is commercialised effectively to the benefit of, and working with, businesses across the North.

- ***Investment***: the literature suggest that investment spending in those areas which boost the economy – such as science, technology and infrastructure – is considerably lower in the North than in other regions of the UK. This **'investment gap'** (measured by fixed capital expenditure per capita) **has widened notably since 2008.** Access to investment funds is also an inhibiting factor, with a heavy concentration of venture capital in the South East and an under-representation of investment executives in the North, in part because market demand is insufficient to attract and support these.

- ***Agglomeration***: **Lack of agglomeration** (i.e. lower levels of agglomeration, meaning the North is failing to capture its full economic potential) **is mentioned frequently in the literature as a reason for the North's 'performance gap'** with the rest of the England, due to Northern cities being too small individually to take full advantage of the positive externalities associated with the concentration of economic activities, and its population being spread out across a number of cities and associated settlements. It is the agglomeration benefit that underpins the argument that the 'whole of the North is greater than the sum of its parts' and it is by maximising these agglomeration benefits that the North can boost its economic performance more than if each part of the North acted independently.

- ***Connectivity and Transport***: linked to the point above, the evidence points to a strong link between agglomeration economies and connectivity. Because the North is **fragmented by poor transport links** between key settlements, the economy as a whole is failing to gain the agglomeration effects which would help grow its productivity. Better transport connectivity can help to promote a higher employment rate, by improving access to centres of employment, and it can help to promote higher productivity, by improving the attractiveness of an area for investment, improving access to markets, increasing the pool of workers available to work in higher productivity urban locations, and increasing the effective scale of cities and the associated benefits of agglomeration.

3. The North's Competitive Advantage and Sector Strengths

Key Messages

This Section draws on 'Smart Specialisation' principles, where places are encouraged to select a limited number of priorities for investment that focus on their strengths and comparative advantages, and the concept of 'capabilities' which encompass assets, expertise and competences which cut-across sectors. Through an analysis of 'top down' sectoral data and a review of 'bottom up' LEP-level evidence of local assets and expertise etc, four '**Prime' Capabilities** have been identified by the Review as differentiated and distinctive at a pan-Northern level. These capabilities also perform well on productivity, and can compete at national and international scales. These are:

Advanced Manufacturing, with a particular focus on materials and processes

Energy, in particular expertise around generation, storage, and low carbon technologies and processes, especially in nuclear and offshore wind

Health Innovation, with a focus on Life Sciences, Medical Technologies/Devices, e-health

Digital, focusing in particular on computation, software tools/design and content, data analytics, and simulation/modelling, and wider strengths in media.

These 'Prime' Capabilities are supported by **three 'Enabling' Capabilities** which will play a critical role in supporting the growth and development of the 'prime' capabilities. These are: **Financial and Professional Services, Logistics, and Education** (primarily Higher Education). Together, these 'prime' and 'enabling' capabilities combine to create a complementary and distinctive offer for the North.

In addition, the North's Quality of Life is an underpinning asset which supports its economic capabilities, particularly in providing an attractive place for people to live, work, invest, and visit.

This Section focuses on **pan-Northern competitive advantages, sector strengths and distinctive capabilities.** The approach taken by the Review to identify these took account of Smart Specialisation principles, and identified sectoral and capability specialisms where the North is genuinely **differentiated and distinctive**, and can **compete at national and international scales**. The focus was primarily on **highly productive** sectors which can help to close the North's productivity gap with the wider economy (in Section 2), and capabilities that are **important in multiple places across the North**[6]. The work combined an analysis of 'top down' Gross Value Added (GVA), employment and productivity data for Cambridge Econometrics' 45 economic sectors with a review of 'bottom up' evidence from LEP strategies, plans and evidence bases, (which help to identify the North's specific strengths and capabilities *within* sectors).

Evidence on pan-Northern Sectors and Specialisms

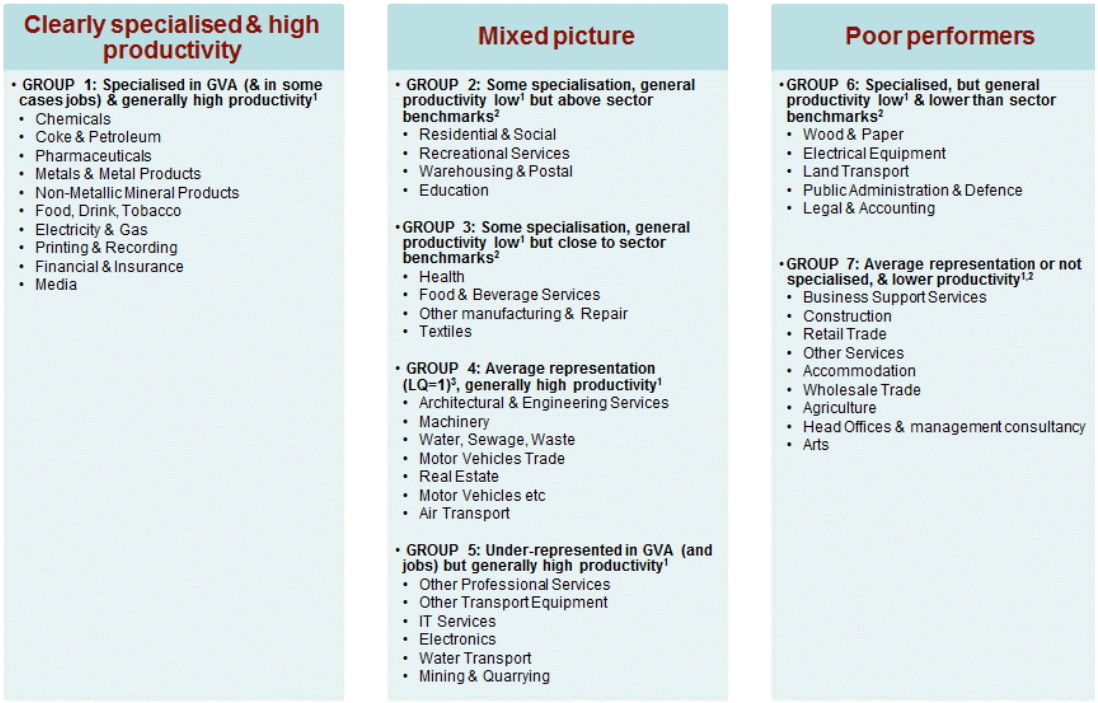
'Top down' evidence on Sector Specialisms and Productivity Performance

An analysis of the North's sectors suggests there are a group of sectors where the North is **specialised clearly in GVA terms** (and in some cases, jobs as well) **and productivity is high** (in an absolute sense and when compared to benchmarks), as illustrated in Figure 3-1. This includes **Coke and Petroleum, Chemicals, Pharmaceuticals, Materials, and Electricity and Gas**. The North is also specialised (to a lesser degree) in a number of other sectors, such

[6] For the purposes of this study, all "city regions" and "local areas" are defined on the basis of Local Enterprise Partnership (LEP) footprints, comprised of Local Authority Districts. There are 11 LEPs across the North, and together they form the Northern Powerhouse footprint.

as Media, Printing and Recording, Financial and Insurance, and Food, Drink and Tobacco manufacturing, but the productivity performance of these sectors is more variable. Many of these sectors are expected to grow in terms of GVA through to 2030, but jobs growth is more limited. There is also a group of sectors where the North is less specialised (or under-represented), but performs well in terms of productivity (e.g. Machinery, Architectural and Engineering services, Other Transport Equipment, and IT Services). Many of these sectors have observed rapid growth over recent years from a small base, and are expected to experience strong growth (especially in GVA) to 2030. Finally, some sectors account for a large share of the North's jobs, but have low productivity (e.g. Public Administration, Retail and Business Support Services), which are expected to see GVA and jobs growth by 2030.

Figure 3-1: Areas of specialisation and productivity performance across the North



Source: SQW analysis of Cambridge Econometrics' data. Benchmarks: (1) vs 'Rest of England (excl. London)' whole economy average; (2) vs respective sector average in 'rest of England (excl. London)' & 'England (excl. London)', (3) LQs compare North to 'England (excl. London). In each block, the sectors are ordered according to their GVA LQ value (highest first)

'Bottom up' evidence on local Sectoral Strengths and Specialisms

Figure 3-2 summarises the local strengths and specialisms in each LEP area, which is underpinned by wide ranging evidence of each area's complementary assets, facilities, research expertise, and business base. Looking across the LEPs, some **specialisms appear to be widespread *across* the Northern geography, including Advanced Manufacturing, Advanced Materials, and Energy**. Other specialisms are evident in a number of areas within – rather than across – the North, including **Life Sciences and Pharmaceuticals, Healthcare Technologies, Digital, Logistics and Tourism.** Other sectors which are prioritised by some LEP areas, but are less widespread across the North, include Agri-Tech (which links in various ways to wider strengths in Engineering, Chemicals, and Digital), and Financial and Professional Services, where some LEPs have niche specialisms but elsewhere the sector primarily serves local demand.

