



The Northern Powerhouse Independent Economic Review

2023 update

Summary Report

November 2023

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Foreword

We are delighted to introduce the updated Northern Powerhouse Independent Economic Review (NPIER). This long-term economic research programme, led by Transport for the North (TfN) in close collaboration with the NP11 group of Northern Local Enterprise Partnerships, and other partners, sets out the economic potential of the North.

We believe that by taking a long-term view with targeted interventions and investment aimed at closing the productivity gap and decarbonising the economy, we can increase prosperity for all parts of the North. The NPIER shows how by aligning the right policy levers together with the right investment we can enable sustainable, healthy and inclusive economic growth, deliver a better quality of life and more opportunities for all, and help our valued industries move to a greener future.

Improved connectivity is fundamental to transforming the North's economy, which is why this review underpins TfN's revised Strategic Transport Plan (STP). The evidence is clear: better connecting the key economic centres across the North will enhance performance, open opportunities for people, businesses, and communities, and facilitate the rapid decarbonisation of our transport network.

The first NPIER in 2016 set out the North's economic position and strengths, including identifying the prime and enabling sectors that drive its economic performance. It identified opportunities for pan-Northern collaboration that could support existing local activities, recognising the importance of place, and reflected on the wider economic ecosystem, of which transport is a vital part.

The 2016 study found that by closing the productivity gap with the rest of England by 2050, the North's economy could be £97 billion GVA a year larger and support an additional 850,000 jobs. It acted as a call to action and the evidence behind it has been invaluable in helping partners across the North to make the case for investment, interventions and devolution while galvanising Northern institutional collaboration.

It is now time to update the NPIER, to reflect the changes in our economy, national policy framework and operating environment, including the implications of leaving the EU, COVID-19 and the growing ambition to tackle climate change.

Achieving net zero is both an economic opportunity as well as an environmental necessity. Our unique combination of natural and commercial assets, coupled with the potential of the labour market, means that the North is well placed to provide strategic leadership on this particular challenge.

This updated NPIER shows a transformed North has the potential to create an economy £118 billion GVA a year larger by 2050 and support an additional one million jobs. Increasing investment per capita in the North to levels seen in other parts of the UK, could – with levered private investment – lead to returns on public funds of 2.8 times cost benefit.

We are immensely proud of the partnership and the work that has gone into developing this research programme. We are clear that delivery of the transformational vision will require the continued collaboration of all Northern partners.

We will endeavour to raise the global profile of the North, increase investment both private and public, domestic and international and improve collaboration between research, innovation and commerce - connecting and convening our foremost partners across the North.

The investment set out in the Strategic Transport Plan, if aligned with intervention in industrial policy and wider investment in skills and enabling infrastructure will unlock economic growth. This wider focus on growth will be a key function of the emerging Pan-Regional Partnership for the North, bringing together business representatives and key institutions including universities and other research groups.

The establishment of the Northern Evidence Network provides a strong basis on which to continue building and enhancing collaboration on research and evidence across the North.

The NPIER will guide this work as we continue to build the evidence base to strengthen the case for investment and policy change in the North of England. This will include research on the development of exports, helping to attract inward investment, support the functioning of the labour market, highlight the cultural and creative assets of the North, and research to support regional regeneration.

We have a track record in the North of achieving success through strong and effective collaborative working. We are all committed to supporting our businesses, our communities and our residents to realise their potential. Together we can and we will transform the North.



Martin Tugwell
Chief Executive



Clare Hayward MBE DL
Interim Chair of the NP11

1 Introduction

This report summarises the key findings and conclusions from the work, commissioned by Transport for the North (TfN) and NP11¹ to update the Northern Powerhouse Independent Economic Review (NPIER) of 2016. The report covers the development of, and output from, new economic scenario modelling to articulate the economic ambition of the North by 2050. The updated NPIER scenarios have informed TfN's revised Strategic Transport Plan, and dialogue continues with Northern partners across the region on how the research and evidence can be used and evolved to support the delivery of economic outcomes.

1.1 The Northern Powerhouse Independent Economic Review 2016

In 2014 HM Treasury identified the potential of an improvement in economic performance of the North's economy if the gap between the productivity in the North and the rest of the country were closed. Drawing on HM Treasury's analysis the (then) Chancellor set out a vision in August 2014 of better connecting the North to become 'one Northern Powerhouse', to drive greater economic outcomes than the sum of its parts.

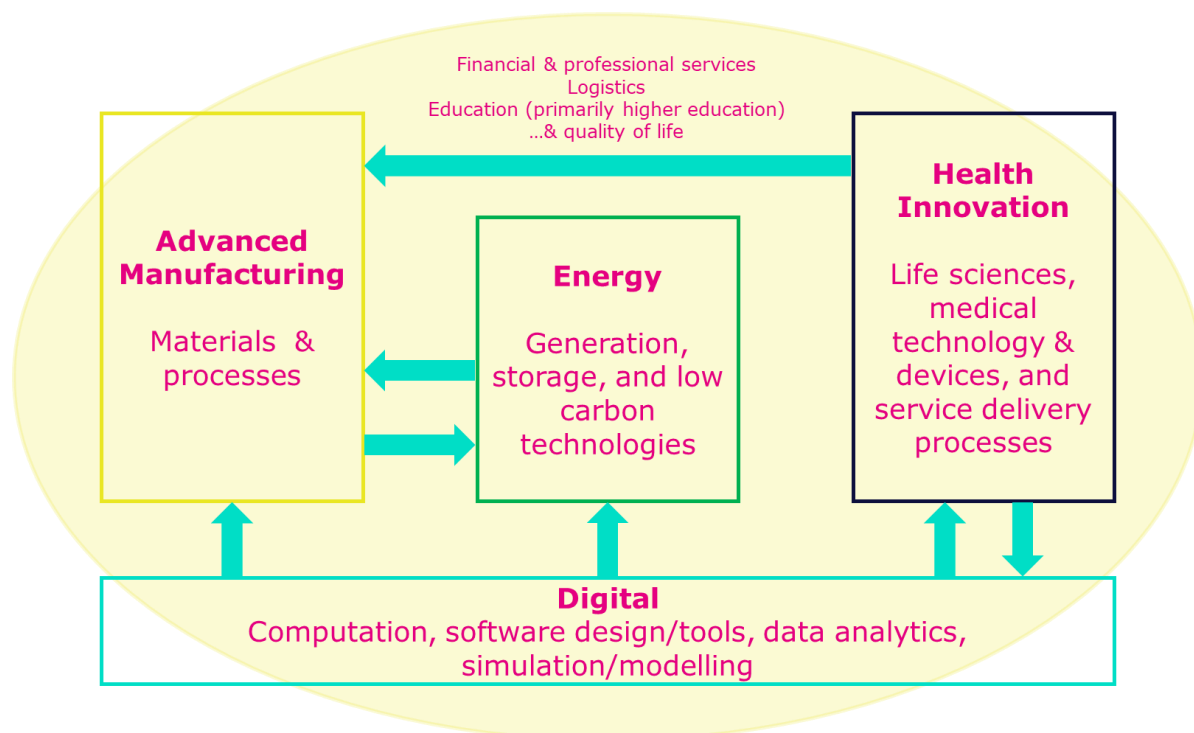
In 2015 Transport for the North (TfN), working in collaboration with government and Northern partners, commissioned Cambridge Econometrics and SQW to undertake an independent economic review of the Northern Powerhouse (NPIER) which was published in June 2016². In summary, the NPIER provided data, evidence and intelligence to underpin TfN's first Strategic Transport Plan and also the evidence and analysis to support the Northern Powerhouse.

Alongside understanding the North's prosperity and productivity gaps, the work identified a set of competitive advantages and highly productive sectors in the region. The review identified four 'prime capabilities' (advanced manufacturing, energy, health innovation and digital), supported by three 'enabling capabilities' (financial and professional services, logistics and higher education). The North's 'Quality of Life' is included as a cross-cutting theme because it is a critical underpinning asset. It supports the North's economic capabilities and is a key factor in attracting and retaining skilled workers and inward investment.

¹ NP11 is the business-led voice for the North that brings together the 11 Local Enterprise Partnerships (LEPs) from across the North of England. It is a partnership between the public and private sectors and Central Government that aims to drive prosperity and improve lives in the North. It is investment focused, partnership driven, and business led. For more information see <https://www.np11.org.uk/>

² Northern Powerhouse Independent Economic Review 2016 Final Executive Summary Report, available [here](#). Cambridge Econometrics and SQW were further supported by Steer Davies Gleave, John Jarvis Consulting and (as peer reviewers) Professors Ron Martin, Philip McCann and Roger Vickerman

Figure 1-1: The prime and enabling capabilities of the North identified in the 2016 NPIER



Source: Northern Powerhouse Independent Economic Review 2016

The NPIER set out a series of scenarios for future growth in the North. These found that:

- Under a 'business as usual' scenario based on historical trends and forecast growth for the UK, the growth gap between the North and the rest of England (less London) was expected to widen significantly by 2050.
- Within a 'transformational' scenario, where there are substantial improvements in the skills base, innovation and transport connectivity, growth rates in gross valued added (GVA), productivity and employment could rise above past trends and close the productivity gap. In this transformational scenario, the absolute level of GVA was expected to be c.15% higher (an additional £97 billion in 2015 prices), productivity 4% higher with an additional 850,000 jobs over the 'business as usual' case by 2050, assuming that the North is able to attract and retain a larger working age population.

The 2016 NPIER also set out the need to strengthen the evidence base over time to guide future policy.

1.2 Progress since the NPIER 2016

Over the last seven years, TfN and its commissioning partner for this update work the NP11 have undertaken significant work to continue the development of the North's evidence base. TfN has published research on Northern labour markets, international trade & connectivity, research & innovation³, working and consulting with partners across the North to ensure we deliver a collaborative and relevant NPIER research programme. TfN has also developed the Northern Evidence Hub which, with the contributions from external researchers, provides easy access to key research and analysis relating to the North to support evidence-based policy making. In addition, the Northern Evidence Network (NEN) has been convened by NP11, including TfN, which aims to enable policy makers to collaborate on research, evidence and share best practice across the North of England.

The NP11 also delivers the Convention of the North, an annual event that since 2018 has been a unifying voice for the North. It has also undertaken its own programme of research across its policy priorities of trade & investment, clean growth, digital, innovation and placemaking⁴.

1.3 Approach to NPIER 2023 update

Partners across the North agreed that 2022/23 was timely to take stock of the progress and the changes to the North's economy since the original NPIER, and in doing so, understand how the North's evidence base should be developed to ensure its relevance into the future. Since the 2016, there have been very substantial changes in the policy and economic context. These include: the UK's withdrawal from the European Union (EU); further local and regional devolution; the growing policy importance of decarbonisation (including the government's commitment to net zero by 2050); the Covid-19 pandemic; and digitalisation continuing to drive changes in goods, services and working practices.

While the 2016 'transformational' scenario was helpful in creating an economic ambition for the North with widespread stakeholder buy-in, partners were keen to see this ambition further developed to provide a more holistic view of the economy and include discussions around health and wellbeing, sustainability and inequality. At a national level, the 2022 Levelling Up White Paper⁵ took a conceptually broader approach to regional policy development, covering productivity, pay and employment; health and wellbeing outcomes; as well as 'community pride' and 'sense of place', within a complex analytical framework.

Given these changes, TfN and NP11 commissioned work to review the North's capabilities and update the economic modelling. The review included engagement with a wide range of Northern stakeholders including education, housing and business representatives to develop and inform the work. The output from this

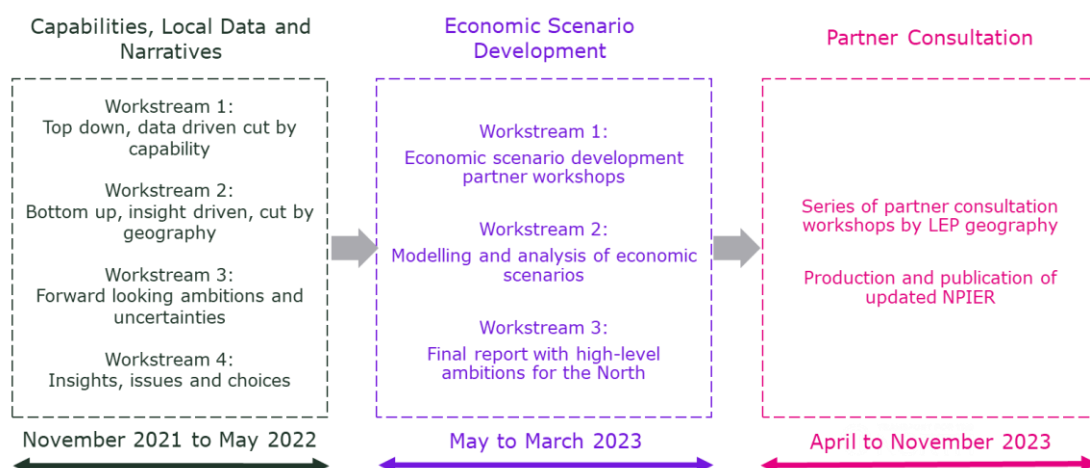
³ See for example [Connectivity and Labour Markets in the Northern Powerhouse](#), [International Trade and Connectivity](#) and [Research and Innovation in the North of England](#)

⁴ See for example [NP11: Clean Growth](#) and [NP11: Place Strategy](#)

⁵ Department for Levelling Up, Housing and Communities, 'Levelling Up the United Kingdom' White Paper available [here](#)

work has provided updated NPIER scenarios for the North, which has reset the economic ambition for the North and informed TfN's updated Strategic Transport Plan, which is expected to be published in early 2024, following public consultation. The evidence supporting this update is split across two separate external commissions which ran consecutively and involved a series of separate workstreams that are shown in Figure 1-2.

Figure 1-2: NPIER update programme



Cambridge Economics and SQW partnered to deliver each of the two commissions. In summary, the work undertaken in each of the workstreams included:

[NPIER development – Capabilities, local data and narratives](#)

This commission involved: a review of the North's prime and enabling capabilities and the foundational economy (defined as the 'everyday economy' that helps to 'supply daily household essentials for safe and civilized living, including providential services like health, education and care, and material infrastructure like pipe and cable utilities, and food distribution.'⁶); collation of local data; consultation with partners on the development of further economic scenarios; and providing an updated Northern economic narrative.

[NPIER economic scenario development](#)

This commission involved: development of economic scenarios to support high-level ambitions for the North's economy; modelling to support the scenarios; and a summary report of the key findings has been published as part of TfN's revised Strategic Transport Plan public consultation launched in May 2023⁷.

⁶ See [The Foundational Economy](#)

⁷ See [Strategic Transport Plan | Transport for the North - Transport for the North](#)

1.4 Report terminology

Throughout this report, performance is defined through a general measure of prosperity - GVA per capita - which is the most commonly used when comparing the economies of different regions. This is for two reasons: GVA per capita can be decomposed (to allow analysis) into drivers of interest such as productivity, employment and dependency rates, and performance gaps; and secondly because, taken alongside population assumptions, there is a close link to the output growth aspirations and associated scenarios, making it possible to quantify future potential growth outcomes.