Figure 3-2: The sectoral strengths and specialisms of places in the North

Area	Examples (existing & future potential)	Area	Examples (existing & future potential)
Cheshire & Warrington	• Life sciences, pharma • Chemicals • Energy – esp. Nuclear • Advanced engineering, incl. consultancy, automotives • Financial & professional services, incl. management consultancy, HQs • Agri-tech and food	**Greater Manchester**	• Health & life sciences pharma, biotech, health analytics, clinical, medical devices, cancer research • Professional & business services – legal, accounting, management consulting, real estate, financial services • Creative & digital – creative & new media, ICT & digital comms, incl computer engineering, software • Advanced materials, incl. graphene • 'Advanced' manufacturing, aircraft, engineering consultancy, food/drink, textiles, materials • Low carbon, environmental goods/services, esp. nuclear
Cumbria	• Advanced manufacturing, esp. nuclear subs, biopharma • Nuclear • Agri-food • Tourism • Offshore wind		
York, North Yorkshire & East Riding	• Advanced manufacturing • Energy – biorenewables, energy generation • Agri-tech, food manufacturing • Potash mining • Tourism • Freight & distribution	**North East**	• Automotive manufacturing, incl. batteries, low carbon vehicles • Life sciences & healthcare, incl. (bio) pharma, custom syntheses, medical technologies/devices • Subsea & offshore technology / vehicles / machinery • Digital & creative – software, games, satellite technologies
Leeds	• Advanced manufacturing - textiles, bearings, gears, electric motors, metals • Financial & professional services – legal, monetary intermediation, insurance, HQs • Health & life sciences - medical devices • Digital & creative – gaming, data analytics, big data, satellite telecoms, publishing, advertising • Food & drink manufacture • Low carbon/environmental – consultancy, water, waste	**Sheffield**	• Advanced manufacturing & materials – incl. high precision engineering, hydraulics metals, rail, automotives & aeronautical engineering, manufacturing services • Healthcare technologies – medical devices, advanced wound care, orthopaedics, clinical, telehealth, additive manufacture • Digital / computing – program engineering, software, analytics, games, satellite technologies • Low carbon – nuclear research • Logistics
Hull & Humber	• Chemicals & petrochemicals – speciality gases, pharma, fibres, glass, biofuels, consulting services • Food / agri-tech • Engineering & manufacturing – marine, healthcare technologies • Energy – offshore wind, turbines • Logistics & ports	**Lancashire**	• Advanced manufacturing, esp. aerospace, automotives • Energy – offshore wind, nuclear • Chemicals • Legal/accountancy • Tourism
Liverpool	• Health & Wellbeing e.g. infectious disease, stratified health, pancreatic disease, paediatrics & e-health/assisted living • Advanced manufacturing – biologics, automotive, chemicals, food/drink, glass & ship building • Creative & digital – big data, virtual engineering, games, advertising & marketing, IoT & sensors • SuperPORT, freight & logistics, marine & maritime • Low Carbon – offshore wind & nuclear • Legal, maritime insurance & wealth management	**Tees Valley**	• Processing – petrochems, pharma, polymers, biotech, nuclear, steel • Advanced manufacturing – incl. in offshore/subsea engineering, automotives, rail • Low carbon – waste processing, renewable energy, hydrogen production • Digital – animation, textiles, film, engineering design, games, big data • Materials – graphene • Logistics

Source: SQW review of LEP-level documentation

Pan-Northern 'Prime' and 'Enabling' Capabilities

Based on the analysis of the 'top down' data on specialisms and productivity performance, combined with 'bottom up' local evidence on sectoral strengths, expertise and knowledge assets above, and wider likely market and technology change, four 'Prime' Capabilities emerge for the North. Across the four, the North is home to **international-class assets, expertise, research and businesses that are genuinely distinctive for the North, are highly productive and can compete at national and international scales**. These Pan-Northern strengths are articulated as 'capabilities' rather than traditional 'sectors', in line with Smart Specialisation thinking which focuses on '*unique assets and capabilities based on [a] region's distinctive industry structures and knowledge bases*'[7] and reflects the connections and themes that run within and across sectors and the wider knowledge base.

The four Pan-Northern 'Prime' Capabilities are:

- **Advanced Manufacturing**, with a particular focus on materials and processes. This capability shows both broad and deep sectoral specialisation across the North, based on historic strengths, and a very strong endowment of pure and applied knowledge assets and facilities in business and higher education.
- **Energy,** in particular expertise around generation, storage, and low carbon technologies and processes. With a long-standing track record in Nuclear Energy (and more recently decommissioning), a proven record in Offshore Wind Energy, and a growing expertise in battery technologies, the North is well-placed to seize the opportunity for Low/Zero Carbon energy, and Energy portability.
- **Health Innovation,** with the North long-established strengths in Life Sciences, Medical Technologies and Devices, and a growing competence in new and efficient service delivery models brought about by e-health and, crucially, the growing devolution of responsibilities for Health and Social Care.
- **Digital**, focusing in particular on high performance computing, cognitive computation, data analytics, simulation/modelling, and machine learning but also including sector strengths, such as Media, which will provide a strong base from which the other 'prime' economic capabilities may build.

In addition to these 'Prime' Capabilities, three 'Enabling' Capabilities which operate at the level of the North, have also been identified. These are:

- **Financial and Professional Services**, which provide essential services to the 'prime' economic capabilities, while also possessing the potential to generate employment via 're-shoring' activities currently out-sourced abroad, and 'north-shoring' where services move to the North from London and the South East.
- **Logistics,** with major port developments in the Liverpool and Hull and Humber City Regions, plus developments at Manchester and Robin Hood Airports,

[7] Jucevicius R and Galbuogiene A, 2013, The Dimension of Smart Specialisation in the Business System

logistics will be vital in allowing the proposed prime capabilities to realise their potentials in overseas markets.

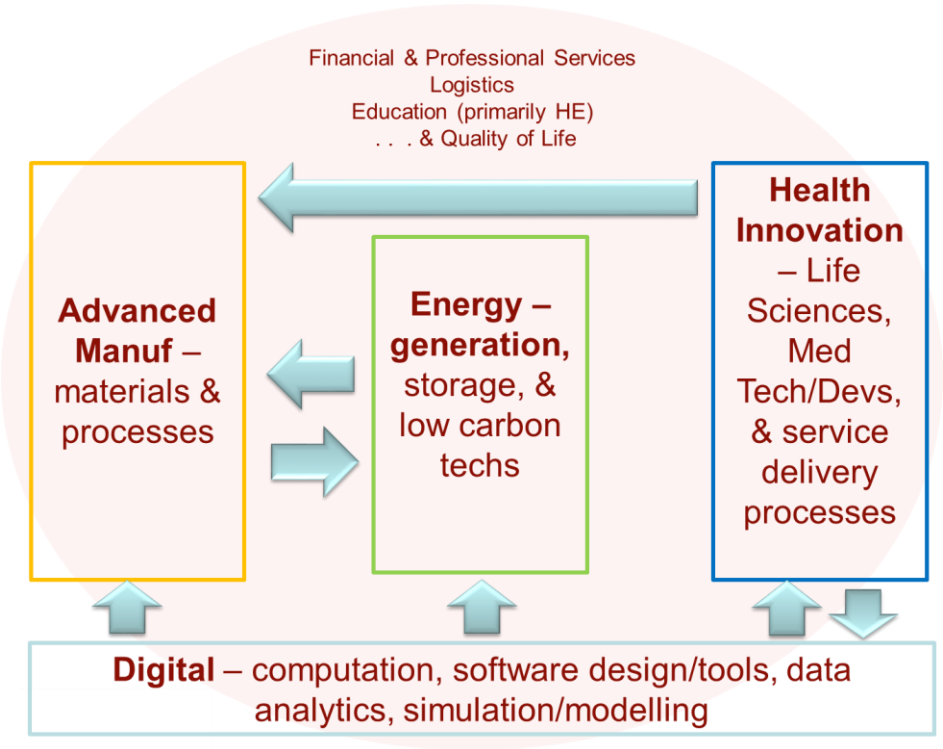
- **Education** (primarily Higher Education), which not only provides the research capability and knowledge excellence that underpins the 'prime' capabilities above, but also by virtue of its intrinsic quality offers serious potential for the internationalisation of activity, both through students, university-university links, and collaborations with global businesses.

Illustrative asset maps for each Capability are provided in Annex B.

Overall, the 'Prime' and 'Enabling' Capabilities account for somewhere in the region of 2.1m jobs and just over £100bn in GVA, representing around **30% of all jobs in the north and just over 35% of GVA**.

The Capabilities combine to create a distinctive and coherent offer for the North. As illustrated in Figure 3-3 there are also interesting and exciting interplays between Advanced Manufacturing and Energy (e.g. in the engineering of Low Carbon technologies and equipment) and Health Innovation (e.g. Medical Devices), and Digital strengths in Computation, Big Data and Simulation/Modelling play important roles both in Advanced Manufacturing design and Health Innovation specialisms around e-health. Cutting across these economic capabilities, **the North's Quality of Life is an critical underpinning asset** which supports its economic capabilities, particularly in providing lower cost housing compared to London and the South East, varied sporting and cultural offers, and easy access to the coast and countryside (including four National Parks). Quality of life is a critical factor in attracting and retaining skilled workers and inward investment to the North.

Figure 3-3: 'Prime' and 'Enabling' Capabilities and their inter-relationships



Source: SQW

4. Scenarios for Future Growth in the North

Key Messages

A 'transformational' economic future for the North, in which there are substantial improvements in the skills base, in innovation performance, and in transport connectivity, is projected to raise the growth rate of the North's productivity, GVA and employment markedly above past trends, helping to close the productivity and prosperity gap compared with the rest of England. By 2050, GVA is projected to be some 15% higher than a 'business as usual' projection - this means that in 2050, GVA is £97bn higher (in 2015 prices) in the 'transformational' scenario than in the 'business as usual' case. Productivity is some 4% higher and some 850,000 additional jobs are projected compared with 'business as usual' in 2050, and 1.56m more than in 2015.

It is assumed that this improved economic performance is led by a marked improvement in the North's distinctive offer of 'prime' capabilities, supported by the contribution of key 'enabling' capabilities, which will have knock-on effects on suppliers based in the North. Many of the additional jobs are likely to come in city and town-based services, including those that benefit from the population's higher spending power, helping to improve the North's employment rate. These services will also see some productivity improvements.

To achieve this growth, and close the gap, substantial improvements in the skills base and graduate retention and attraction, innovation performance, and inward investment are necessary across the North. Transformational improvements to the North's transport connectivity are also critical, both between and within cities. Enhanced pan-Northern city-centre to city-centre rail links, east-west and north-south are needed to facilitate the bigger labour markets that support the success of knowledge-based firms – and, to be effective, they must be integrated with city-region local public transport networks, which are joined-up with wider networks, involving frequent rail services, light rail and bus, all supported by smart, multi-modal ticketing. Global connectivity, for people and for goods, is also essential if the North's Smart Specialisation opportunities are to be realised fully.

The report *The Northern Powerhouse: One Agenda, One Economy, One North*[8] sets out a broad vision for a transformed economic future for the North. It refers to HM Treasury analysis cited by the Chancellor of the Exchequer[9] which quantifies what such a future could be worth in terms of GVA. That estimate calculates the GVA that would arise in the North between 2013 and 2030 if the region grew at the same rate as the projected UK average rate and compares this with GVA that would arise if the region grew at the (slower) rate that it experienced between 1994 and 2012. The difference, £37bn[10] in real terms, was described by the Chancellor as the 'prize that awaits the north of England'. As set out above, there is a persistent 'performance gap' – especially in terms of productivity – that will need to be addressed if the North is to reach this goal (see Section 3), but the North also has distinctive, highly productive capabilities on which to build (see Section 4).

In this Section, the Review's future growth scenarios for the North are presented, including a 'transformational scenario' which builds a picture of what the North's economy could look like if the 'prime' capabilities grow substantially and if the drivers of the North's underperformance in productivity are addressed. It also discusses the role of agglomeration and transport in enabling this improved performance.

[8] Transport for the North and Department for Transport (2015) *The Northern Powerhouse: One Agenda, One Economy, One North*. A report on the Northern Transport Strategy, HMSO, London, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427339/the-northern-powerhouse-tagged.pdf.
[9] HM Treasury (2014), supporting analysis for speech by the Chancellor of the Exchequer, available at https://www.gov.uk/government/news/northern-powerhouse-chancellor-sets-out-pathway.
[10] The original figure in the cited reference was £44bn in real terms. The revised figure of £37bn is taken from https://www.gov.uk/government/speeches/chancellors-speech-at-the-cbis-2015-annual-dinner.

Approach taken to developing the scenarios

The approach to developing the scenarios is summarised below. Further details on the underpinning assumptions and health warnings are provided in the Full Report for Workstream 4 (available separately), and all results should be interpreted in this context.

Five forward-looking scenarios were developed, which compared the growth that might be expected in the North if:

- The future is like the past *('business as usual')*, which reflects both historical experience (and substantial levels of policy intervention and investment in the past) and expected UK trends – it is not, therefore, a 'do nothing' scenario.
- The expectations embodied in the LEPs' Strategic Economic Plans (SEPs), which generally run through to 2030, are fulfilled *('SEPs' expectations')*, based on analysis undertaken in-house by TfN[11].
- The North's future performance is transformed, relative to the past ('*transformational*'), which assumes, implicitly, that progress is made in tackling the wide range of factors that are responsible for the 'performance gap' observed in the past, and that growth comes about as a result of sector-level assumptions for growth. This scenario is discussed in more detail below.
- The 'transformational' scenario is adjusted to reflect a higher UK GDP growth context, consistent with the Office for Budgetary Responsibility's (OBR) long-term view *('transformational plus')*[12].
- The North's growth rate is equal to UK GDP growth ('*HMT aspiration*'). This is constructed by applying the Office for Budgetary Responsibility's long-term UK GDP growth rate assumptions (published in OBR, 2015) to the starting level of GVA in the North in 2015.

In particular, the **'transformational scenario'** builds up a picture of what the North's economy would look like were six things to occur:

- There is **substantial growth in the four 'Prime' Northern Capabilities**, and supporting growth in the three 'enabling' capabilities (which together currently make up about 35% of Northern GVA and 30% of Northern employment)
- There are consequent **effects on suppliers** based in the North

[11] These Plans were developed independently, and so they may be based on different underlying assumptions about the economic context and the strategies to be pursued to promote growth. TfN has sought to account for double counting, where LEP geographies overlap. We also acknowledge that the SEPs included a range of proposed projects, not all of which were awarded Growth Deal (or other) funding, and so their ambitions (in terms of economic growth) may be over-stated. Some LEPs were revising their growth ambitions in the light of this at the time of the IER study.

[12] The outcomes for the North of the 'business as usual' and 'transformational' scenarios were prepared in the context of CE's view about the long-term prospects for growth in the wider UK economy, which has UK GDP growth growing at a slower rate (a difference in the annual growth rate of about 0.2pp) than the long-term assumptions published in OBR (2015). Hence in the 'transformational plus' scenario the differential between the North's growth in the 'transformational' scenario relative to CE's view for UK growth is applied to the OBR assumptions for long-term UK GDP growth.

- There is **improved competitiveness** and hence higher growth in output (but to a considerably lesser extent than for the 'prime' capabilities) **and productivity** for selected other sectors that largely serve markets outside of the North
- There are **agglomeration effects** arising from faster connections between cities in the North, reflected in the growth in output and productivity of city-based business services
- There are broadly-based improvements in productivity across the wider economy and a higher employment rate[13] (associated particularly with higher skills)
- There are consequent **effects on private and public services** that serve the population which has a higher income.

A 'bottom up' structural approach was adopted to develop the 'transformational scenario'. The **definitions of 'Capabilities' were deliberately broad**, reflecting uncertainties around which particular technologies will develop most rapidly and experience the fastest growth in markets, or which of these market segments will prove to be most successful for the North. These Capabilities were translated into 'best fit' sector definitions to feed into the forecast modelling using Standard Industrial Classification (SIC) codes, but these are not a precise measure – some of the Capabilities are narrower than the SIC codes allow, others will be absorbed by much broader SIC codes, and some SIC codes contain a combination of higher and lower productivity activities that cannot be disaggregated in the SIC coding system.

Moreover, the Review recognised that bringing about improvements in productivity performance is likely to be a **long-term endeavour** and any investment in (say) the skills system will need to go hand in hand with improvements in the other drivers of business performance. Similarly, it will take time to put into place the substantial scale of investment in pan-Northern transport infrastructure required to support a change in the North's economy. The assumptions underpinning the 'transformational scenario' therefore consisted of improvements whose effects build up over some 20-25 years – it is the **accumulation of these measures that will together drive the overall improvement in the North's performance**.

Incorporating agglomeration effects

Agglomeration captures the impacts on economic performance (notably in the form of higher productivity and pay) that arise from specialisation and knowledge-spillovers that can be realised in larger cities. The literature that seeks to quantify agglomeration effects has focused on the relationship between city size (measured by population or employment) and productivity, drawing on evidence from the UK, US, Europe and Japan. The estimated scale of the relationship varies, but there is a cluster of **estimates implying that a doubling of city size is associated with an increase in productivity in the range**

[13] There is a potential tension and short-term trade-off between the objectives of (1) closing the productivity gap between the North and the rest of England, on the one hand, and (2) bringing more people who are not employed (typically with low skills) into (presumably relatively low-productivity) work.

of 3-8%[14]. **Agglomeration effects also vary across sectors** – for example, while positive effects are reported for some Manufacturing industries, they are found more consistently for Service sectors, with evidence to suggest that a doubling of a city's agglomeration (here measured in terms of 'access to economic mass') is associated with a 20-30% increase in productivity for Service sectors[15]. Frontier Economics (2016) presents a summary of results from four studies in which the agglomeration effects for producer services are around double the average impact for all sectors.

Proposals for improved transport infrastructure for the North focus on reducing rail journey times *between* cities and improving commuting *into* cities. This would make it **easier for firms and their employees to interact** and hence enjoy the productivity benefits associated with agglomeration, **allowing more workers to work in city-centre locations where higher-paid jobs are available** and better matching between skills and jobs (although the latter effects are not necessarily additional to the wider economy if the connected city centres benefit at the expense of smaller urban locations).

One of the key features of the North is that it has a series of medium-sized cities which are close together but not currently connected optimally. In their work for The Northern Way, SERC (2009) estimated that a 20-minute reduction in train journey times between Leeds and Manchester would increase the rail contribution of 'access to economic mass' by 10% in the two cities, leading to an increase in wages of 2.5% in both places[16]. Frontier Economics (2016) presents estimates of the impacts of 'achieving all Northern Powerhouse rail aims', which results in a 3.2% improvement to the accessibility of the Manchester travel to work area (more than double the effect of the reduction in the Manchester-Leeds journey time alone) and a 5.2% improvement for Leeds (up from 2.8%). For the other large cities of the North, the improvements in accessibility resulting from faster rail journeys estimated in Frontier Economics (2016) are of a similar magnitude, all lying within the range 3.2% - 5.2%.

Using a reasonably narrow definition to focus on city-centre activities, the metropolitan districts of Leeds, Liverpool, Manchester, Newcastle on Tyne and Sheffield together account for some 20-25% of the North's GVA and employment in services. Hence, if the productivity of these services were boosted by say 5-7.5% as a result of improved connectivity and structural changes, and there were no offsetting impacts in other locations, this would boost the productivity of the North as a whole in these services by some 1-2%.

The IER's 'transformational scenario' incorporated a broad estimate of potential scale and nature of impacts arising from connectivity improvements, informed to the

[14] For example, see: Graham D.J., (2007), 'Agglomeration, productivity and transport investment', *Journal of Transport Economics and Policy*, 41, 317-343; Rosenthal, S. S. and Strange, W. C. (2004) 'Evidence on the Nature and Sources of Agglomeration Economies', Handbook *of Urban and Regional Economics*, Vol. 4, ed. Henderson, J. V. and Thisse, J. F. New York: North-Holland; Venables, A.J., Laird, J. and Overman, H. (2014), 'Transport investment and economic performance: Implications for project appraisal', paper commissioned by the Department for Transport; Rice, P, A. J. Venables and E. Patacchini (2006) 'Spatial Determinants of Productivity: Analysis for the Regions of Great Britain'. *Regional Science and Urban Economics* 36 (6), 727-752; and Frontier Economics (2016) Assessing the productivity benefits of improving inter-city connectivity in Northern England, A report prepared for the National Infrastructure Commission

[15] Graham, D.J. (2005) 'Investigating the link between productivity and agglomeration for UK industries', report for the Department for Transport

[16] Spatial Economic Research Centre (SERC) (2009) Strengthening the economic linkages between Leeds and Manchester. Report to Northern Way, report dated November 2009.