When defining the performance gap, the report refers to the comparator 'the rest of England less London', which was the one used for referring to the headline performance ambition in the 2016 NPIER. Where other comparators of interest are used these are highlighted. The purpose of this is to maintain some consistency with the 2016 work, acknowledging that London's unique characteristics as a global city and financial centre are unlikely to be replicable elsewhere in England, so may not be a relevant benchmark for the Northern economy. In addition though, one of the aims of promoting better connectivity across the North 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.

Given the breadth of the economic scenarios, a wider suite of metrics was also developed with Northern partners⁸, both direct outputs from the scenario modelling work and some that required 'off model' calculations. The full suite of 24 metrics and their definitions can be found in section 3.18 of the economic scenario final report⁹.

1.5 Report structure

This report summarises the work across the two commissions described in section 1.3. Following a similar structure to the 2016 NPIER, it includes:

- **Chapter 2** describes the changes to the North's policy landscape changes since 2016, in the context of changing policy priorities beyond the North, and the prosperity and productivity gaps that remain.
- **Chapter 3** reviews developments in the NPIER programme since the 2016 work's recommendations. It also reviews the areas where the North has a competitive advantage, particularly its key sectoral strengths, the performance

⁸ Through this document reference is frequently made to 'partners'. Contribution by way of views, challenge and insight has been brought from a wide range of organisations through both the research work and directly through workshop consultations. Workshop consultations mainly engaged officers of local and combined authorities, and local enterprise partnerships (including business representatives) from the North. It was not limited to this group, and further input was provided by IPPR North, Northern Powerhouse Partnership, Northern Evidence Network, Convention for the North, N8 and other academics with interests in economic development issues, Homes for the North, The Peoples' Powerhouse, UK2070 Commission, The Engineering and Physical Sciences Research Council, The Royal Town Planning Institute and UK Government departments including the Department for Transport. TfN and its co-commissioner NP11 are grateful for all contributions.

⁹ NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#)

of the foundational economy and assessing local areas' contribution to the North's capabilities.

- **Chapter 4** describes how the updated economic scenarios for the North were developed and presents the outputs from the economic modelling for the North's economy by 2050.
- **Chapter 5** discusses the key headlines emerging from this work; and
- **Chapter 6** sets out the proposed next steps for the development of the NPIER programme and policy proposals for the North.

2 Policy landscape changes

This chapter explores the evolution of the North since 2016. The policy context and governance structures have continued to change in the North, including the handing of greater decision making and spending powers to some areas, through devolution from central government. While the context has changed though, there remain prosperity and productivity gaps within the North and between the North and the rest of England.

2.1 The North's governance structures

Since 2016, we have seen significant changes in the institutional and governance arrangements across the North, including:

- Elections for Metro Mayors held for the first time May 2017. These mayors have varying levels of powers and responsibilities to make strategic decisions across their respective regions. Key responsibilities include housing, transport and skills, although these do vary and can be dependent on the Devolution Deal negotiated with the government.
- The People's Powerhouse¹⁰ was established to expand the existing discourse around the Northern Powerhouse from a relatively narrow scope to include a wider range of groups and interests, specifically to ensure inclusivity, people and communities are at the heart of the Powerhouse agenda.
- Established in 2017, the Northern Powerhouse Partnership (NPP)¹¹ was created to increase the impact and contribution of the North to the UK economy, helping to broker consensus across the region to drive success. The NPP is chaired by George Osborne and has a business-led board including Northern leaders. It is a non-partisan body and maintains an all-party approach.
- TfN became a statutory body in April 2018, enabling it to provide an advisory and facilitation role in the case for investment and delivery of strategic transport infrastructure across the North.

¹⁰ See <https://peoplespowerhouse.org.uk/>

¹¹ See <https://www.northernpowerhousepartnership.co.uk/>

- The chairs of each of the eleven local enterprise partnerships (LEPs) in the North of England formed the 'NP11 board' in July 2018 to support the government's ambitions for the Northern Powerhouse¹²; and
- The 'Convention of the North'¹³ brings together political parties, business trade unions, community groups and others. It met for the first time in September 2018. While not a statutory body, it does provide a platform for the North to discuss national and regional issues.

These structures are enabling pan-Northern collaboration, and through boards such as TfN and NP11, the North's political and business leaders can achieve consensus and provide one voice for the region. Other Northern partners, such as the N8 group of universities and the NEN, also continue to press the case for policy intervention and support across the North.

Focusing on the political aspects of these changes, the consolidated strategic landscape of the North, is shown in Figure 2-1. This consolidation and coverage, underway at the time of the 2016 NPIER, gives the North a unique capacity to deliver change at depth and scale. As devolution has increased, we have seen more powers devolved to Greater Manchester in a trailblazer deal made in the 2023 Spring Budget. Other recent devolution deals, including York & North Yorkshire and the North East, mean that 74% of the North's population will live in a Mayoral Combined Authority area when their respective Mayors are elected in 2024.

The establishment of combined authorities, as well as local government re-organisation in places like Cumbria, strengthens the North's strategic delivery capacity, better enabling local government to work alongside pan-Northern partnerships across business and other sectors. This landscape continues to evolve, with the government now intending for the functions of the LEPs to be delivered by local government in the future¹⁴.

2.2 The changing policy context

There has been a substantial shift in the policy context since 2016. There is more national and international recognition of the social, political and economic consequences from the unequal distribution of economic growth benefits. The Inclusive Growth Commission in the UK, central government policy on rebalancing of the economy, and the levelling up agenda, are domestic responses to the issue. At a local level, there are other policy and strategy initiatives, such as Leeds

¹² There are eleven LEPs that cover the North of England geography, defined as the ITL1 areas North East, North West and Yorkshire and the Humber, except the two local authority areas North Lincolnshire and North East Lincolnshire. These two local authorities are in geography covered by the Greater Lincolnshire LEP. Representatives of both local authorities and the Greater Lincolnshire LEP have been engaged throughout this update programme.

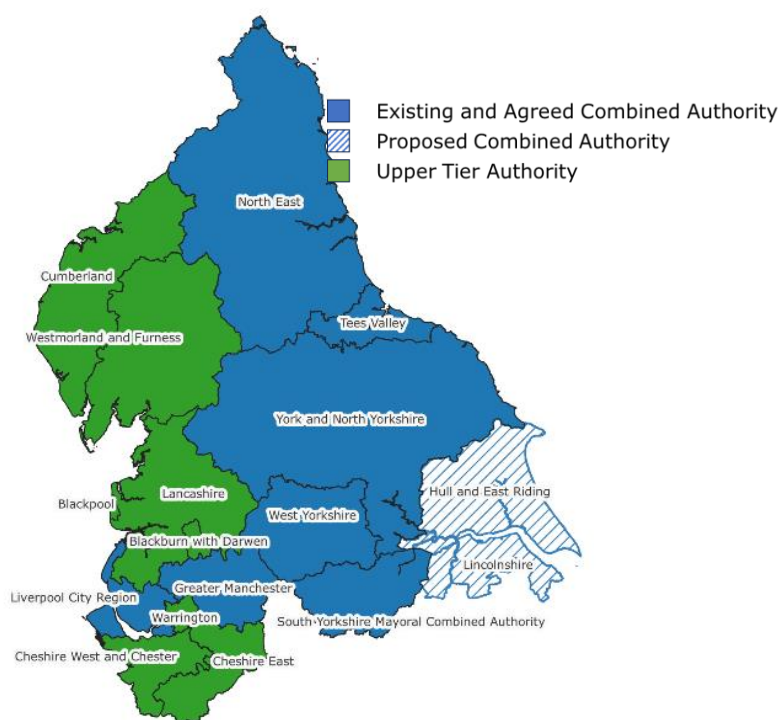
¹³ An annual event held in the North, convened, and led by the NP11, see <https://www.np11.org.uk/>

¹⁴ See [HM Treasury Spring Budget 2023](#)

Inclusive Growth Strategy¹⁵, the North East's More and Better Jobs agenda¹⁶, and Greater Manchester's research into the drivers of low pay¹⁷.

Inclusive growth draws the low-skill and low-pay dimension of the economy into sharper focus. It contrasts with the scope of the 2016 NPIER, which focussed on the North's 'prime capabilities', which typically generate high-wage opportunities for highly skilled individuals. This changing context has had implications in updating the NPIER in 2023.

Figure 2-1: Political governance across areas of the North, July 2023¹⁸



Source: Adapted from Convention of the North 2023

Place-based policy recognises the importance of the distinct characteristics in a place, including differing strengths, needs, opportunities and challenges. Government recognised 'place' as a policy driver, and the UK Industrial Strategy of 2017¹⁹ identified 'place' as one of five foundations of growth, and, at the time of

¹⁵ See [Inclusive Growth Leeds | Inclusive Growth Leeds](#)

¹⁶ See <https://www.northeastlep.co.uk/the-plan/>

¹⁷ See <https://greatermanchester-ca.gov.uk/what-we-do/economy/greater-manchester-independent-prosperity-review/>

¹⁸ As noted in the text, York & North Yorkshire and the North East have agreed devolution deals with Government and will formally become Combined Authorities with an elected mayor in 2024. At the time of writing North Lincolnshire and North East Lincolnshire local authorities are working in partnership with Lincolnshire County Council on a proposal for the creation of a Greater Lincolnshire Combined Authority which is being discussed as part of a devolution deal with the Government. Discussions are also ongoing with Government on the formation of a Hull and East Riding Combined Authority as part of this area's proposed devolution deal.

¹⁹ [Industrial Strategy: the 5 foundations](#) (2017), withdrawn by Government on 1 March 2023 as Industrial Strategy transitioned into the [Plan for Growth](#)

writing, LEPs have produced their own local industrial strategies to reflect their places and local economies (see for example Section 4.1, Figure 4-1).

The 2016 NPIER recognised 'Quality of Life' as a cross cutting theme in recognition that the North is a great place to live, work, invest, study and visit. Its world-class arts, culture, heritage and nature assets are a fundamental part of this outstanding quality of life and make important contributions to economic growth and employment. Further, the North's unique and internationally significant shared environment, culture and heritage all support a vital and growing part of the region's economy. In 2019 TfN commissioned research, which estimated there were 420 million visits to the region, and that the visitor economy supported 39,000 businesses employing 579,000 people, with a total net GVA impact of £12.33 billion²⁰.

The UK's commitment to net zero greenhouse emissions by 2050 will demand far-reaching change in many areas: the built environment, transport system, industry, energy supply and distribution and land use. The North has the potential to lead the UK's transition to net zero by 2050, which could create economic growth opportunities. While potentially supporting 440,000 jobs nationally by 2030, the commitment to net zero presents challenges to carbon-intensive sectors and will require intervention at the local level where the policy response may overlap with devolved powers, for example in skills, planning and transport interventions²¹.

2.3 The prosperity and productivity gaps of the North since 2016

The 2016 NPIER provided an overview of the North of England's prosperity and productivity gaps compared to the rest of England (excluding London). This section updates this analysis with the latest data and the changes to the North's economy since 2016.

In 2021, the North contributed almost £369 billion GVA, equivalent to almost 19%, to the UK economy. Over the last decade (2011 to 2021) the North's economy has grown by £43 billion GVA, and the region continues to contribute strongly to the UK economy. The region is home to around 1.1 million businesses, and the number of businesses increased by around 5%, or 50,000 in real terms, between 2015 and 2021. In that period, the North's growth in total businesses outperformed the rest of the UK.

Yet, despite its size, the economy of the North is constrained, and productivity continues to lag behind the rest of the country, even with the ambition of government and the North's partners since 2016 to close the gap, as shown in Figure 2-2.

In economic terms, since 2016 we have seen persistently weak productivity growth in the UK, alongside a continued gap between the North and the rest of the country. The picture is not uniformly negative: employment growth has been exceptionally strong, with around ¾m jobs created in the North since 2012, and there has been an unprecedented fall in unemployment and worklessness.

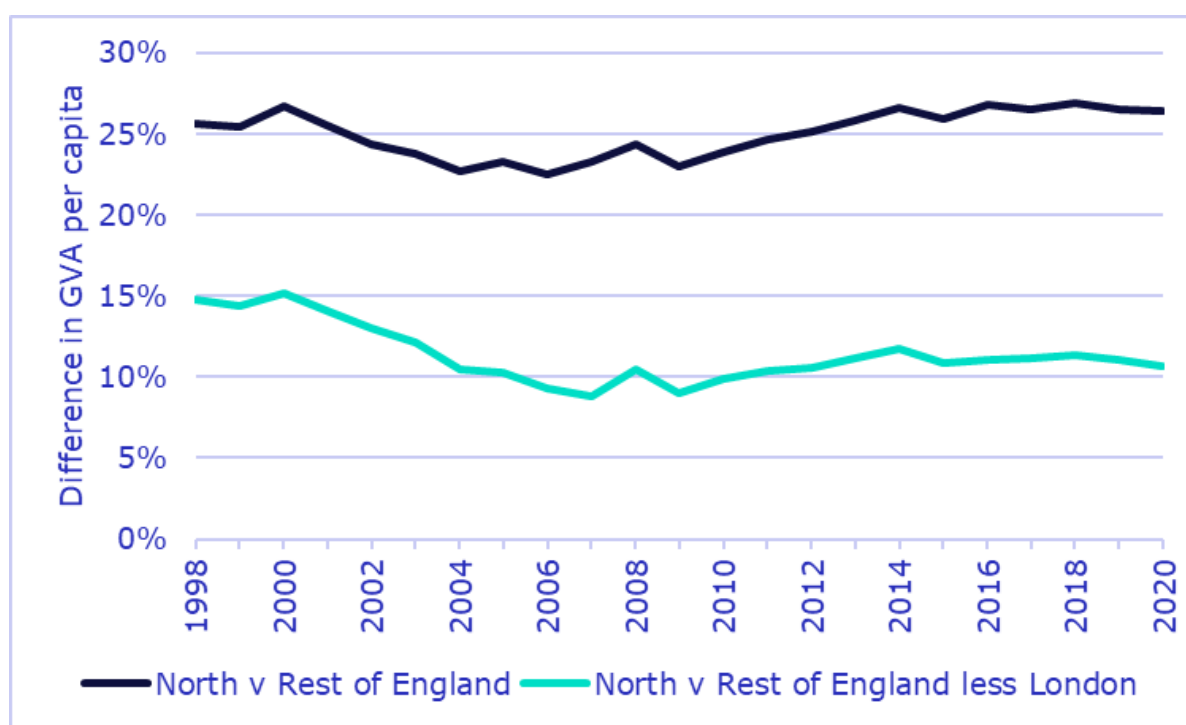
²⁰ See [Visitor Economy and Transport in the North - Executive Summary](#)

²¹ See [BEIS: Net Zero Strategy](#)

However, much of this employment growth has been in labour intensive, and relatively unproductive sectors. As a result, the productivity gap and challenges that the 2016 NPIER set out remain and are significant at a time when the economic outlook remains very uncertain against a backdrop of an energy price crisis and other inflationary pressures.