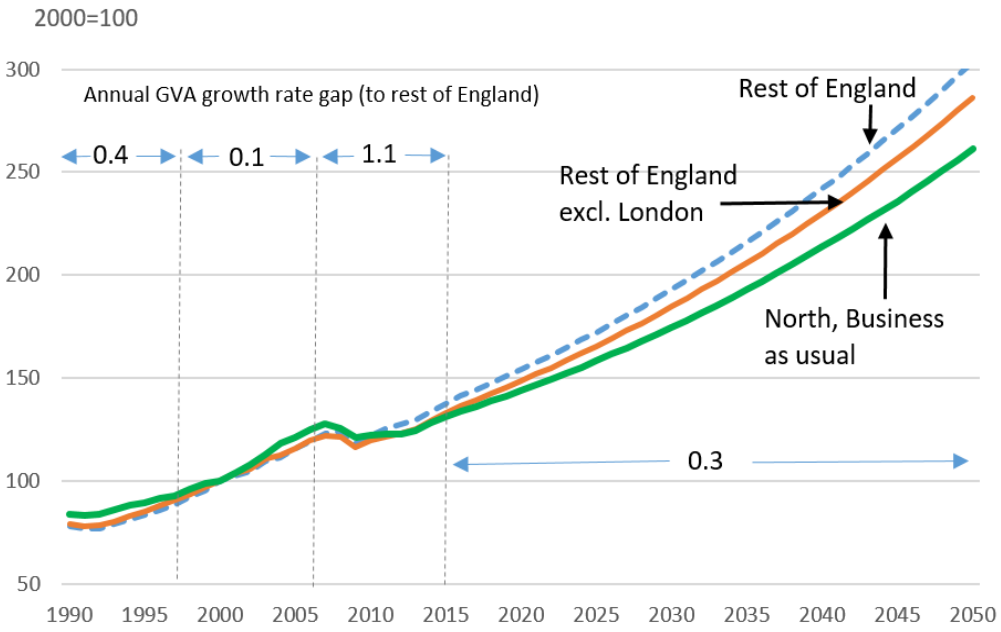
extent possible by the empirical estimates of agglomeration effects that have been cited, alongside other continuing influences on productivity (more capital, better technology and improved skills). It assumed that some of the 'Prime' and 'Enabling' Capabilities are city-based and are expected to benefit more from agglomeration economies; others are located on the edge of or outside of cities and their future success depends more on other factors, including other kinds of transport connectivity improvement.

Scenario-testing Results

'Business as Usual'

Under the 'business as usual' scenario, the growth gap between the North and the rest of England is expected to widen considerably, with an annual rate of GVA growth in the North that is 0.3 percentage points behind the rest of England. Figure 4-1 shows the trends. On this scale, important differences may appear small (the apparently modest 2008-10 drop represented the worst recession since the 1930s). If the North's growth rate lagged behind the rest of England rate by 'just' 0.3 percentage points per year, after 35 years the gap between the sizes of the two economies would have widened by 11%.

Figure 4-1: Real (inflation-adjusted) GVA in the North, actual and 'business as usual' projections, compared with the rest of England with and without London (Index 100 = Year 2000)



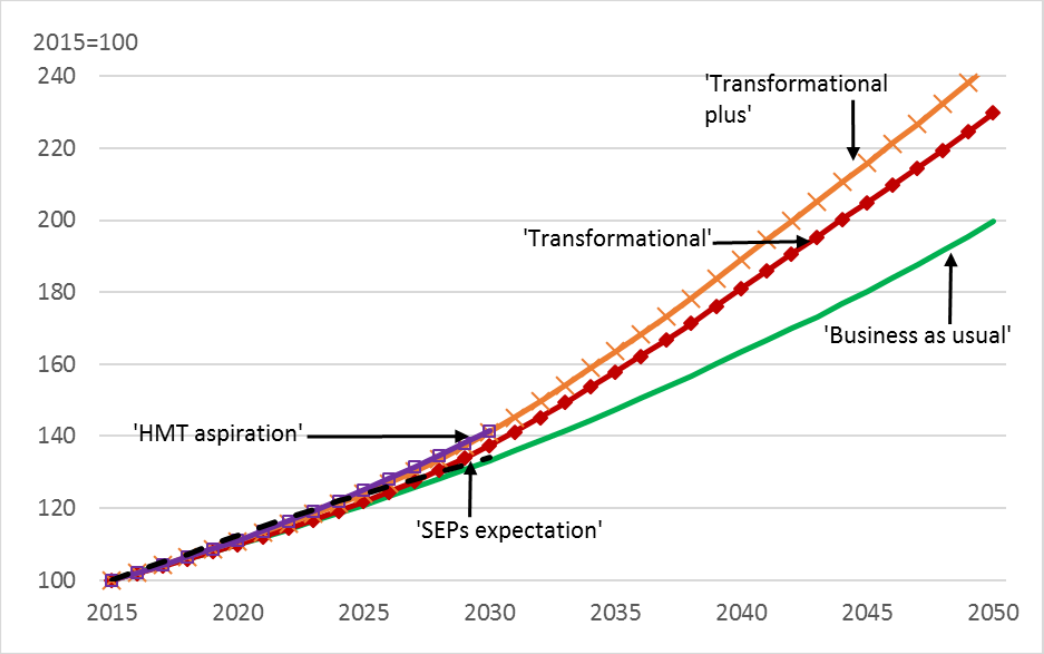
Source: Cambridge Econometrics

Growth scenarios

Under a 'transformational scenario' for the North, where there are substantial improvements in the skills base, innovation and transport connectivity, growth rates in the North's productivity, GVA, and employment could rise markedly above past trends, helping to close the productivity and prosperity gap compared with the rest of England. As illustrated in Figure 4-2, the scenario testing analysis indicated that:

- The annual average growth rate of the 'transformational scenario' is about 0.5 pp higher than the 'business as usual' rate over the whole period 2015/50, with accelerated growth in the 2030s.
- By 2050, under the 'transformational' scenario the **absolute level of GVA in the North is projected to be some 15% higher than the 'business as usual' projection**. This means that in 2050, GVA is **£97bn higher** (in 2015 prices) in the 'transformational' scenario than in the 'business as usual' case.
- **Productivity some 4% higher in 2050 than the 'business as usual' case**, which is predicated on the assumption of an improvement in the various drivers of productivity (with strongest effects on the prime capabilities). On its own (without adding in the effect of the expected boost to the employment rate), this would cut by about a third the prosperity gap compared with the rest of England outside of London.
- By 2050, some 850,000 additional jobs are projected in the North under the 'transformational' scenario compared with 'business as usual' in 2050, and 1.56m more than in 2015. This assumes that the North is able to attract and retain a larger working age population (with an associated impact on the overall population). The largest increases in jobs are in the Enabling Capabilities and the Digital Prime Capability, and in other Business and Consumer Services.
- The growth rate of the 'transformational plus' scenario is very similar to that of 'HMT aspiration' to 2030, but not by design.

Figure 4-2: Real GVA in the scenarios (Index 100 = Year 2015)



Source: Cambridge Econometrics

The 'transformational scenario' would represent **a sustained better long-term performance for the North** than has been seen in any period in the last four decades. **It would depend on long-term improvements in the various drivers of productivity**

and output growth, including transport connectivity, and so the impact on economic performance would be a gradual one, building up over the long term. **This scenario would also imply a substantial restructuring of the North's economy.** Some city-based service activities were assumed to become more specialised and to increase the geographical reach of the markets that they serve. As skills, productivity, and average earnings increased across the North as a whole, firms engaged in lower value added activities that are also tradeable (notably in manufacturing) would come under increasing pressure to change their product ranges and processes to be able to compete in a higher labour-cost environment.

Added to this, there is some uncertainty over the scale of agglomeration benefits that could be realised by fast journey times between the North's cities, and the extent to which these are additional. It is conceivable that this could bring about a substantial integration of the activities of the cities, yielding larger improvements in productivity through specialisation than envisaged here.

Implications

Transformed economic performance in the North will depend on marked improvements across the wider ecosystem that supports successful economic development. The focus of the IER was to explore **implications for transport** in more detail. However, **implications for the wider ecosystem** are also evident, and included in the narrative below.

Implications for Transport

Better transport connectivity within and between cities matters for the North's growth prospects for a number of reasons: investment in skills is more likely where there is access to well-paid jobs; foreign investors are more likely to be attracted to locations that are well connected to global markets, with access to a well-qualified workforce; and firms are more likely to specialise and innovate in areas with deep and extensive labour markets.

In terms of transport demand under the 'transformational scenario', growth in the knowledge-based 'Prime' and 'Enabling' Capabilities should be expected to lead to **increases in the number of high-skilled workers employed in urban areas in general and city centres in particular**. **Such workers are typified by longer than average commutes and greater than average business travel**, both in terms of the number of trips and their average length, and greater travel for leisure purposes. However, not all the 'Prime' and 'Enabling' Capabilities have predominantly urban locations – the **Advanced Manufacturing and Logistics capabilities** are typically located in out-of-town locations, where **good access to, and connectivity between, road and/or rail networks beyond the cities is crucial**. As noted above, growth in the 'Prime' and 'Enabling' Capabilities will support growth in other sectors of the wider economy, and jobs in these sectors and the people who work in them are predominantly located in the North's towns and cities. In addition, a strengthened and more prosperous Northern economy will stimulate more housing demand, and the location of this will also have a major impact on future travel patterns and transport demand.

On the supply-side, **it is no longer the case that the North has spare transport capacity to accommodate growth:** the North has some of the most crowded rail services in the country, rail journey times are slow (and correlated with low levels of longer-distance commuting), and the road network is also becoming congested increasingly. This is creating a real constraint on the ability of the North to respond to changes in the global market and enable the greatest possible rate of growth, especially in the North's 'Prime' and 'Enabling' Capabilities. Addressing these issues will **require a new and transformational approach to planning and implementing new transport infrastructure** which will enable transformational growth. The implications for transport investments across the North are as follows:

- The majority of trip-making and travel in the North is made by road. Significant elements of the Prime and Enabling capabilities are highly dependent on road travel, notably Advanced Manufacturing and Logistics. Economic growth will lead to increased demand for road travel across the North. This would be the case even if there were substantial and transformative investment in public transport provision. Accordingly, **targeted investment in new road infrastructure will be warranted** to enhance the reliability and resilience of road travel, reduce journey times and improve the connections offered by the North's road networks.

- However, the increase in town and city centre employment in the knowledge-based 'Prime' and 'Enabling' Capabilities cannot be accommodated through private (car) travel alone. It will require **enhanced public transport connectivity** within city regions/towns: coherent, user-friendly, joined-up networks, involving frequent rail services (including cross-city operations), light rail and bus, all supported by smart, multi-modal ticketing with simplified fares.

- Growth in the knowledge-based 'Prime' and 'Enabling' Capabilities is also expected to lead to **increased demand for business-to-business travel**. Rail is well suited to cater for this demand, but adequate capacity and faster journey times will be required.

- **Enhanced city-centre to city-centre rail links, east-west and north-south**, also have the potential to facilitate the bigger labour markets that support the success of knowledge-based firms, but only if they are integrated with city-region local public transport networks.

- **Global connectivity** (ports and airports) is also critical if the North's Smart Specialisation opportunities are to be realised fully. This applies to people – to meet customers, suppliers and collaborators – and for the import and export of goods.

Implications for the wider 'ecosystem'

In addition, the IER recommended that **improvements would be required across the wider ecosystem**, particularly in terms of the following:

- Improved **education** outcomes and work-based and vocational **training**
- Improved **graduate retention and attraction**, helped by better prospects for skilled, mobile workers to make their careers in the North through good access to opportunities in more than one town/city, and by a good supply of high-quality housing
- Better **commercialisation of university research** to the benefit of the North's business base
- Better **management skills,** including the uptake of **innovation**
- Attraction of **inward investment** by world-leading, international businesses that can bring transformed business practices and access to leading technologies.

Not all of these thematic areas require policy development and implementation to be undertaken at a pan-Northern level (as has been the case for strategic transport infrastructure). Vocational skills and housing policy need clearly to be aware of particular local needs and circumstances, but there is likely to be value in understanding issues, constraints and opportunities to help drive the Northern economy as a whole. For others, such as inward investment and innovation, there is a case for both research and coordinating action over a larger geographical scale.

5. Looking Forward

Further evidence needs

As outlined above, a transformed North will depend on investment and improved performance in a number of critical areas (especially skills, innovation, and inward investment) in addition to transport infrastructure. It was beyond the remit of the IER to explore these in detail but **future research at the level of the North would be beneficial, particularly in the following thematic areas to inform policy**:

- Improved education outcomes and work-based and vocational training
- Improved graduate retention and attraction, helped by better prospects for skilled, mobile workers to make their careers in the North through good access to opportunities in more than one town/city, and by a good supply of high-quality housing
- Better commercialisation of university research
- Better management skills, including the uptake of innovation
- Attraction of inward investment by world-leading, international businesses that can bring transformed business practices and access to leading technologies
- The implications of the IER for transport provision and associated transport masterplanning.

Proposals for 'guardians' of the North's evidence base looking forward

A key requirement of the IER was that formal attention be given to thinking through how the evidence base generated by the Review could be sustained and advanced to inform policy going forward (Workstream 5). Specifically, the Reviewers were asked to develop proposals for establishing an independent Panel to act as the custodian of the evidence in future. This was premised on the need for an excellent understanding of relevant pan-Northern issues so as to inform economic, efficient and effective economic strategy and action. Importantly, the Panel would be about maintaining the evidence base, *not* wider NPh governance.

In this context, **an independent Panel could deliver on six functions**:

- **Providing an independent, evidence-based, assertion-free overview of economic performance and prospects at the level of the North**. In so doing, it could provide the evidential feedstock to provide LEPs, Northern agencies, national government and other stakeholders to inform policy development and investment decisions.

- **Acting as a cost-effective guardian of the economic data pertaining to the North**, and achieve economies of scale in the commissioning and production of economic forecasting and forward-looking thinking at the level of the North.

- **Offering specific advice and guidance on how the different domains of the economic 'ecosystem'** (for example, Knowledge, Skills, Labour Force, Infrastructure, Enterprise etc.) **could be flexed and progressed** to help achieve the 'transformational scenario' set out above.

- **Drawing on wider thinking about the economic development of the UK in the global context**, and using this to inform views about the North's economic future. A key function here could be for the Panel to act as a 'channel for engagement' with other specialist thinkers on economic issues, such as the Organisation of Economic Cooperation and Development and various Think Tanks, and make effective use of this knowledge for policy-making in the North.

- **Identifying gaps in the existing data and/or knowledge** regarding the economy in the North, and to **commission research to address these gaps**, ensuring this new evidence is widely diffused and embedded. Key here could be exploration around the issues that the IER has not had time (or resource) to probe – for example the relationship between skills and occupations in the North, the supply chain linkages within the 'Prime' and 'Enabling' capabilities, and issues around innovation capacity, which BIS' proposed Science and Innovation Audit process is progressing.

- **Providing a 'reality check' and acting as 'critical friend' to policy-makers in the North,** to ensure that relevant strategies, policies, programmes and projects are robust and evidence-based, and take account of connections between places, economies, policies, investments, and disinvestments (by public and private sectors).

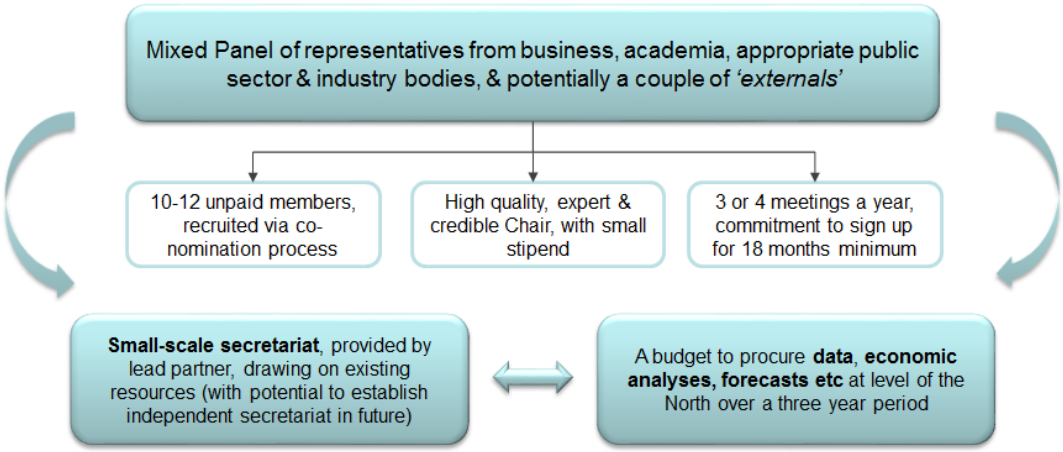
- **Providing 'thought-leadership' in 'foresighting the issues,'** based on scenarios of different technological and market trends, which could push the boundaries of explanation and understanding of how the economy of the North operates.

In progressing these functions, the Panel would be independent and objective, following the style adopted for the IER. It would have an advisory, inputting, and challenging role to the Northern Powerhouse's thinking and development. It would not be a formal component of the Northern Powerhouse governance structures or related policy-making/deciding processes; so to do would compromise its intended, and distinctive, independence.

In light of these functions, a suggested form for the Panel and supporting secretariat is summarised in Figure 5-1 below. It is envisaged that the Panel could comprise 10-12 members, who were recruited via a process of co-nomination. In recruiting members, the emphasis would be on knowledgeable, articulate, and inquisitive individuals, rather than simple place, sector, or interest 'representation'.

To support the Panel, there would need to be a secretariat infrastructure which was capable of supporting and servicing the Panel, and budgetary scope to procure data, economic analyses, and forecasts at the level of the North to inform the Panel's debate. The Panel could operate for minimum of three years, to build momentum. Initially, it is recommended that it would focus on the thematic areas identified as 'further evidence needs' above, but this would be widened as future evidence needs emerged.

Figure 5-1: Proposed form and operation of a Panel



Source: SQW

Annex A: Learning from the Past

Pan-Northern perspectives on economic growth have been progressed previously. The Northern Way operated from 2004 to 2011, and was established to address the North's underperformance on productivity relative to the rest of the UK through pan-Northern priorities, investment and actions. Relevant learning from The Northern Way experience, which is instructive for the current context in the North, is summarised below.

Learning from The Northern Way

***What Worked*?**

Functional economic geography is multi-layered, with some issues best dealt with locally or sub-regionally, and some at a broader geography. It was only after a review, three years after the launch of the Northern Way Growth Strategy (2004) and its dozen or so themes and real operating experience that it became clear The Northern Way should focus down on Private Sector investment and Innovation, alongside Strategic Transport as those areas with non-contested rationales at pan-Northern level. Other policy areas and drivers of productivity and economic improvement were recognised as being dealt with best at smaller geographies. Subsidiarity was an important consideration.

Crucially, The Northern Way was able to think intelligently for the North, in a way which made people listen. This was partly down to being able to draw in international, national, pan-regional and local thinking on the issues, and relating these to the North. This drew widely on, for instance, the OECD, academics, think tanks, consultants, national government and its agencies, the regional tier and local decision-makers. The Strategic Transport Priority's work, progressed in the form of the Transport Compact, benefitted also from long-term relationships with external professional advisors - leaders in the Transport field – which progressively increased the value from their input.

The Northern Way was a 'standard' around which Northern interests could cluster. In the case of the N8 Group of Universities, The Northern Way provided initial development capacity, and this Group moved on to have an ongoing role in relation to pan-Northern interests in the university research base. It continues to do good work.

The initiative was clever in using appropriate mechanisms for its work. Theme groups complemented substantially the overall Steering and Management Groups, and were vital for specific expertise. The Transport Compact was successful in providing a forum for evidence-based policy advice on pan-Northern transport priorities. At the outset, this was considered challenging given competing interests but the first meeting of the Compact concluded that backing the investments with the biggest collective productivity impact was the way to go, rather than spreading resources. Over the lifetime of the Transport Compact, this was achieved by confronting parochial assertions with evidenced need, and allowing Transport experts to talk to politicians (and vice versa) in reaching lasting agreements that informed The Northern Hub Strategy, the Y-Shaped HS2 network and the roll-out of managed motorways in the North. The hallmarks of the Compact were, ultimately, strategic leadership, strategic influence and effective co-ordination and engagement, these with a preparedness to take some risks and innovate.

Importantly, the Transport Compact created the space for debate and conclusions on priorities at a strategic scale which could not be handled regionally, sub-regionally or locally, and which were also difficult for national politicians to manage themselves. This is, of course, the gap identified by Sir David Higgins in his Rebalancing Britain report, leading to the establishment of Transport for the North as a Statutory Body. Filling this gap effectively and with value added remains a key challenge (and risk area) for Transport for the North going forward.

The Innovation in Industry Steering Group also generated confidence from stakeholders and was effective in acting as a conduit for joint-working with the then Technology Strategy Board, and in promoting the opportunities in the North. Again by identifying and defining collective interests and synergistic overlaps, it came forward with an agenda for each and all of participating universities to buy into, and this continues to be progressed

However, the mechanisms would have been without value had it not been for the people running the show and the ways of working adopted. A fundamental part of what worked was the capability and networks of The Northern Way's people.

What didn't work?

The fundamental rationale for public policy interventions is that action is needed when the market itself will not generate an efficient outcome. One of the reasons for market failure might be risk over-and-above what the market is willing to allow for, or the related point of too much uncertainty. Some projects progressed by initiatives such as The Northern Way will be more successful than others, and care is needed to ensure that failure does not preclude subsequent innovation and risk taking.