Since the 2016 NPIER, there have been some changes, which have impacted the North's economic landscape, and will remain relevant for the North's longer-term context for growth, shown in Table 2-1.

Figure 2-2: Difference in GVA per capita 1998 to 2020



Source: ONS regional gross value added (balanced) per head

Table 2-1: The North's economy today and changes since the 2016 NPIER

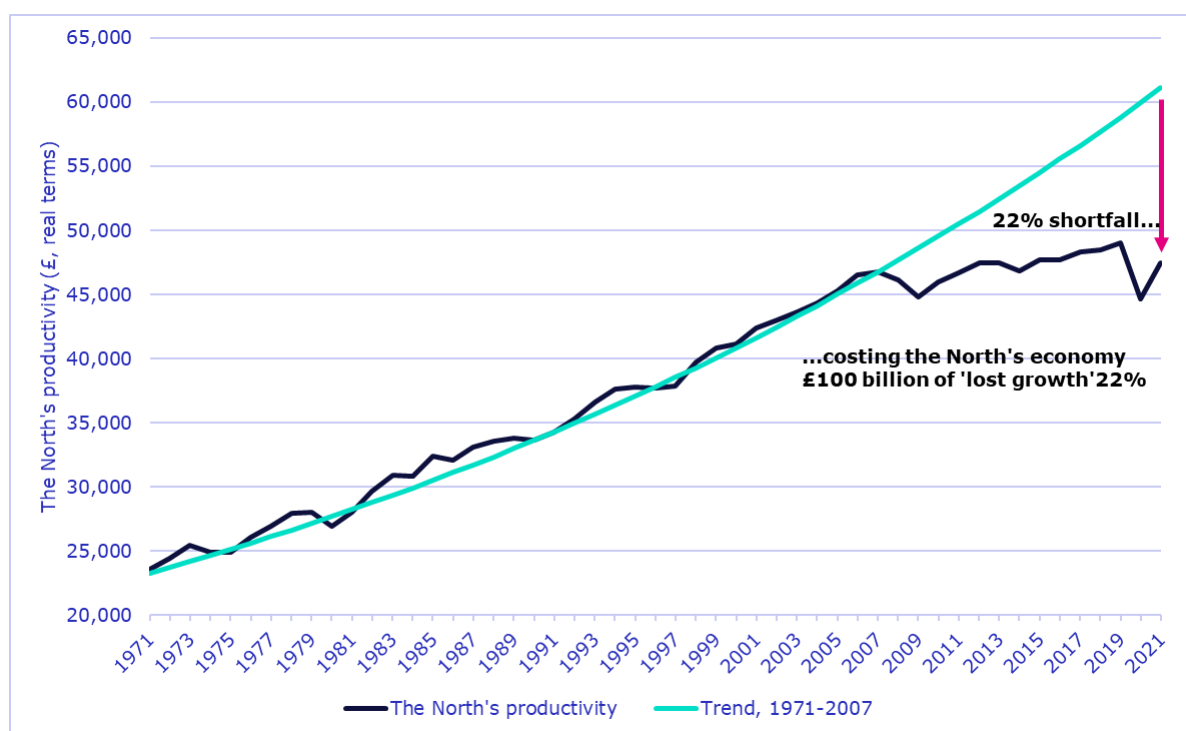
Headline metric	The North today (2021)	Change since 2016 NPIER Baseline (2015-21)
Population	15.6 million	+384,900
Jobs	7.7 million	+283,400
GVA (£2019)	£369 billion	+£15.6 billion
GVA per job (£2019)	£47,900	+£300
GVA per capita (£2019)	£23,700	+£400

Source: ONS, Cambridge Econometrics

In addition to this, as Figure 2-3 shows, the North's economic narrative of the past seven years has continued to be dominated by its 'low and slow' productivity growth. Over this period, productivity growth in the North has averaged only 0.1% per annum compared to its pre-financial crisis trend of 1.9%. This is despite data for 2021 indicating that business starts in the North and the proportion of high-growth firms as a proportion of all businesses are both slightly higher than for the rest of the UK. However, between 2015 and 2020 business failures in the region were at a higher rate than for that of the UK as a whole²².

In direct terms, this is costing the North's economy an estimated £100 billion of 'lost growth' (relative to if it had followed its longer-term trend, which it trails by 22% on a per job basis, Figure 2-3). This has indirectly placed an unprecedented squeeze on wage growth and living standards in the North. Against this backdrop, productivity in the North remains stubbornly below the national average despite productivity growth at the national level having stalled somewhat since the global financial crisis and the uncertainty of the post-EU referendum period. Currently the gap stands at approximately 8%, unchanged since the 2016 NPIER, with this shortfall having implications for the North's pay and competitiveness.

Figure 2-3: The North's productivity: actual vs. (previous) trend



Source: ONS, Cambridge Econometrics

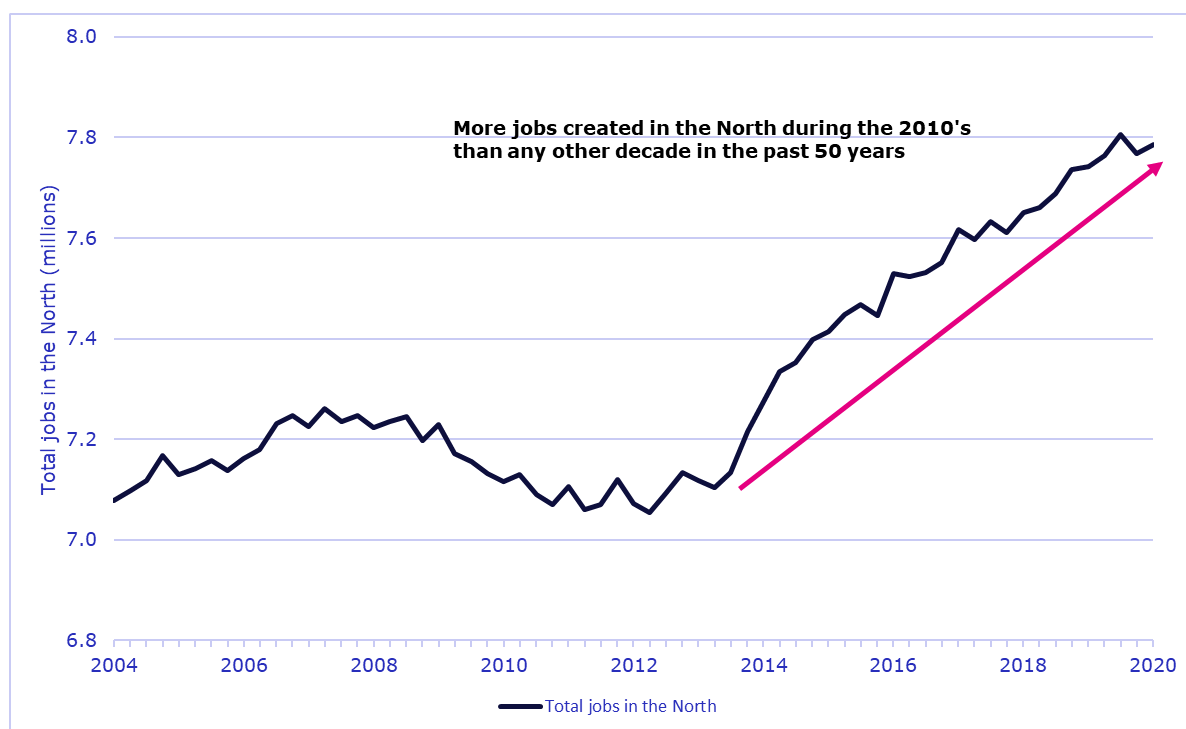
Lower productivity results in lower wages and living standards. This underperformance of the North's productivity outcome is closely linked to other measures of inequality in the North compared to other parts of the country. Lower productivity is linked to higher levels of poverty, lower skills, poorer health

²² [Business demography, UK - Office for National Statistics](#)

outcomes and life expectancy and lower enterprise rates. Furthermore, the North's housing stock is amongst the oldest and least efficient in the UK, contributing further to the greater prevalence of respiratory diseases and fuel poverty.

The opportunity identified in the 2016 NPIER remains, of a more productive and prosperous Northern economy, which can make a positive contribution to the wider prosperity of the whole UK.

Figure 2-4: Job creation in the North

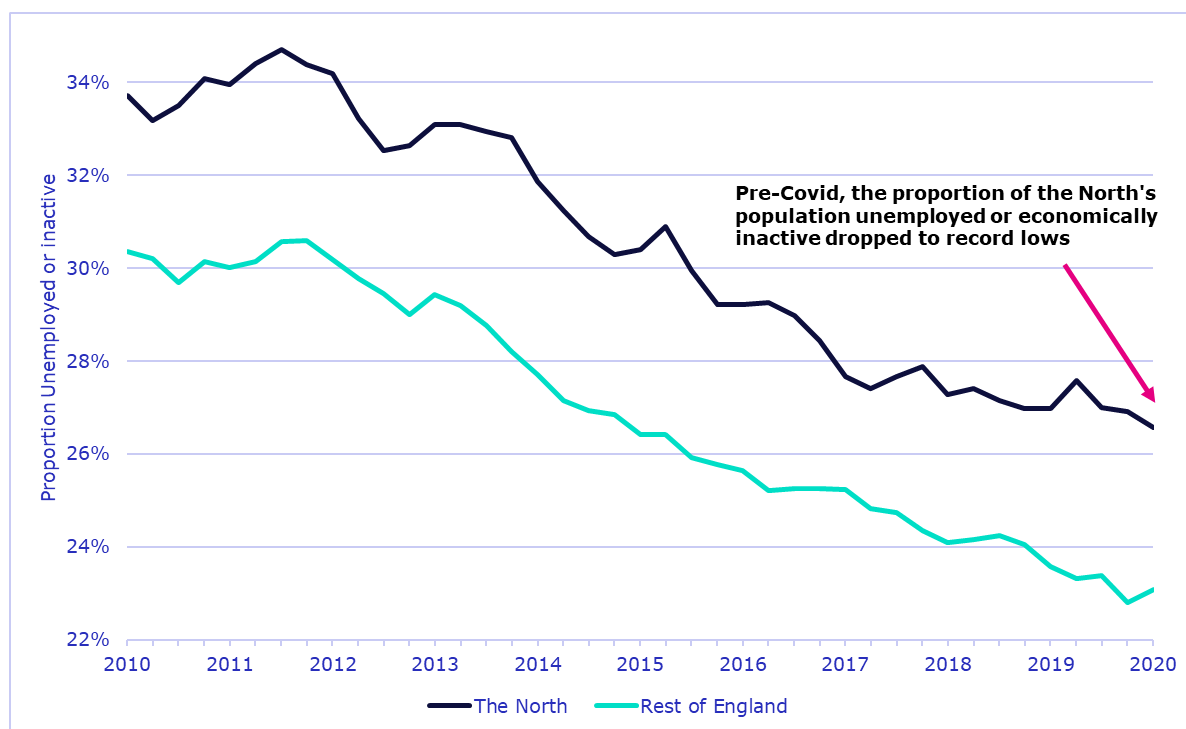


Source: ONS, Cambridge Econometrics

Despite stalling productivity growth, the North has experienced a relative 'jobs boom', as shown in Figure 2-4. Shortly before the Covid-19 pandemic, the total number of jobs in the North reached a record total of 7.8 million, an increase of almost 300,000 since 2016 alone, far exceeding even the expectations of the 2016 NPIER transformational scenario by that point in time.

In fact, over the past decade more jobs were created in the North relative to any equivalent period during the past 50 years. This has been driven by both strong demand from labour intensive, high job creation industries, and an unprecedented decline in unemployment and worklessness. As Figure 2-5 shows, before the Covid-19 pandemic, the proportion of the North's population out of work (either through unemployment or economic inactivity) declined to record lows. Though still above the national average, the North had made progress in closing this shortfall.

Figure 2-5: Unemployment and economic inactivity in the North



Source: ONS, Cambridge Econometrics

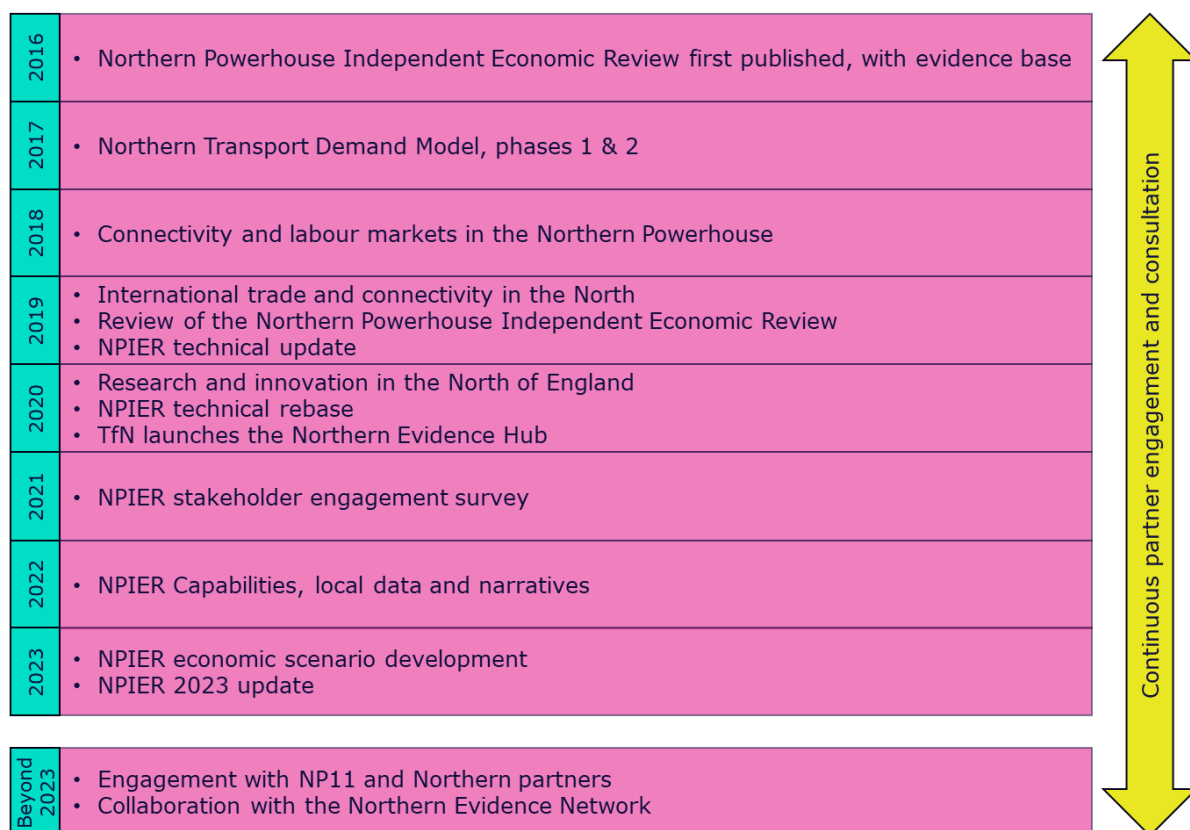
3 Progress developing and managing the NPIER evidence base

The 2016 NPIER identified a need for an 'excellent understanding of the relevant pan-Northern issues so as to inform economic, efficient and effective economic strategy and action' and set out proposals for 'guardians' of the North's evidence base to ensure this understanding was at the forefront of economic policy design. This chapter summarises the work completed since 2016, how this compares with the 2016 proposals and suggestions for how the NPIER programme can contribute to the Northern evidence base in the future.