On the influencing work of the Northern Way within the North, one of the risk areas was how well the findings of the initiative's work were communicated to, and within, partner organisations. This tended to work most smoothly around the work of the Transport Compact given its focus on pan-northern priorities. But influencing at all levels was not in the gift of The Northern Way, and this is a lesson for such activity in the future, where impact relies on passing on evidence and findings up/down organisational hierarchies.

Northern Way communications often only attracted the attention of locally-based media within the North and only rarely national equivalents (with the exception of the OECD, which took on board some of the Northern Way's research outputs). That has, in some considerable measure, changed with the current Northern Powerhouse profile, but unlike say Scotland the North does not have the benefit of dedicated pan-Northern media outlets.

With the long view, not enough people within the North quite understood why the initiative was important and why certain issues were (and still are) best addressed at a pan-Northern level. This lack of public consciousness and relevance was not helped by the focus of The Northern Way on long-term (and often publicly invisible) improvements and the need for changes in public policy. But The Northern Way helped seed the ground for Transport for the North by, for example, contributing towards the delivery of The Northern Hub and the commitment to new and additional rail rolling stock in what is now the relatively near future. Action is becoming increasingly evident, but more is needed.

One of the contributory reasons to the demise of The Northern Way was the reliance on funding from too narrow a partner base. Multiple sources of more diverse income may have helped to ensure some continuation in activity, though it is recognised that the difficulties with respect to conflicts between funders was beyond the Initiative's resolution.

Other lessons for successor/similar initiatives

Institutions/initiatives of value and worth that are seeking to address long-term challenges and fulfil long-term objectives need actual, and perceived, stability. Having a clear political mandate can contribute potentially to achieving such stability, but such mandates must be enabling, rather than constraining. Without stability, partnership initiatives such as The Northern Way are vulnerable, hence the importance of Transport for the North (TfN) being constituted to have statutory status with government as a sub-national transport body, building consensus across the North, and speaking with a consistent voice to Whitehall.

It takes a certain amount of time for initiatives to find their equilibria, and get into their 'operating strides'. With the exception of the work of the Transport Compact, it was three years before the wider Northern Way initiative was able to really start to think for itself (following good and thorough self-examination). The pressure on Transport for North to 'deliver' means it has no such luxury, but some breathing space will be needed to do the thinking and develop/embed the new networks required. TfN will need to manage the requirement for continued progress with a more medium-to-long term horizon for investment planning.

More generally, partnership bodies at the scale of the North are complex operations. They require sufficient in-house staff and the overall capability required to operate strategically at pan-regional scale. New and lean ways of working need to be considered and adopted which avoid unnecessary costs on partner organisations.

For organisations/initiatives which are so people-focussed in terms of their expertise and knowledge, it is vital to build-in, wherever possible, arrangements for embedding knowledge and networks as well as succession planning for key members of staff. This is important in ensuring inevitable staff change does not dilute-out learning and momentum.

Source: SQW and John Jarvis

Annex B: 'Prime' and 'Enabling' Capability Maps

This Annex presents asset maps for the four 'Prime' and three 'Enabling' Capabilities, based on evidence gathered from the LEP-level narratives. These maps are intended to be illustrative, rather than exhaustive.

Figure B-1: Asset mapping for the North's Advanced Manufacturing 'Prime' Capability (non-exhaustive)

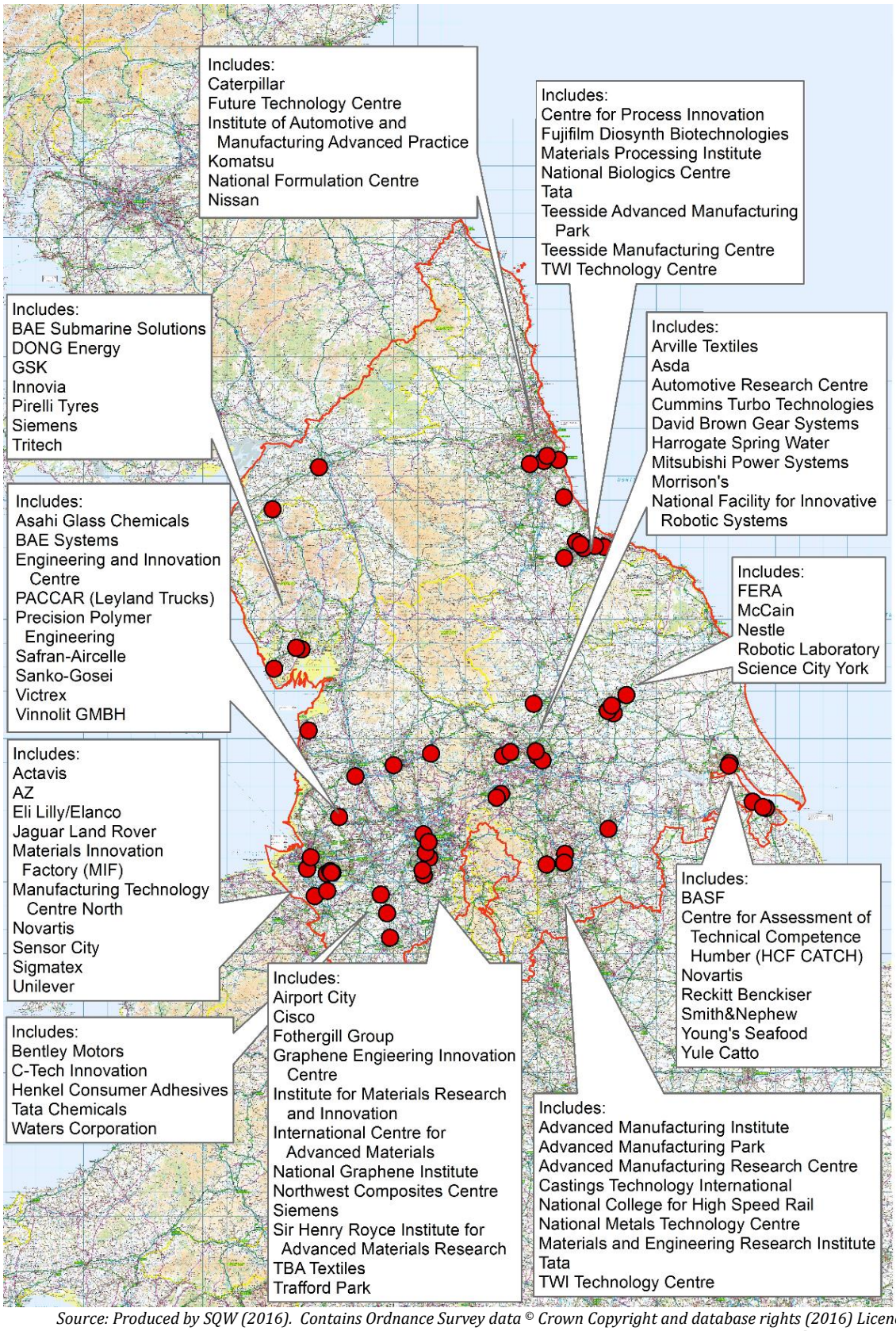


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Figure B-2: Asset mapping for the North's Energy 'Prime' Capability (non-exhaustive)

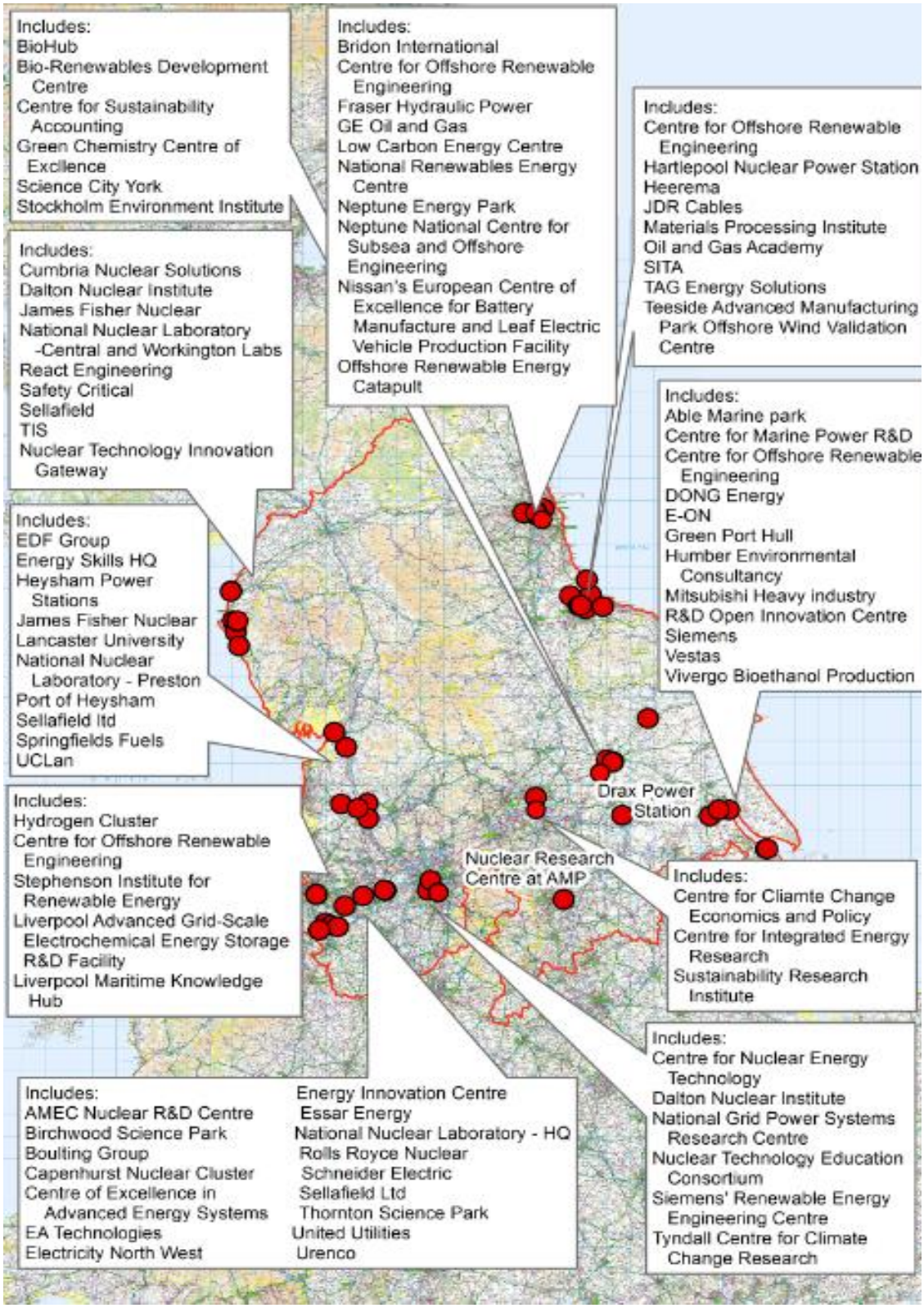

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Figure B-3: Asset mapping for the North's Health Innovation 'Prime' Capability (non-exhaustive)