3.1 TfN-led NPIER research since 2016

TfN and NP11 have undertaken a significant programme of research, analysis and consultation with partners to develop the North's evidence base through the NPIER programme. Figure 3-1 summarises the key pieces of TfN-led NPIER research and activities since 2016.

Figure 3-1: Key TfN-led NPIER research and activities since 2016



TfN's research and activities have focussed on the areas of Northern labour markets, international trade and innovation to aid better understanding of the investment and developments required to deliver the 2016 'transformational' scenario. TfN has also led and developed the Northern Evidence Hub²³ and online platform to share relevant Northern research and analysis, with plans for this to become a collaborative space for Northern policymakers.

3.2 Partner-led and collaborative research since 2016

TfN's co-commissioning partner for the NPIER update programme, NP11, has also undertaken its own research and established a number of policy positions resulting from that research. More recently it has produced its Place Strategy²⁴, not simply a programme focussed on growth and productivity, but a strategy about what makes life worth living, and previously The North's Levelling Up and Net Zero Partnership Offer, focused on five 'gamechangers' to level up the North. Through the Convention of the North in 2023 a series of policy papers were also produced to explore the policy priorities of the North²⁵.

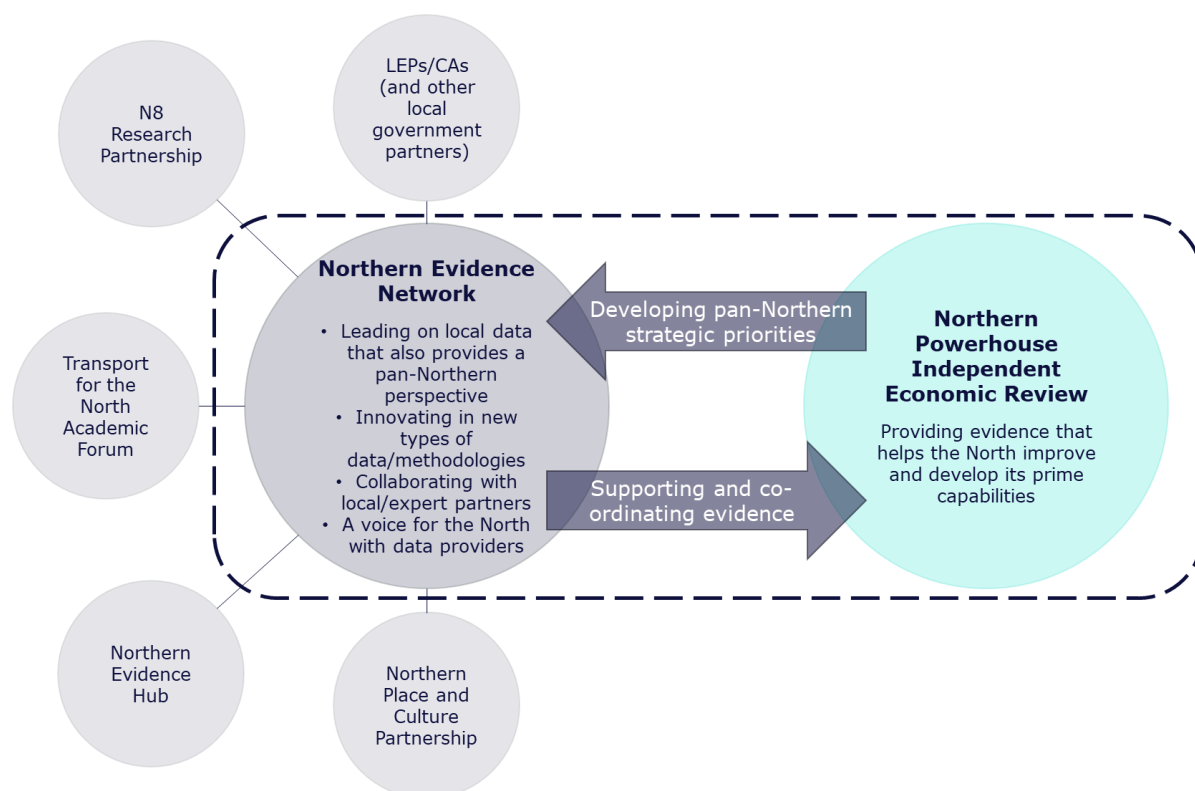
²³ See [Library - Northern Evidence Hub](#)

²⁴ See [NP11: Place Strategy](#)

²⁵ See [Convention of the North](#). Policy papers presented were; Advanced Manufacturing and Digital, Clean Energy and Net Zero, Life Sciences & Health, People and Good Jobs, Trade and Investment and Transport

Further, TfN has worked collaboratively to develop the NP11-led NEN, a working group of policymakers spread across the North of England to work collectively on data, evidence, analysis and research. The Network currently has two workstreams focussing on data sharing and collaboration and a long-term research plan. Within this second workstream the direct linkages between the NPIER and the NEN's research programme have been noted with Figure 3-2 setting out the proposed relationship between the two.

Figure 3-2: Proposed relationship between the Northern Evidence Network and the NPIER



Source: MetroDynamcis for NP11 (2021), Building a Northern Evidence Network

3.3 Comparison with the 2016 'guardian of the evidence' proposals

The 2016 NPIER set out proposals for an independent panel that would act as 'guardians of the evidence' to ensure the evidence base generated could be maintained and progressed. Table 3-1 sets out the functions proposed in 2016 and a review of the activity and progress to date.

Table 3-1: Progress of NPIER 2016 'guardians of the evidence' proposals

2016 Guardians of the evidence proposed functions	Activity and progress to date
Provide an independent, evidence based, assertion free overview of economic performance and prospects at the level of the North.	TfN has commissioned independent consultants to develop the North's evidence base in key policy areas as outlined above. This could be developed further with the establishment of an external expert panel to provide an independent overview
Act as a cost-effective guardian of the economic data pertaining to the North	Discussions are underway with Northern partners through the NEN to collaborate on economic data and analysis
Offer specific advice and guidance on how the different domains of the economic ecosystem could be flexed and progressed	TfN research has provided insight into some aspects of the economic ecosystem, including relative strengths but this could be further developed by the NEN
Draw on wider thinking about the economic development of the UK in the global context	The NPIER Economic Scenarios report provides a review and discussion of these issues
Identify gaps in the existing data and/or knowledge to commission research to address these gaps	TfN, NP11 and the NEN have worked collaboratively to identify evidence gaps and commission work where required
Provide a reality check and act as a critical friend to policymakers in the North	This function is led by IPPR North, particularly its annual 'State of the North' report, as well as other thinktanks with a Northern focus
Providing thought leadership in foresighting the issues	TfN and partners have provided thought leadership throughout the NPIER research programme, developing the economic scenarios and opening up discussions of wider metrics for inclusion

3.4 Reviewing the North's competitive advantage and sector strengths

The 2016 NPIER was given the clear remit to identify the most productive areas of the economy, where the North was, or had, the potential to be internationally competitive. It was framed to develop the evidence base around the international-class strengths of pan-Northern significance²⁶ and the work identified four prime (advanced manufacturing, energy, health innovation and digital) and three enabling (financial and professional services, logistics and education) capabilities. Further to this, partners have used the capabilities framework and NPIER evidence within their own local strategies and business cases, valuing its addition to economic development thinking.

For this update programme, work was completed by Cambridge Econometrics and SQW to review and test the prime and enabling capabilities, to determine whether they still represent the North's strengths. The analysis first took a 'top down' approach, analysing the data on the current sectoral composition of the North based on official statistics and supplemented by a novel review of The DataCity's analytical tool. Alongside reviewing the prime and enabling capabilities, it was acknowledged with partners that the 2016 NPIER could have provided a more rounded view of the economy with the inclusion of the foundational economy. So, the analysis includes an overview of the foundational economy that supports the North's quality of life. Secondly, a 'bottom up' approach was taken, reviewing material from the local economic strategies of partners in the eleven LEP area geographies and via insight obtained from them during workshops at the early stage of this programme.

'Top down' review of the pan-Northern sectors and specialisms

The review sought to address some of the concerns and shortcomings raised during the Steer review²⁷, while seeking to retain the strength and understanding of the original framework applied to the 2016 NPIER. The work reviewing the capabilities sought to:

- Augment the focus on globally competitive export-focused capabilities with an equally in-depth look at the 'everyday' or foundational sectors of the economy.
- Make use of newly available data sources to add Northern-specific detail to the existing prime and enabling capabilities, including the extent of their urban-focus.
- Identify any additional emerging capabilities that might also benefit from being highlighted.

²⁶ Northern Powerhouse Independent Economic Review 2016, Workstream 3: Competitive Advantage and Sector Strengths – Final Report, available [here](#)

²⁷ In 2018 TfN commissioned Steer Economic Development and Cambridge Econometrics to undertake a review of the 2016 NPIER including; pertinent changes in the policy and economic landscape since publication, requirements for long-term forecasts and scenarios and future research requirements

The details of the top-down review process can be found in the *NPIER: Local Data & Narratives, Workstream 1* report and its technical annex that summarises an alternative data-driven approach using data from The Data City²⁸.

Findings from the 'top-down' review

In 2016 the prime capabilities were identified as being pan-Northern specialisations and strengths: highly productive, innovative, and outward-looking. In this review, two of those prime capabilities were clearly still existed as distinctive strengths: advanced manufacturing and energy. Moreover, the importance of these sectors to the North has increased in the past five years, in light of the need to accelerate progress towards net zero.

The other two prime capabilities were not so clear during the review: neither emerged from the data analysis as existing pan-Northern strength. Health innovation as identified as a potential future growth opportunity but is currently a niche sector within the North. The digital capability may be better understood as a key cross-cutting driver. Nonetheless, while the two didn't technically fulfil the definition of a prime capability for this review, they were both still recognised as key growth sectors and opportunities. In respect of digital, the sector is closely linked with the increasingly significant creative sector of the Northern economy, as highlighted by partners during feedback and when identifying subregional contributing assets to pan-Northern digital capability²⁹.

The 2016 enabling capabilities all had average or above average performance, but were chosen for their important role in supporting the wider growth across the economy. The analysis from this review concluded that these sectors remained critical regional enabling capabilities, and building on their performance remained appropriate for policy interventions.

The data also identified five additional sectors to consider. Four of these are already performing as pan-Northern prime capabilities. This includes agriculture & food, engineering & construction, textiles & wood products, and foundational industries. The fifth sector is water, waste & circular economy, which while not yet strongly represented across the entire region, warrant consideration as a key component in the 'green economy' as an opportunity for further growth³⁰.

Identifying the foundational economy

The inclusion of the foundational economy in the 2023 NPIER allows us to better consider the role and importance of the 'everyday economy'. This has been found to be a significant economic contributor in its own right, accounting for some 4.7

²⁸ NPIER: Capabilities, Local Data and Narratives, Workstream 1: Reviewing the North's Capabilities, available [here](#), and Technical Annex: NPIER Capabilities, Local Data and Narratives, Workstream 1: Definition and Data Development, available [here](#)

²⁹ NPIER: Capabilities, Local Data and Narratives, Workstream 2: NP11 Area Profiles, available [here](#)

³⁰ Further detail on how the capabilities were defined can be found in the full report NPIER: Capabilities, Local Data and Narratives, Workstream 1: Reviewing the North's Capabilities, available [here](#)

million jobs in the North of England – equivalent to almost three-quarters (approximately 67%) of all employment – and generating approximately £204 billion of GVA³¹.

Through the provision of its goods and services, the foundational economy also has a critical role in determining the wellbeing and quality of life for residents in the North. The North's foundational capabilities were defined, reviewed and benchmarked as part of this work for their performance and effectiveness across three service dimensions; coverage, reliability, and quality.

Positively, the results show at a pan-Northern level the region has capabilities that exhibit 'exemplar' levels of service in terms of coverage, reliability or quality³² relative to the rest of England.

Though evident across all themes, the North's 'exemplar' providers are largely concentrated in public services, such as health and social care, emergency services, and public administration, which score particularly well for coverage and reliability. 'Exemplar' service is also observed in the remaining themes, notably digital connectivity in utilities, and wholesale and supply chains in food and essentials.

For those that are not 'exemplar', the majority perform 'as expected' - in line with the national (rest of England) average. Of concern though are capabilities in the North that exhibit service that 'requires action' - where performance lags the rest of the country, which are most evident across the utilities, transport and logistics themes. Poor levels of reliability were observed across electricity, gas, and water provision, in addition to public transport (particularly for rail-related transport). The latter concurs with TfN's wider evidence base, which has underpinned the revised Strategic Transport Plan.

Further, despite exhibiting 'exemplar' coverage, the primary and secondary education and critical freight handling capabilities were the only ones to provide noticeably below average quality in the North of England. For primary and secondary education metrics show 80% of pupils in the North attend schools scored 'good' or 'outstanding' by Ofsted, below the national average of 86%, and this shortfall is widening. Pupil outcomes also lag the national average – The Programme for International Student Assessment (PISA) scores remain 3% below national benchmarks in the North, whilst educational attainment upon leaving school is on average 4% lower and improving slower than the rest of the country. In the case of critical freight handling, the United Nation's Liner Shipping Connectivity Index (LSCI) was used as an provides an indication of freight port quality. Relative to those elsewhere in the country, major ports in the North underperform on the index. In addition to this, major freight port turnaround times are almost 30% slower in the North. Better connectivity between the North's ports and beyond has already been identified as a priority in the revised Strategic Transport Plan.

³¹ Based on Cambridge Econometrics analysis and sectoral classification of ONS data for the year 2019. See NPIER: Capabilities, Local Data and Narratives, Workstream 1: Reviewing the North's Capabilities, specifically section 3.8, available [here](#)

³² Coverage: assesses how prevalent and accessible the service is across the North (and, where possible, accounting for rurality, mode/cost of transport etc.). Reliability: considers how reliable the service is, and the prevalence of disruptions, delays, or cancellations to that service. Quality: looks at the utility and value of the service or product being provided.

'Bottom up' evidence on local strengths

Emulating the process undertaken to gain local insight and knowledge of the different LEP geographies in the 2016 NPIER, and to complement the 'top down' review, 'bottom up' evidence gathering was undertaken.

A review of local economic strategies and plans was conducted and workshops with the eleven LEP area partners were undertaken. These sessions also explored views on the NPIER and its future development, and found that:

- It was of value to partners in preparing local strategies and plans, business cases, investment prospectus documents and public sector funding bids; and
- the way the prime and enabling capabilities had been set out enabled the identification of local strengths and informed local strategy. Partners advised they wished to retain what is seen as a simple framework for presenting and discussing this work.

The review of local strategies led to the development of a set of standard profiles for each of the eleven LEP geographies, which with input from partners gathered more detailed information on the local strengths in the context of the prime and enabling capabilities. The local area profiles have been published to support the evidence base for this work and can be found on the TfN website³³.

4 Scenarios for future growth in the North

Building on the two economic scenarios developed in 2016, this update takes this approach further, setting out six economic scenarios which explore different policy routes to transformation of the North's economy by 2050. In short, the scenarios set out a baseline scenario, four scenarios which explore policy developments in the areas of technology and innovation, entrepreneurship, commercial property and housing supply, health and well-being, skills and net zero. Each scenario has been devised with partners to capture a range of policy interventions relevant to this update. The final scenario combines the four policy scenarios delivered simultaneously to deliver a new transformational vision for the North's economy by 2050.

4.1 Context and development of the economic scenarios

Many of the core arguments contained within the 2016 NPIER in relation to the stubborn structural challenges facing the North's economy remain valid and highly relevant today. However, as set out in Chapter 2, the political and economic context has changed significantly since 2016. Building on the original scenarios presented in 2016, the updated economic scenarios were developed through a collaborative effort between TfN and partners. Between January and March 2022, a

³³ NPIER: Capabilities, Local Data and Narratives, Workstream 2: NP11 Area Profiles, available [here](#)

series of workshops were held with each of the LEP regions in the North and three broader stakeholder groups to develop thinking around the creation of economic scenarios for the region. There was strong agreement across the workshops that productivity should remain the cornerstone of the NPIER, and the development of the economic scenarios was driven by three elements, detailed below.

Understanding the emerging themes in economic development in a wider national context

One of the challenges for the NPIER is remaining relevant and having a clear route to impact as the policy context evolves. Since 2016 there have been a significant number of changes to regional policy with the Levelling Up White paper taking a broader approach to regional rebalancing, covering not just economic but also other outcomes such as health and wellbeing. The White Paper also sets out specific targets to 2030, including closing the gap in pay, employment, and productivity between the top-performing regions and other areas.

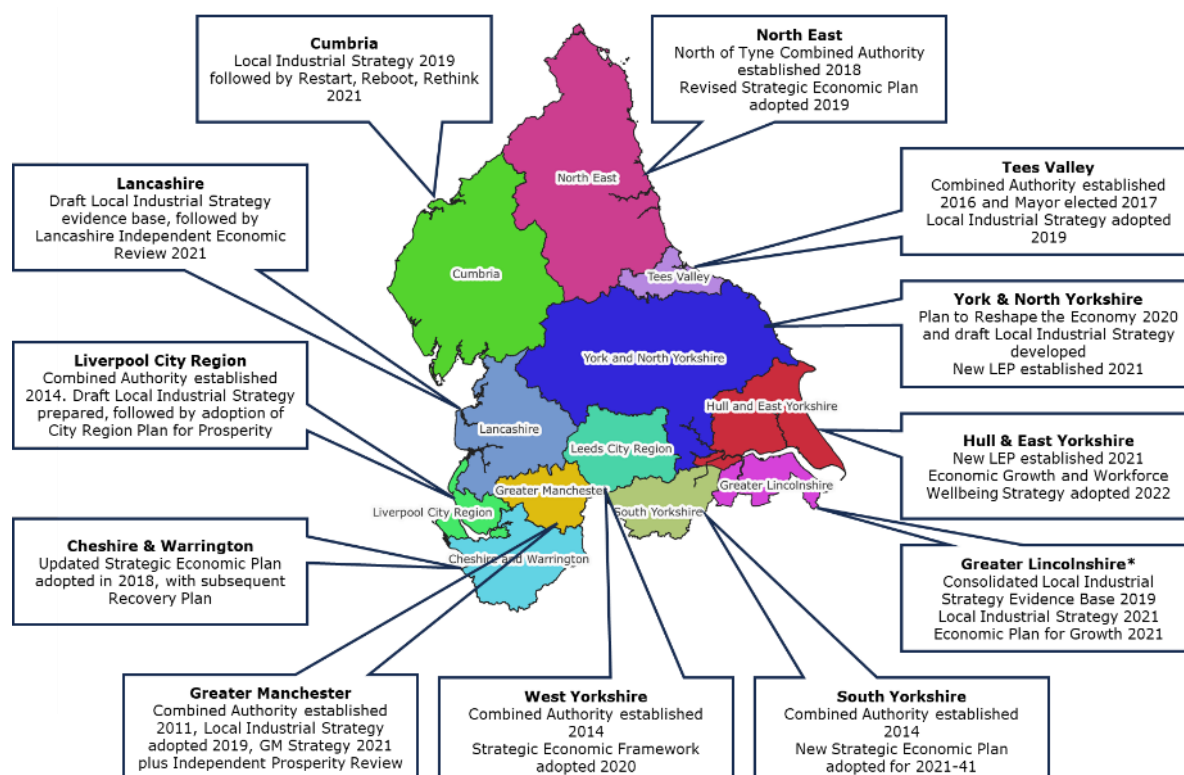
The focus on a range of metrics beyond GVA and jobs aligns with local partners' considerations in recent years, which stakeholders recognised during the consultation process, along with the now urgent need to address climate change by achieving net-zero emissions by 2050.

Wider technology change, particularly the digitalisation of the economy, will also have an impact on all sectors, and technological change is driving changes in the way people work, such as an increased ability to work from home. Several areas of the North now see the digital sector as a major enabler, cross-cutting across all sectors of the economy.

Emerging themes from partners' economic strategies and planning

As outlined in section 2.1, governance and policy making has evolved further since 2016 with LEPs and/or combined authorities having adopted their own local industrial strategies or equivalents, and comprehensive evidence bases. Many areas have extensive sector development strategies, skills plans, innovation frameworks, and local independent economic reviews of their own. Figure 4-1 summarises the core strategy documents when this work began in 2022. Further descriptions of the local strategic context are also set out in the eleven area profiles and supporting evidence for this updated NPIER³³. It was therefore imperative that the economic scenarios developed for the NPIER update were developed in the context of local plans and remained relevant for local policy makers.

Figure 4-1: Core strategy documents of Northern LEPs early 2022³⁴



Source: Adapted from SQW, * for Greater Lincolnshire, see footnote

Emerging themes in long-term scenario development and economic modelling

It was also imperative to understand emerging trends in scenario development more broadly, as undertaken by other sub-national bodies and devolved nations. Following a desk-based review the following common themes were identified:

- Growth and productivity
- Urbanisation and agglomeration
- Demography and population growth
- Transport use and commuting.

In addition, a shift towards considering both positive and negative outcomes in scenario analysis, and a greater emphasis on inclusivity and 'net zero' goals were noted. These positive and negative-led outcomes included topics and themes such as:

- 'Net zero' and decarbonisation
- Inequality and living standards (including health)
- Technology adoption and innovation
- Covid-19 pandemic related impacts (notably remote working).

However, there were concerns about how this broadening of scenario parameters and metrics would be interpreted by key decision-makers, with partners reporting

³⁴ As per footnote 12, North Lincolnshire and North East Lincolnshire are part of the Yorkshire and the Humber ITL1 area. The two authorities are part of the [Greater Lincolnshire LEP](#), and only that part of the LEP geography in the North is shown on the map.

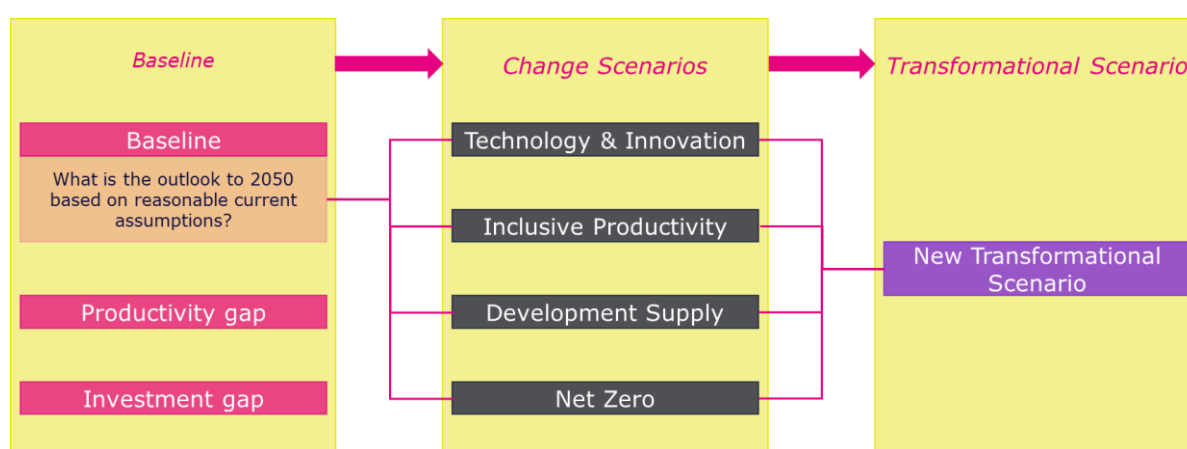
the requirement to present high-level economic benefits such as GVA and employment growth for investment cases for policy intervention remained necessary. As a consequence it was decided to retain a focus on the headline ambitions and measures of GVA, productivity and employment, while including a wider range of outputs to consider other economic, social and carbon reduction implications of a long term intervention.

Following the development of the economic scenarios, further workshops were held with partners between June and September 2022 to establish the preferred analytical framework and refine the economic scenarios to be modelled, including the desired policy levers and suite of metrics to be produced. Cambridge Econometrics went on to model six scenarios, including a 'business as usual' and 'transformational' scenario. The outputs and accompanying narratives for each of these scenarios is covered in the remainder of this chapter. For more detail on the approach, methodology and outputs, please see the full economic scenarios report³⁵.

4.2 The updated NPIER scenarios

Figure 4-2 sets out the six scenarios that were modelled.

Figure 4-2: Analytical framework and change scenarios



Source: SQW

The baseline benchmark scenario estimates the trajectory of the North's economy in a 'policy-off' context (i.e. there is no policy intervention and/or it is policy neutral) and was developed using Cambridge Econometrics' Local Economy Futures Model (LEFM).

Four change scenarios model what the impact of different policy approaches might have on the North's economy. Each scenario is an abstract conceptualisation, which combines a series of policy levers that supports the ambition and growth objectives of partners into a coherent package of interventions. These four scenarios have

³⁵ NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#)

been modelled separately to consider the impacts on GVA, productivity, jobs and a range of other metrics.

The transformational scenario brings together the combined impacts of the four change scenarios, demonstrating the synergies from simultaneous delivery, which would deliver significant economic gains to transform the North's economy. Table 4-1 describes the six scenarios.

Table 4-1: Updated scenarios

Baseline Benchmark: estimates the trajectory of the North's economy in a 'policy-off' context.	
<p>Scenario 1: Technology and innovation</p> <p>The North enjoys high levels of technology adaption and investment, impacting on skills, innovation and productivity across all sectors of the economy.</p> <p>The scenario considers the effects of increasing investment in R&D, technology diffusion and capacity for adoption.</p>	<p>Scenario 3: Development supply</p> <p>The North retains and attracts more working age people, and people are better able to access a wide range of economic opportunities within a reasonable distance of home.</p> <p>The scenario considers the effects of investment in social housing and in improving local and regional transport networks (and therefore unlocking new development opportunities).</p>
<p>Scenario 2: Inclusive productivity</p> <p>The North enjoys high levels of economic participation at good rates of pay and with good opportunities for in-work progression, re-skilling and inter-generational mobility.</p> <p>The scenario considers the effects of investment in health, social care, childcare, education and skills provision.</p>	<p>Scenario 4: Net zero</p> <p>Progress towards meeting the UK's net zero target is accelerated, with public investment increased and greater certainty created for the market.</p> <p>The scenario considers the effects of implementation of the Net Zero strategy in relation to the decarbonisation of the built environment, transport system, energy generation, industry, waste and agriculture.</p>
Transformational; brings together the combined impacts of the four change scenarios demonstrating the synergies from simultaneous delivery.	

Source: Cambridge Econometrics/SQW

4.3 Modelled policy levers in the change scenarios

Northern partners were presented agreed the policy levers to be modelled as packages in each of the four change scenarios. There were 16 policy levers chosen, as shown in Table 4-2.

Table 4-2: Modelled policy levers by economic scenario

Technology & innovation	Inclusive productivity	Development supply	Net zero
Increasing public R&D	Increased education and skills spending	Increase in social housing provision	Accelerated renewable energy deployment
Support and funding for investment in technology adoption	Increase health spending	Increase in digital connectivity investment	Decarbonisation of foundational economy
Support and funding for entrepreneurship & exporting	Increase childcare provision	Increase in allocation for market rate housing	Decarbonisation of agriculture and land use
	Increase social and community funding	Increase in allocation for commercial property	Decarbonisation of built environment
			Decarbonisation of transport system

Source: Cambridge Econometrics/SQW

Detailed information around the modelling theory, evidence and methodology is reported in the Economic Scenarios Development commission workstream 3 report³⁶. One notable absence is the required intervention in transport infrastructure. This has been deliberately omitted to avoid 'double counting' any potential economic benefits arising from such schemes, in line with the Department for Transport's Transport Analysis Guidance³⁷.

³⁶ NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#)

³⁷ See [Transport analysis guidance - GOV.UK](#)

Productivity and investment benchmarks

Alongside the modelled policy levers, assumptions were made around the scale of the policy interventions and associated potential public sector investment required to deliver the scenario ambitions. In addition to the baseline benchmark, the change scenarios were appraised relative to an investment and productivity ambition benchmark. The productivity ambition benchmark takes an outcome-focused view on the returns of closing the North's productivity gap with the rest of the country, while the investment benchmark takes an input-based perspective, considering the feasible level of public investment per capita in the North that might justly be available to drive the change scenarios.

To identify the investment benchmark, the recent historic public investment per capita between different regions was reviewed. Although there is substantial variation from year to year (particularly during the pandemic period), a persistent fund gap of around £1,500 per capita exists between the regions of the North and the most generously publicly funded geographies³⁸.

Taking this level of additional public funding as the investment benchmark presents a potential level of funding that could support the levelling up the UK and addressing long term regional economic imbalances. For the current population of the North, a figure of £1,500 per capita corresponds to approximately £21 billion per annum in additional real terms public spending³⁹.