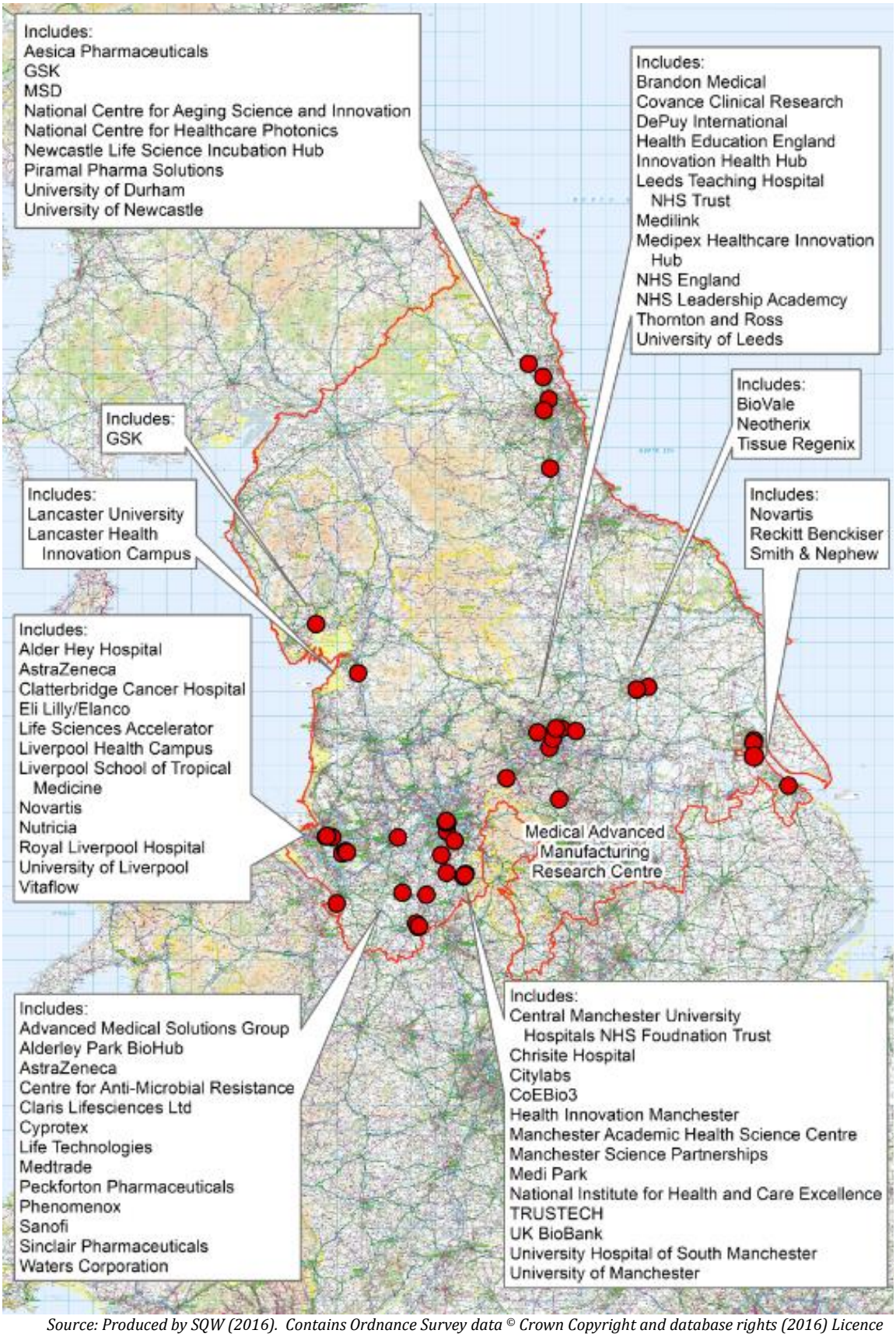

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Figure B-4: Asset mapping for the North's Digital 'Prime' Capability (non-exhaustive)

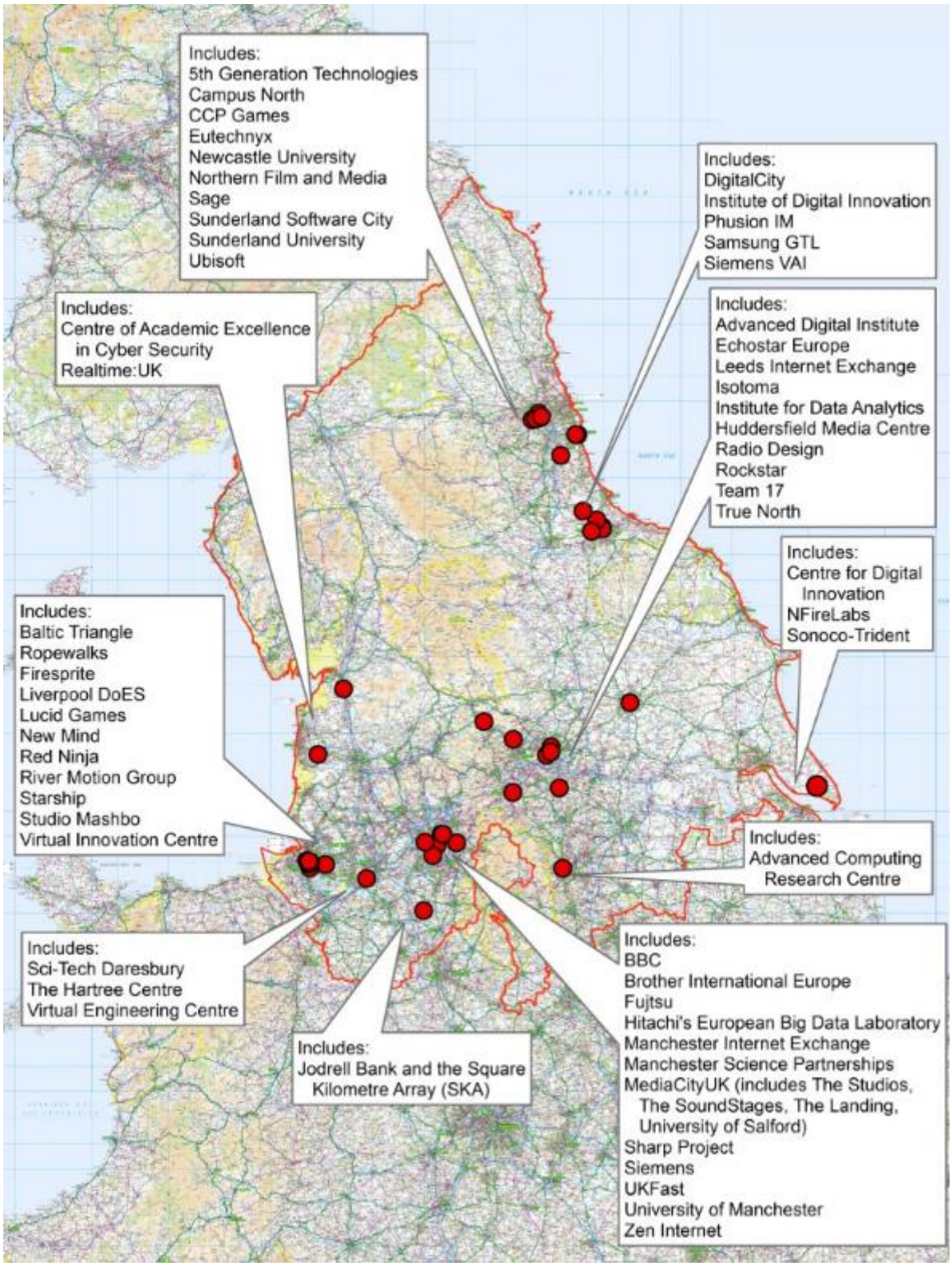

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Figure B-5: Asset mapping for the North's Financial and Professional Services 'Enabling' Capability (non-exhaustive)