The additional £21 billion per annum of public funding (over and above the current level of spending across the North) is applied across policy levers in three of the change scenarios so to explore - via the economic modelling - what the economic and social implications of additional investment could be for the North.

The fourth scenario, 'net zero', has a slightly different motivation; this is not intended to represent a policy intervention designed to support levelling up, but instead a representation of the impact on the North of the UK Net Zero Strategy. Therefore, the public funding required intervention is treated as a separate 'one-off' intervention over the period 2025 to 2050, with the level of public sector spending required at the level of the North to total £210 billion in 2019 prices⁴⁰.

The spending profile for each intervention is assumed to ramp up smoothly from zero in 2024 to the full amount in 2030, then remain steady (at 2019 prices) until 2050 (which is the end of the modelled period), except for the 'net zero' scenario. In this scenario, public funding ramps up from zero in 2024, as with the other scenarios, reaching the full £10 billion a year in 2030. Spending remains at £10 billion pa until 2045 before falling steadily to zero in 2050.

³⁸ Total capital and current expenditure of central government and local government bodies as well as public corporations split by UK devolved nation and region, see [Country and regional public sector finances expenditure tables \(ons.gov.uk\)](https://ons.gov.uk/country-and-regional-public-sector-finances-expenditure-tables). Ten-year expenditure average for devolved nations and London (2013-2022) was £1,540 per capita higher than the average across the three ITL1 regions of the North of England in the same period.

³⁹ Current government spending estimate for 2022-23 is £1,182 billion, so £21 billion would be 1.77% of this.

⁴⁰ The profile of this spending is presented in section 8 of NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#), along with the evidence underpinning the scale of intervention for each of the separate policy levers in this scenario.

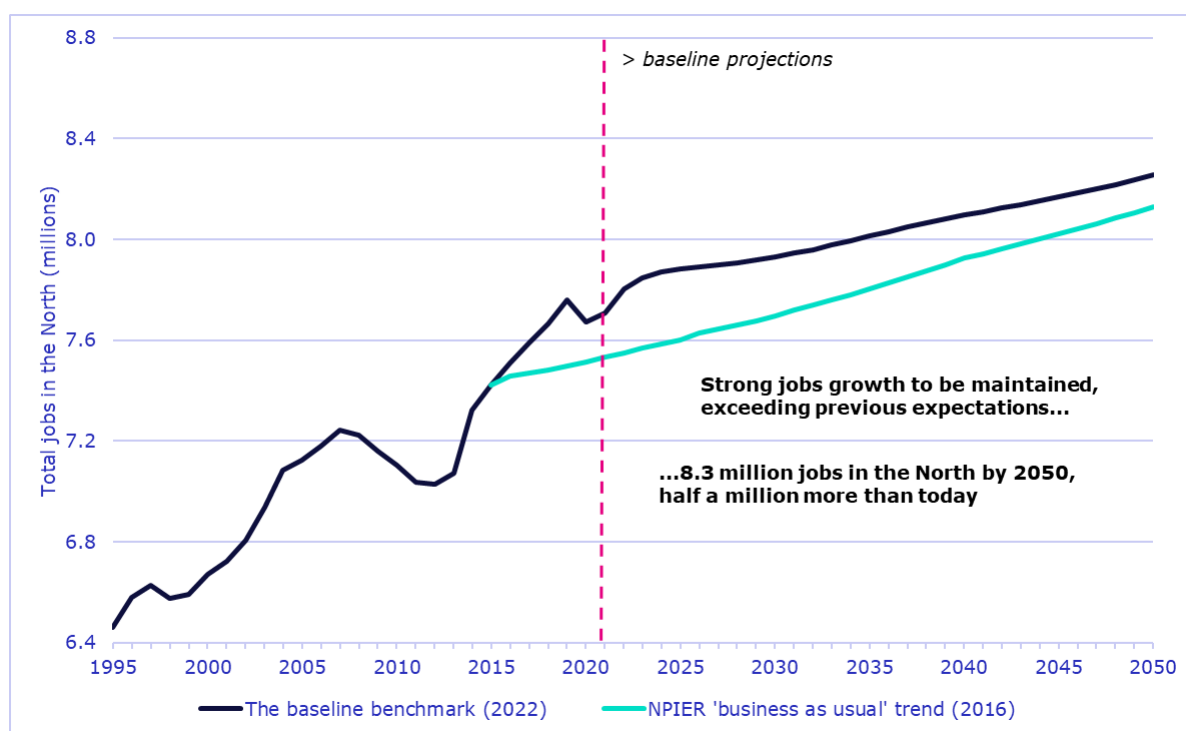
4.4 Change scenario modelling impacts

A summary of the key impacts of the six scenarios modelled for this NPIER economic update are shown in Table 4-3. The full methodology and assumptions can be found in the Economic Scenarios report⁴¹.

4.5 Baseline scenario for the North's economy to 2050

Looking ahead to 2050, the baseline benchmark shows a broad continuation of recent trends. This includes strong jobs growth with the North's labour market expected to exceed the 'business as usual' expectation of seven years ago.

Figure 4-3: Baseline jobs outlook relative to the 2016 NPIER's 'business as usual'



Source: Cambridge Econometrics LEFM, 2016 NPIER

After the recent period of strong growth, job creation is expected to settle around the North's long-term average. By 2050 there could be 8.3 million jobs in the North, over half a million more than current levels. This more optimistic outlook for jobs growth is largely a result of expectations for ongoing labour market flexibility (i.e. the rate of people moving out of inactivity and unemployment), ongoing population growth in the North, and the more positive outlook for labour-intensive, high job creation industries over this period.

⁴¹ NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#)

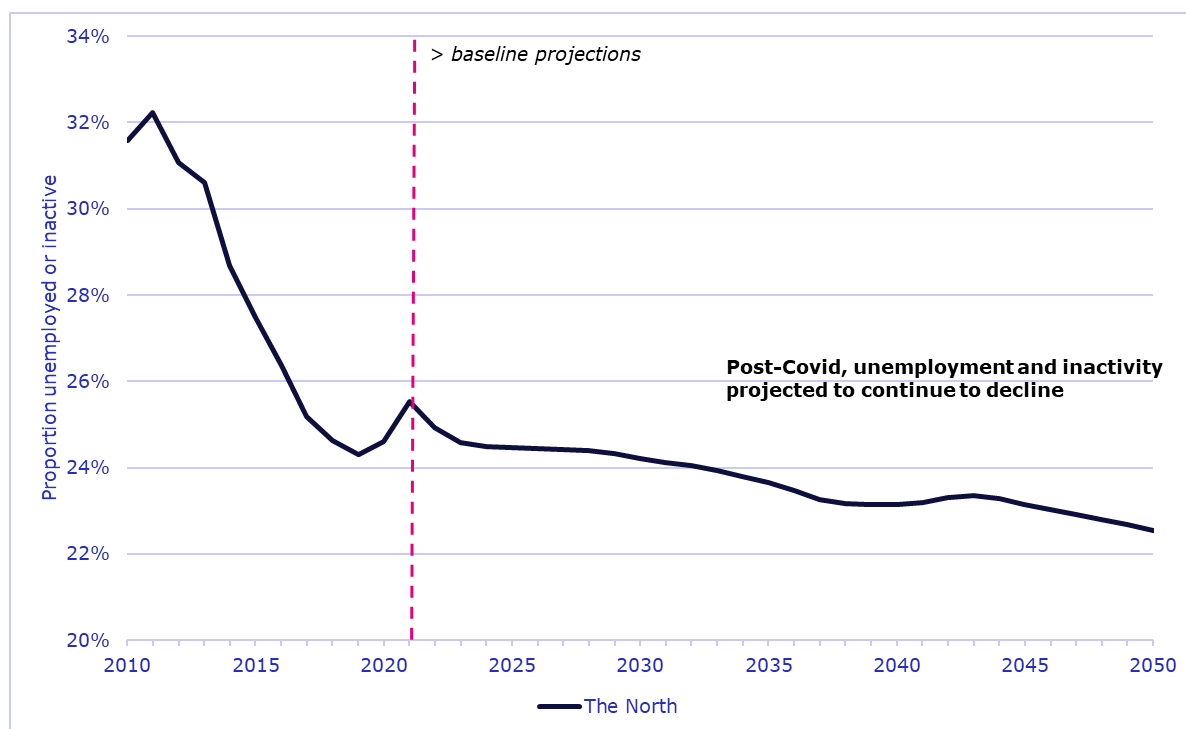
Table 4-3: Summary of the six change scenarios

Scenario	Baseline	Technology and innovation	Development supply	Inclusive productivity	Net zero	New transformational
Description	Business as usual, policy neutral	Interventions to boost research and innovation, entrepreneurialism and technology adoption	Interventions to boost supply of commercial and social housing	Interventions to support health, wellbeing and skills of the Northern workforce	Full and timely implementation of UK government Net Zero strategy	Implementation of all of the policies in the four scenarios outlined above
Model assumptions	Cambridge Econometrics' Local Economic Forecast Model 2022	Baseline+ investments in business capital, R&D, product and process innovation and market expansion	Baseline+ one million additional social homes, local infrastructure and public realm investment, increased demand for construction and local services and boost to labour supply	Baseline+ improvements in labour participation, graduate retention, skills levels, labour demand for health, social care and education	Baseline+ investment across a range of sectors (energy, alternative fuels, agriculture, industry, construction, transport, public administration etc)	All of the above, simultaneously
Cost per annum		£6 billion	£5 billion	£10 billion	£10 billion (over 20 years)	
Key impacts	Strong jobs growth is expected to continue, but productivity growth is slow with the gap between the North and the national average expected to narrow slightly by 2050.	Additional public spending on R&D and innovation "crowds in" private investment, partly through match funding support, and innovation by design. In the long run, productivity boost to wages consumption and competitiveness boost to exports.	Additional public spending on social housing and renovation of existing stock attracts and retains skilled workers. Higher population leads to growth in consumption demand.	Additional spending on health care, education and skills and childcare boosts labour supply. Higher skills levels boost productivity which feeds through into consumption and induced private consumption.		Private investment is "crowded in" and boosts productivity further. Consumption increases in line with additional population and higher wages. Imports initially increase, exports increase in later decades.

Source: Cambridge Econometrics/SQW

Helping to meet this demand for labour from employers, as Figure 4-4 shows, worklessness in the North is expected to decline further long-term, although there is some uncertainty – given the Covid-19 pandemic and cost of living crisis – as to the pace and shape of this, at least in the short-term.

Figure 4-4: Baseline unemployment and economic inactivity outlook

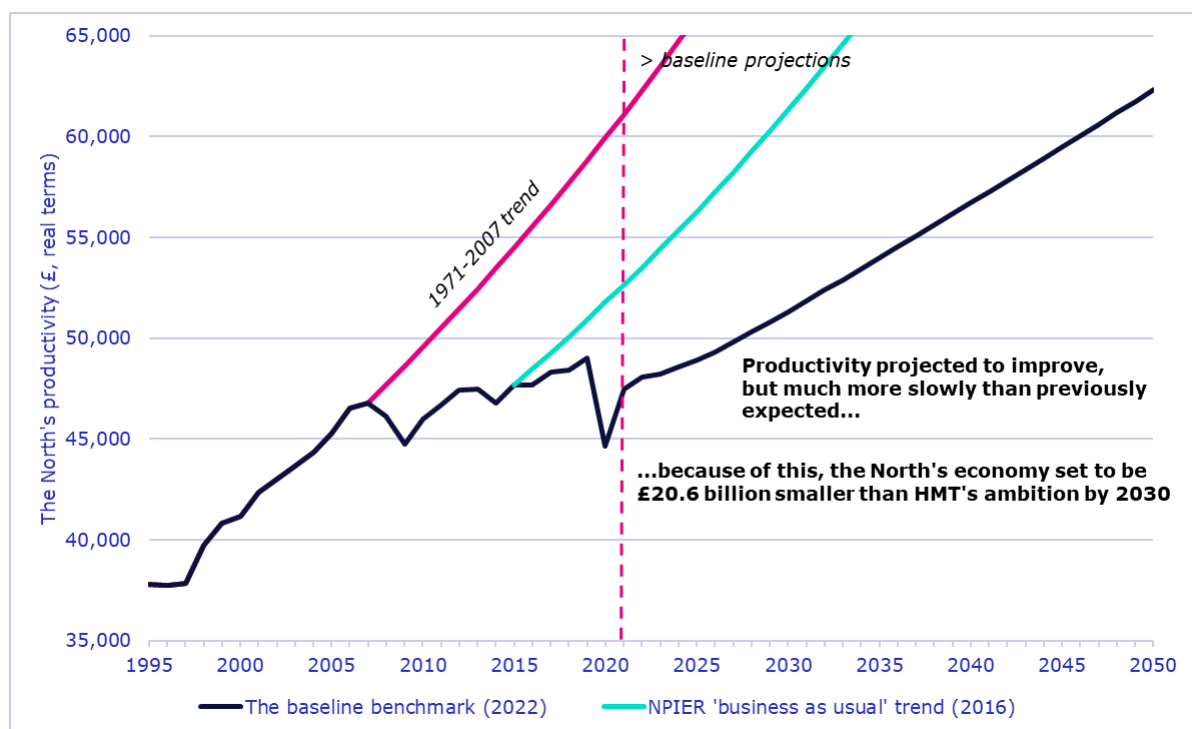


Source: Cambridge Econometrics LEFM

The outlook for productivity growth in the baseline benchmark is still low by historic standards (i.e. the pre-global financial crisis trend), and more pessimistic than the 'business as usual' outlook of seven years ago, as Figure 4-5 shows. Even this more pessimistic trajectory represents a significant step-up compared to the post-global financial crisis "new normal" of stagnating productivity.

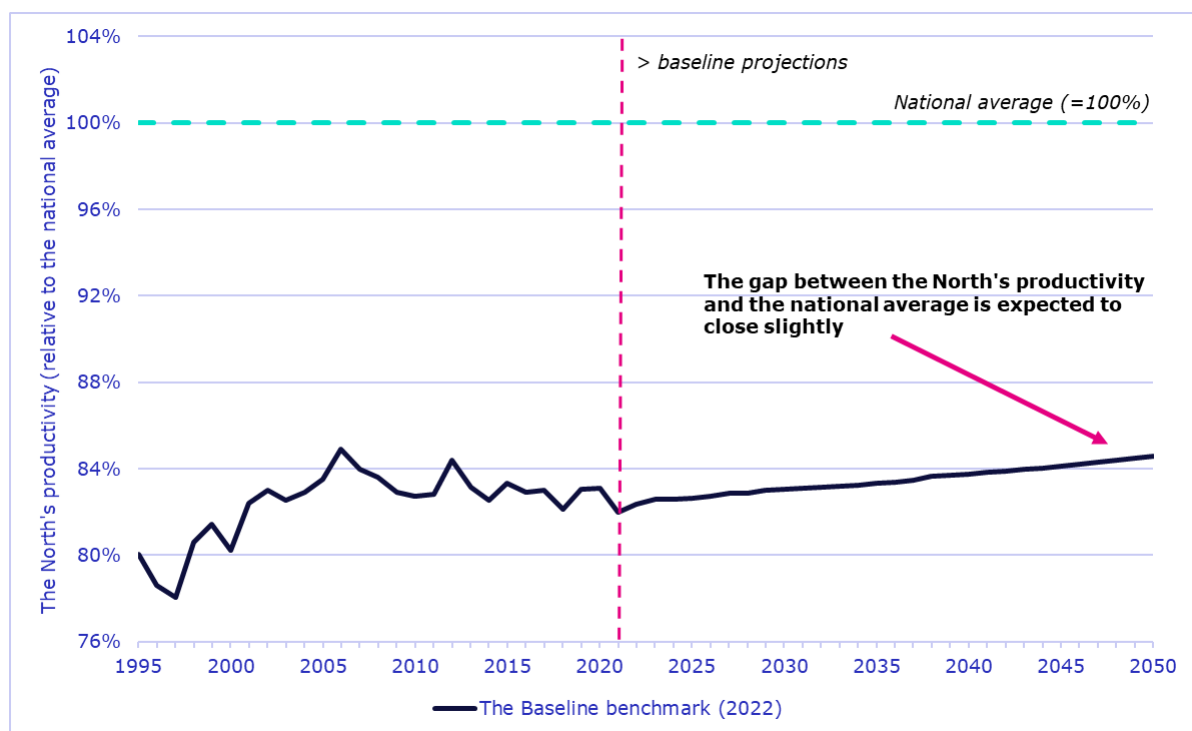
Indeed, productivity forecasts such as these over the past decade have consistently proven over-optimistic, with 'lower and slower' productivity growth now an accepted assumption. This trend will continue to limit the economic potential of the North, and by 2030, the region's economy could be £20.6 billion smaller than targeted by HM Treasury back in 2015. A central ambition of the 2016 NPIER was to close the North's productivity gap relative to the national average (defined here as the Rest of UK average). With limited progress in closing the gap over the past decade, the baseline benchmark expects this gap to close only very slightly over the long-term, as shown in Figure 4-6.

Figure 4-5: Baseline productivity outlook relative to the 2016 NPIER's 'business as usual'



Source: Cambridge Econometrics LEFM, 2016 NPIER

Figure 4-6: The North's baseline productivity outlook relative to the national average



Source: Cambridge Econometrics LEFM, Note: national average defined as the Rest of the UK

Further assumptions relating to CE's Local Economy Futures Model were informed by a series of UK-level macroeconomic assumptions, with tailored assumptions relating to EU exit, the Covid-19 pandemic, and the emerging cost of living crisis, which can be found in the more detailed Economic Scenarios modelling report⁴².

However, it is worth noting that there are uncertainties around the assumptions related to jobs growth looking forward, particularly with the emergence of new technologies such as artificial intelligence that could have a considerable impact on the labour market. In addition to this, in the LEFM, demand is not assumed to be unconstrained. Both local sectors and local labour markets have "supply-side" constraints that dictate the extent to which changes in demand lead to changes in real outputs and activity versus price or wage responses in the short term. But these are allowed to adjust over the longer run. By allowing these supply-side variables to evolve over time allows some of the features of agglomeration economies to emerge.

4.6 The new transformational scenario for the North

The 'transformational' scenario sets out a collective vision that seeks to close the productivity gap between the North and the rest of England (less London), in a manner that is socially inclusive and addresses the challenge of climate change by achieving the government's stated objective to reach net zero. When all four change scenarios are modelled simultaneously, implementing all of the policy interventions outlined, the result is a new 'transformational' scenario.

Table 4-4 shows the headline impacts under the scenario by 2050, relative to 2021 and the expectations of the baseline benchmark. The new 'transformational' scenario has the potential to provide:

- Additional GVA growth of £118 billion above the baseline benchmark, and in total an economy that is £267 billion larger in 2050 than 2021.
- An additional 1 million jobs above the baseline benchmark, and in total a labour market with 1.6 million more jobs than in 2021.
- Additional productivity per worker £6,000 above the baseline benchmark, and £20,900 more than in 2021.
- A population 1.7 million above the baseline benchmark, and 3.1 million higher than in 2021.

⁴² NPIER: Economic Scenarios Development, Workstream 3: Final Report, available [here](#)

Table 4-4: Headline new transformational scenario metrics in 2050, and relative to 2021

Headline metric	The North by 2050	Change relative to 2021	Change relative to baseline benchmark by 2050
Population	18.7 million	3.1 million	1.7 million
Jobs	9.3 million	1.6 million	1 million
GVA (£2019)	£633 billion	£267 billion	£118 billion
GVA per job (£2019)	£68,300	£20,900	£6,000
GVA per capita (£2019)	£33,900	£10,400	£3,600

Source: Cambridge Econometrics LEFM

The new 'transformational' scenario sees the "best" of all its component change scenarios: rapid decarbonisation; growth in R&D spending; improvements to housing affordability; and the effects of labour activity, life expectancy and reduced poverty.

A comparison between the 2016 NPIER 'transformational' and the new 'transformational' scenarios is shown in Table 4-5. The magnitude of the impacts are broadly similar, with the new scenario resulting in slightly higher levels of performance, particularly for improved labour productivity.

Table 4-5: Comparison of the 2022 new transformational with the 2016 NPIER transformational

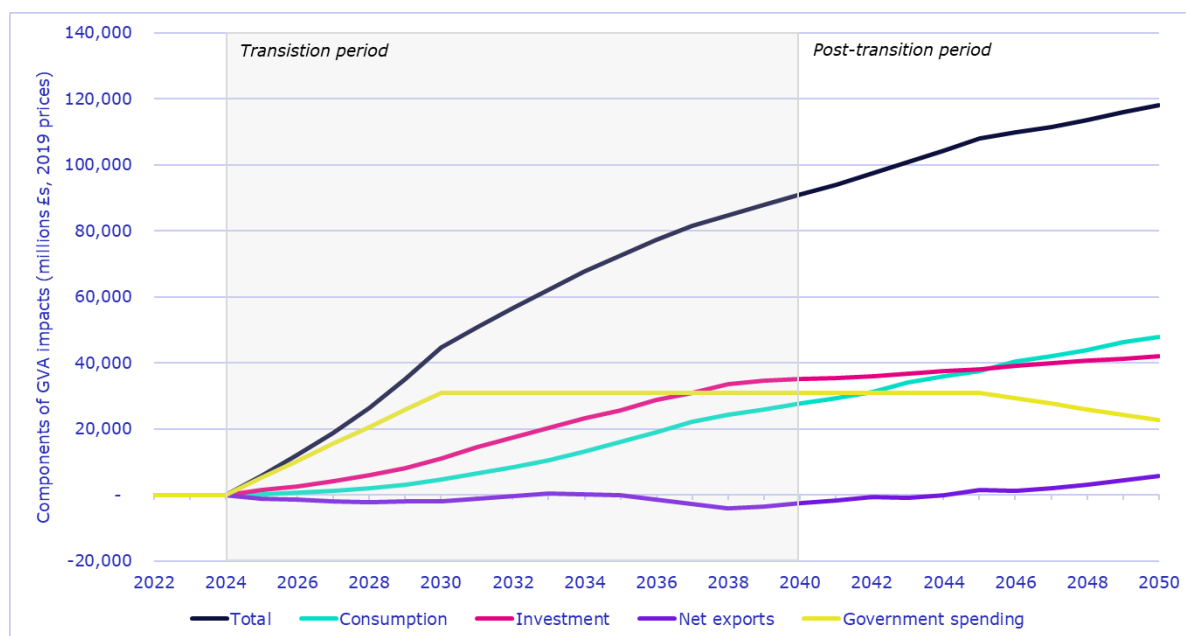
	2016 NPIER Transformational		New transformational	
	Difference from baseline by 2050 ⁴³	% difference from baseline by 2050	Difference from baseline by 2050	% difference from baseline by 2050
Jobs	855,000	10%	1 million	12%
GVA (£2019)	£106 billion	16%	£118 billion	23%
GVA per job (£2019)	£4,100	4%	£6,000	10%

Source: 2016 NPIER, Cambridge Econometrics LEFM

⁴³ The 2016 NPIER was based on prices for 2015. The original published figure of £97 billion has been adjusted by annual CPI inflation to 2019, likewise for the productivity per job figure, which was £3.2k in the 2016 work.

Figure 4-7 shows how the Northern economy evolves differently over time in this new 'transformational' scenario. The graph shows the additional GVA (the grey line), compared to the baseline scenario over the period 2025-2050, and its four main components: public investment, private investment, consumption and net exports.

Figure 4-7: Composition of the new transformational scenario GVA impacts to 2050

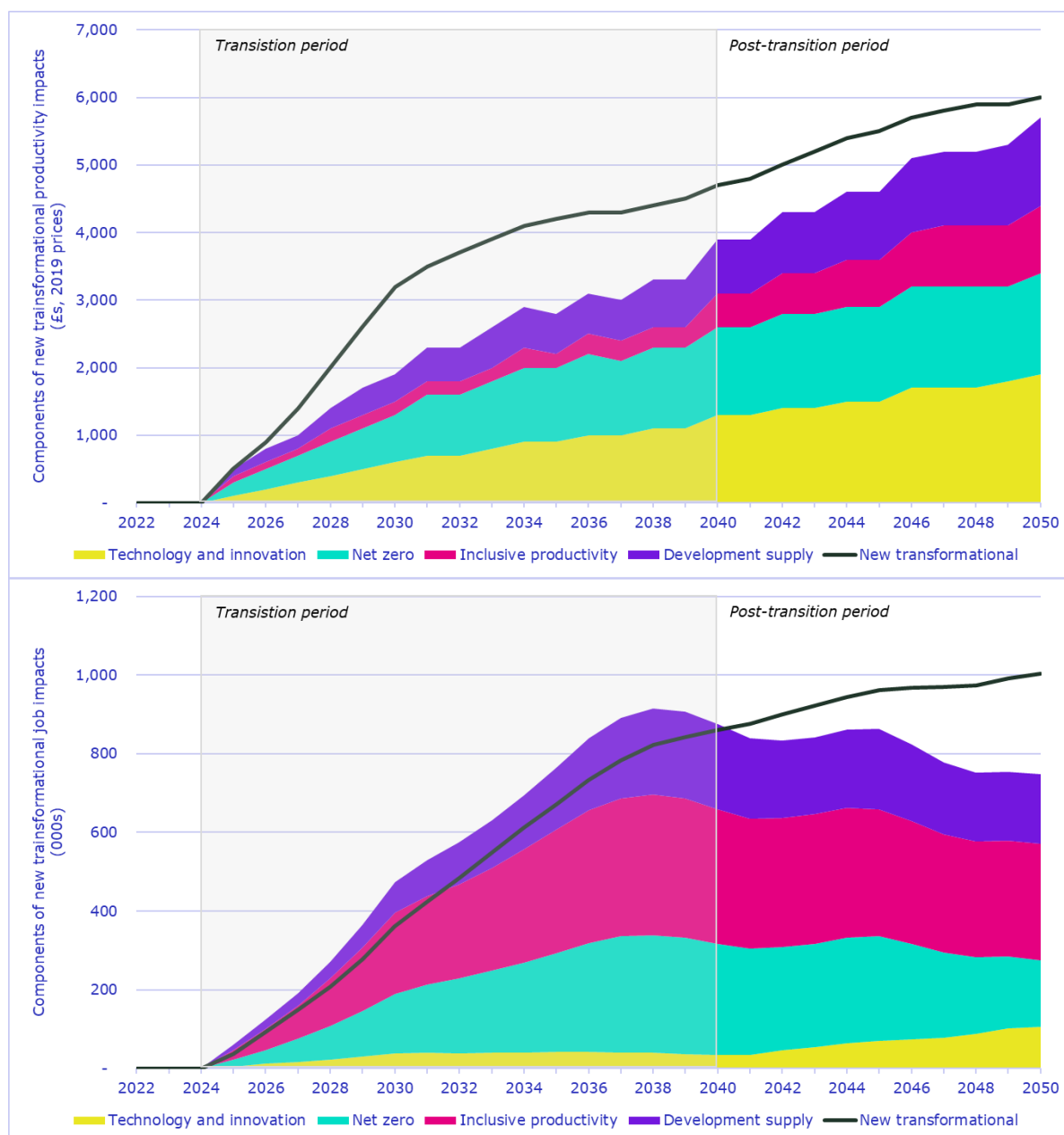


Source: Cambridge Econometrics LEFM

The transformational scenario follows a similar trend to each of the individual scenarios: with public sector investment leading during the transition period of 2025-2040, and then private sector investment increasing between 2040-2050 to take advantage of new market opportunities. Capital accumulated during the transition period starts to feed through into productivity performance, which leads to higher household incomes, job opportunities and aggregate consumption as well as positive and growing net export performance.

In Figure 4-8 the charts for productivity and employment trajectory of the new 'transformational' scenario are shown together, building upon each of the four policy scenarios. The new 'transformational' scenario, with its higher aggregate levels of investment, produces an economic evolution pathway through the transition period that is substantially more capital intensive, more highly productive, and less labour intensive than the sum of its four component change scenarios.

Figure 4-8: Scenario synergies for productivity (top) and job (bottom) impacts to 2050



Source: Cambridge Econometrics LEFM

The new 'transformational' scenario has higher productivity and lower labour intensity due to the interaction of two effects:

- Synergies between different scenario interventions help to release the constraints on growth and produce positive productivity spillovers. For example, demand for more skilled workers in the 'Technology and innovation' scenario match with the educational investments made in the 'Inclusive productivity' scenario; and
- The "hot" labour market incentivises a more capital-intensive transition than would otherwise be the case, shifting the inputs of production more to capital than labour.

One way of understanding this synergy is to consider the remaining constraints to growth existing in each of the four change scenarios:

- **Technology and innovation:** high levels of innovation and capital, but growth constrained by a lack of suitably skilled workers, and the North is held back by suboptimal public infrastructure.
- **Inclusive productivity:** this scenario sees high levels of availability of skilled workers, but productivity is still limited by a lack of innovation and accumulated capital, and suboptimal public infrastructure.
- **Development supply:** this scenario depicts a large, well-housed and well-connected population, but economic performance is constrained by a lack of innovation, capital, and skills.
- **Net zero:** the decarbonisation agenda requires high levels of investment and labour demand during the transition period, but investment declines after 2040.

In the new 'transformational' scenario combining all of these investments together leads to high level of innovation and capital, a healthy and educated workforce, a large, well-housed and well-connected population, with high levels of well-matched labour demand and supply that continues to grow through the post-transition period and beyond.