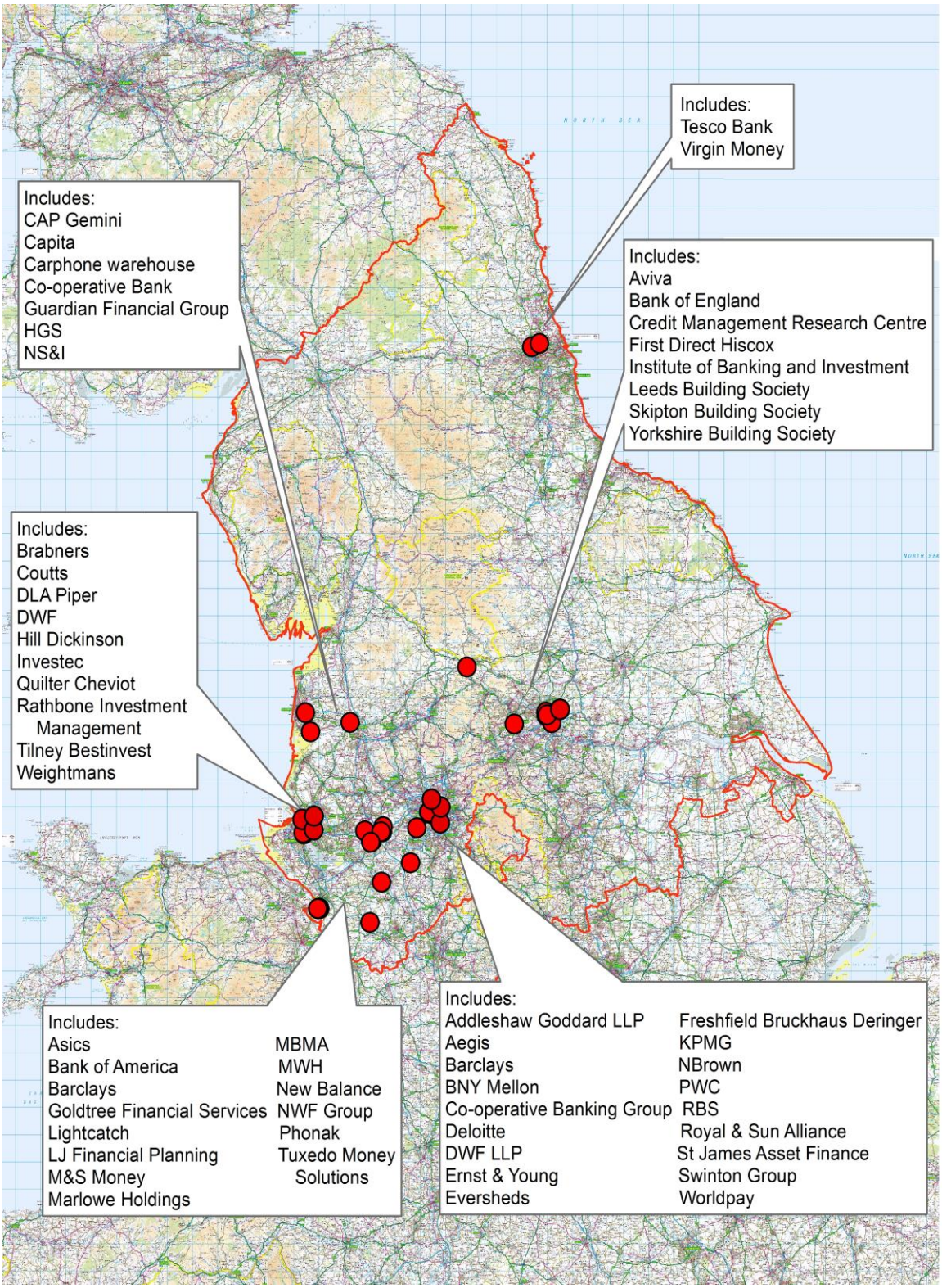

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Figure B-6: Asset mapping for the North's Logistics 'Enabling' Capability (non-exhaustive)

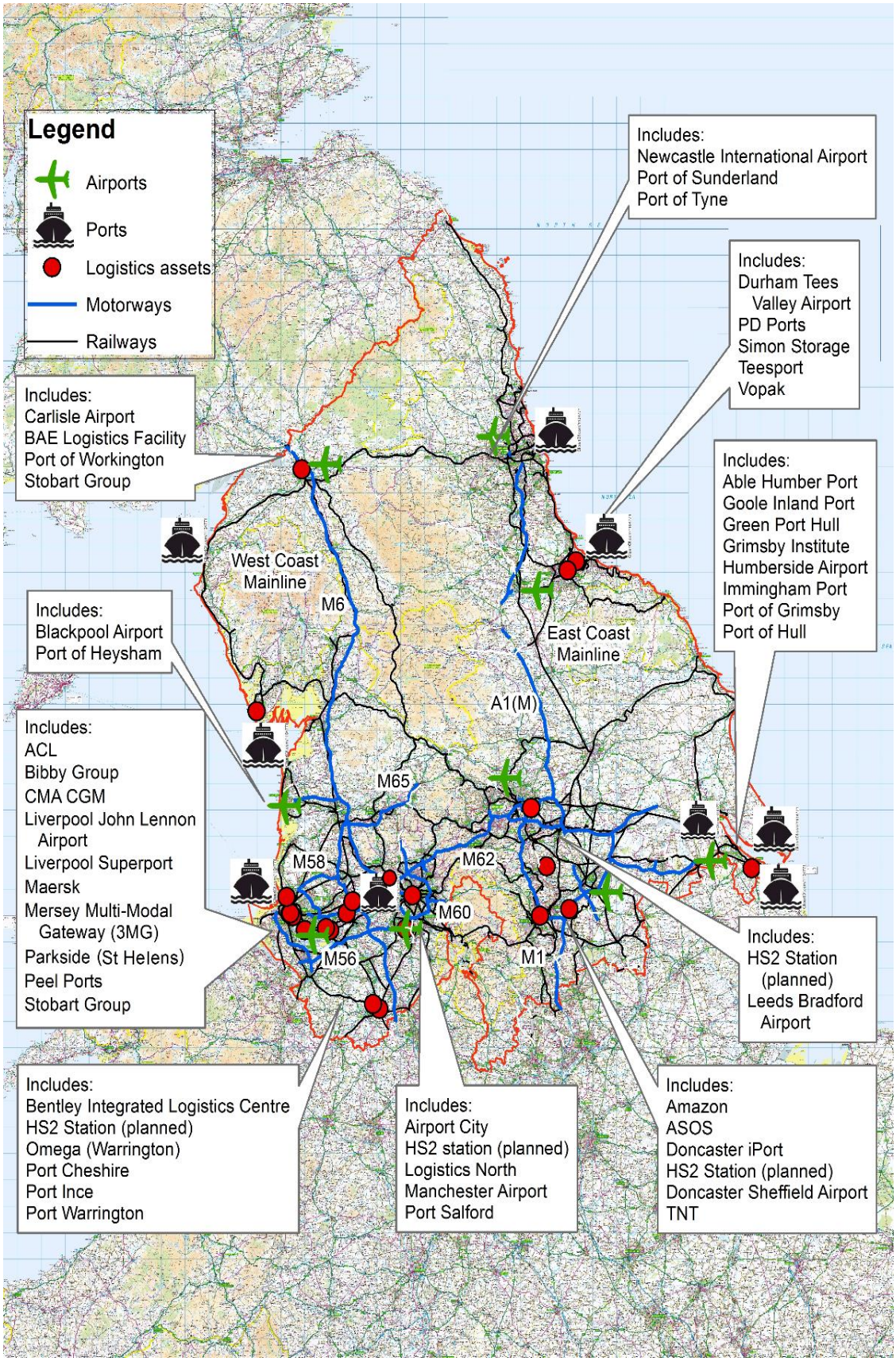

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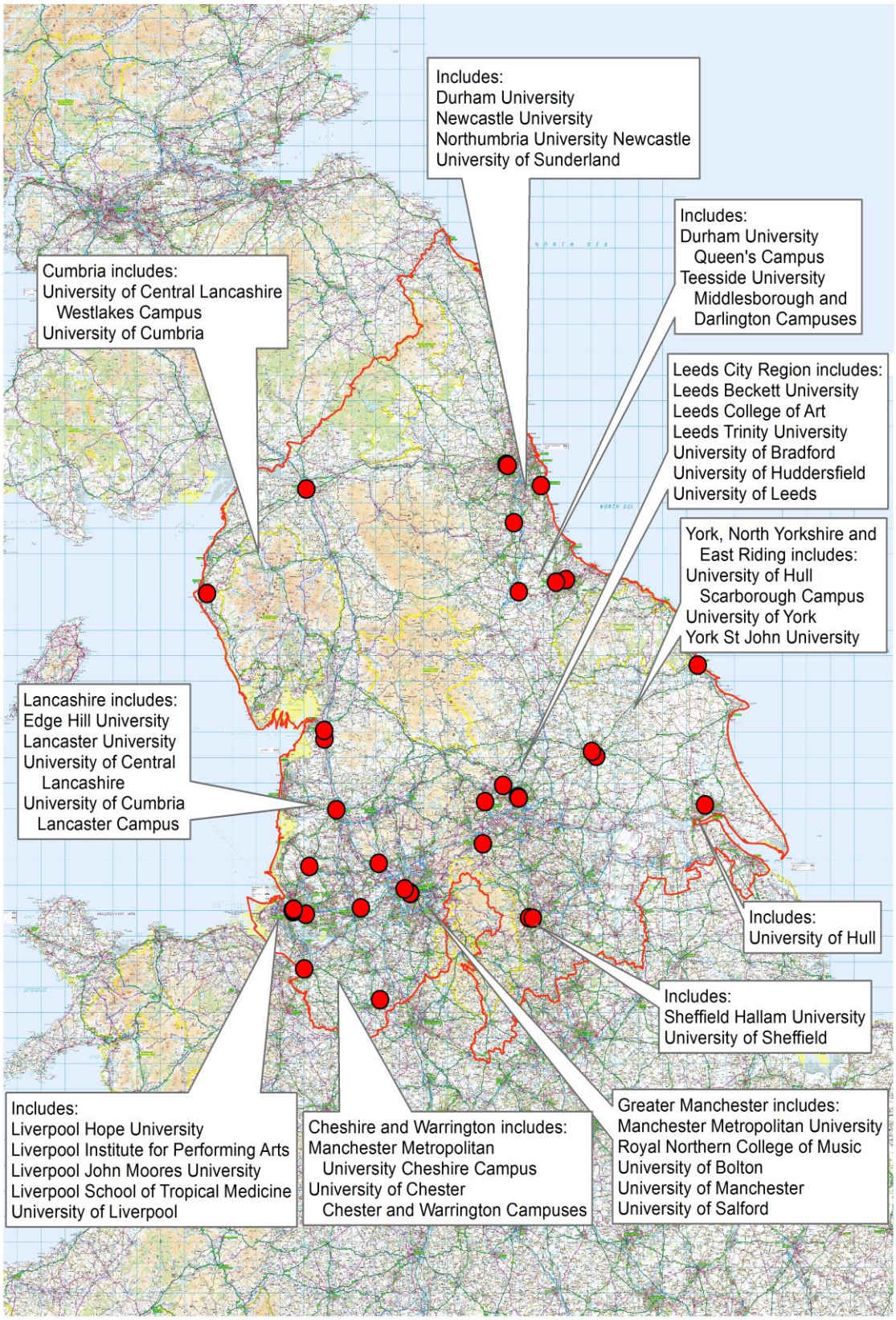
Figure B-7: Asset mapping for the North's (Higher) Education 'Enabling' Capability (non-exhaustive)



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Annex C: Glossary

Table C-1: Acronym definitions

Acronym	Definition
GVA	Gross Value Added
HE	Higher Education
HMT	Her Majesty's (HM) Treasury
HS2	High Speed 2
IER	Independent Economic Review
LEFM	Local Economy Forecasting Model
LEP	Local Enterprise Partnership
LQ	Location Quotient
NPh	Northern Powerhouse
SIC	Standard Industrial Classification
TfN	Transport for the North
WAP	Working Age Population

Source: SQW