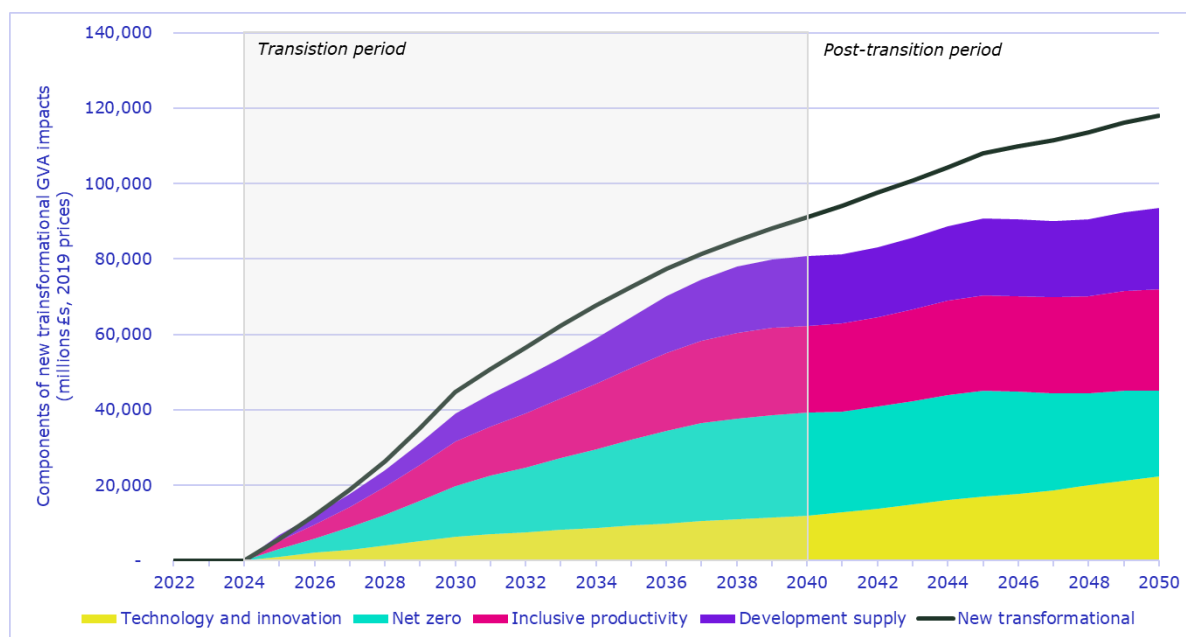
In the new 'transformational' scenario there is also greater competition for labour than in the four change scenarios, which as well as incentivising investment in capital, also incentivises employers to invest in existing staff to increase output. There is particularly rapid productivity growth in the initial five years of the transformation (2025-2030), as multiple investment agendas are expanded simultaneously.

In the longer term, the steady delivery of housing, and resulting increase in the labour supply from inward migration, starts to mitigate this immediate effect. This works to cool the labour market down again in the post-transition period, but at a higher level of capital intensity and at a higher overall level of productivity and wages.

The post-transition period is therefore characterised by higher levels of employment being maintained even after the bulk of the net zero transition activity is complete. Within the model, this is a result of higher levels of both internal demand due to wealthier households, and external demand, due to higher levels of international competitiveness.

The net result on GVA – which is positive and growing over time – can be seen in Figure 4-9. As presented above these correspond initially to productivity synergies during the capital-intensive transition period, and to labour demand synergies in the now highly-productive, highly-competitive, highly-prosperous post-transition period.

Figure 4-9: Scenario synergies for GVA impacts to 2050



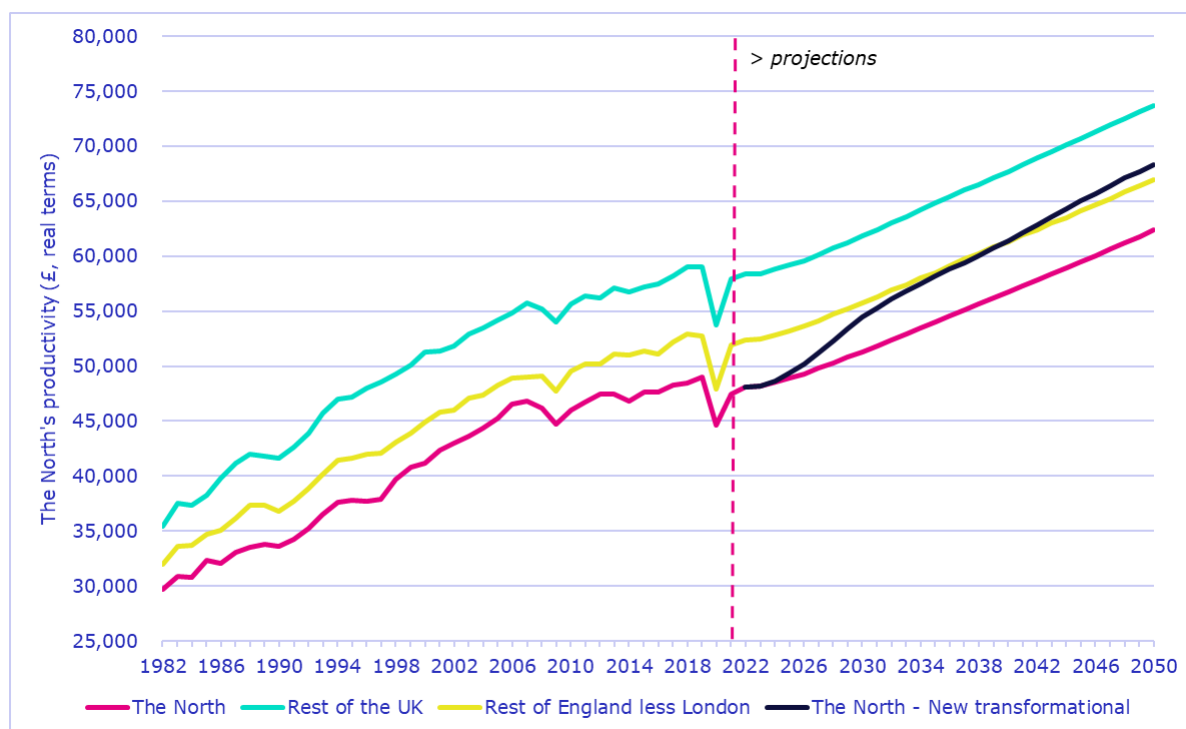
Source: Cambridge Econometrics LEFM

A comparison with projections for various benchmark regions within the wider UK reveals the positive productivity impact of the proposal policy combinations, shown in Figure 4-10. The productivity of the North catches up and overtakes the rest of England (excluding London) benchmark (effectively the Midlands, the East, and the South), and halves the gap with the rest of the UK benchmark, which is heavily skewed upwards due to the inclusion of London. For a 25-year period, this is exceptionally rapid progress, yet could be achieved if the growth in the 1997-2007 period, pre-global financial crisis could be repeated.

4.7 Estimating the cost of the new transformational scenario

It is possible to calculate approximate cost/benefit ratios of the new 'transformational' scenario for economic growth in the North, based on the modelled outputs of a quantified level of public sector spending intervention across a wide range of policy areas, sustained to 2050. Significantly all separate change scenarios are positive for GVA growth, but it is only when modelled together that the full potential of the North is unleashed, and the level of growth modelled is greater than sum of parts. Table 4-6 shows the total cost of real-terms additional proposed government spending over a 25-year time period is compared to a narrow definition of the benefits – the total additional GVA produced over the same period. In addition to the modelled GVA benefits, there are likely to be significant social and environmental benefits which have not been modelled or quantified.

Figure 4-10: Productivity in the new transformational scenario relative to the productivity ambition benchmarks



Source: Cambridge Econometrics LEFM

Even without the inclusion of social and environmental benefits, there are high estimated returns for each of the scenarios; varying between £2.05 and £3.09⁴⁴ per £ of government investment, providing a cost/GVA ratio of 2.8.

The modelling also explored the potential impact on the Exchequer from sustained investment in the North. If the economic growth and subsequent impacts on productivity and employment set out in the new 'transformational' scenario are realised, this could lead to increased tax revenues⁴⁵, which are estimated to total £721 billion by 2050. With an estimated public investment to achieve the 'transformational scenario' of £704 billion, the analysis suggests that by 2050 – even when taking a narrow view of the benefits – the investment in the North will produce a net positive revenue to the Exchequer over the 25-year time period.

⁴⁴ This ratio for the North is likely to be lower at the UK level, as a component of the development supply narrative is greater population retention and attraction in the North. This may result in relatively lower population growth in other areas of the UK.

⁴⁵ Government tax revenues are estimated at 37% of GVA. For further information please refer to the [Economic Scenarios](#) report.

Table 4-6: Cost-GVA ratios and revenues for the new transformational scenario

	Total public investment 2025-50 (£2019 billion)	Total additional GVA 2025-50 (£2019 billion)	Public cost-GVA ratio	Total potential government revenues (£2019 billion)
Technology and innovation	141	291	2.06	108
Net zero	210	532	2.53	197
Inclusive productivity	235	482	2.05	178
Development supply	118	365	3.09	135
New transformational	704	1,949	2.77	721

Source: Cambridge Econometrics

5 Realising the economic opportunity

Since the 2016 NPIER, productivity growth in the North has broadly tracked that of the weak productivity growth in the rest of the England less London, and there has been no progress closing the productivity gap between the two areas. So the scale of economic opportunity for the North remains. This lack of progress reflects the challenges that the UK economy as a whole has faced since that time, and the current changing economic backdrop, such as inflationary pressures and the return of interest rates toward a more normal long-term average.

Through this updated, abstract modelling work, the NPIER has been further developed to reflect a vision of a transformed Northern economy that aligns with the broad policies of partners across the region. Speaking as one voice it has also quantified the scale of economic ambition which is reflected in TfN's revised Strategic Transport Strategy. Whilst the relative stagnation of the UK economy of recent years might call into question how achievable this ambition is, maintaining a focus on the original productivity gap highlighted by the 2016 NPIER is an anchor to realise the ambition.

The public sector intervention of c.£700 billion to 2050 could payback more than this amount in additional revenue to the Government, with substantial wider societal and environmental returns that have the potential to reduce spending on health and social support. But critically, any policy application must recognise the distinct local and regional characteristics within the North to be successful.

To transform the North's economic performance requires significant improvement in transport connectivity, intra and inter-urban/city connectivity, and across the wider policy ecosystem, including but not limited to:

- Improving skills with better education outcomes and work-based-vocational training;
- Graduate retention and attraction, through the prospect of better careers access to more than one location and the provision of a good supply of high-quality housing;
- Commercialisation of university research through the wider Northern business base;
- Improved management skills and take up of innovation; and
- Attracting inward investment by world-leading, international businesses that can bring leading business practices and technologies.

Table 5-1 shows, across each of the change scenarios, the potential areas of policy and investment focus for the North.

Only with sustained public sector investment in connectivity and the wider policy ecosystem can we fully transform the North of England. But we must not just close the productivity gap, but we must do so in a way that promotes inclusive growth and addresses the climate challenge.

The scale of the public investment has been quantified using policy-based evidence to support the monetary interventions modelled. While the detail of the spatial spread of that intervention and specific policy action has not been modelled, the importance of private sector investment must not be understated. The public sector needs to create the environment and market to support business confidence in the North, because only then can we realise the potential to crowd-in a broadly equivalent private sector investment total to 2050, but significantly one that is double the public intervention by that time. And it is only through intervention across this wider policy ecosystem that the North will benefit from the synergies modelled here to realise its full economic opportunity, in turn contributing to national growth.

The solutions to delivering the activities set out in the scenarios are many, but primarily lie in the expansion and acceleration of existing approaches. These include continuing to move forward with devolution in all areas of the North. Many areas without an existing devolution deal are exploring options for future approaches in light of the transfer of local economic development powers from LEAs to local authorities from April 2024, and these areas should be supported on that journey with packages of funding and responsibilities in line with previous devolution deals.

Those areas with Mayoral Combined Authorities already in place should also be supported to continue to expand and deepen devolution in their areas, in the same way that Greater Manchester and the West Midlands have been supported with their trailblazer devolution deals. And for those trailblazer areas, there remains a desire and a need to go further. This includes fiscal devolution, giving local areas

the authority to introduce new taxes or take responsibility for existing taxes, as well as having greater control over how public spending is allocated within their locality.

Table 5-1: Potential areas of policy and investment focus for the North

Technology and innovation
<ul style="list-style-type: none"> • £3 billion pa direct investment on research and innovation through new publicly funded institutes, and a substantial increase in R&D tax credit to encourage research and innovation across firms of all sizes. • £3 billion pa match funding for start-ups and SMEs, primarily focused on technology adoption, process and product improvement and exporting.
Inclusive productivity
<ul style="list-style-type: none"> • £6 billion pa health and social care investment to support NHS to grow to meet future demand for services and improve access. • £4 billion pa for childcare, education and skills to boost education service provision across all age groups including vocational courses, and provide additional free childcare for 1–4-year-olds to support labour market participation by discouraged parents.
Development supply
<ul style="list-style-type: none"> • £2 billion pa on new and improved social housing, to stabilise demand through a counter-cyclical development programme to deliver 40,000 new social homes a year. • £3 billion pa on local infrastructure, each year 30-50 miles of light-rail network or open 100 rural stations where track already exists or retrofit a city region with active travel infrastructure.
Net zero
<ul style="list-style-type: none"> • £1.5 billion pa to decarbonise the built environment retrofitting heat pumps, solar panels and insulation. • £2.5 billion pa to decarbonise the transport system split across electric vehicle infrastructure, rail electrification and new fuel systems for shipping and aircraft. • £0.5 billion in waste and agriculture to eliminate methane emissions, reduce pesticide use and restore natural environments. • £1.5 billion decarbonising industry and developing alternative fuels, including carbon capture and storage and clean industrial processes. • £4 billion pa investment in clean energy production across nuclear, solar, wind and biomass plus electricity storage, transmission and distribution.

It is also clear that the ambition set out in the NPIER will require a significant uplift in overall levels of investment in the North, likely including a combination of the reallocation of central government spending, tax rises, additional borrowing, or alternative financing solutions at a more local level. Whatever the solution, this must be accompanied by a firm political commitment to the programme from the outset that stretches beyond the five-year political and spending review cycles of national government. This should be supported given the return on investment the

activities outlined in these scenarios can generate as outlined elsewhere in Table 4-6.

6 Next steps for the NPIER

Since the 2023 NPIER Economic Scenarios report was published (as part of the Strategic Transport Plan evidence base), TfN has been engaging with partners to disseminate the findings. The intention has been to explore what steps may now be necessary to realise the economic ambition, but also to assess how the NPIER research programme moves forward and the further work needed to augment and evolve the evidence base. By doing the latter, we can ensure there is a current, robust and credible case for investment and change for the North.

6.1 Using the 2023 NPIER

The 2016 NPIER was the starting point for a research programme that would establish the evidence base in relation to the North's international-class strengths and assets. It provided the case for change for strategic interventions and investment in the North for public and private funders. The North's partners are keen to maintain and continue to build this aspect of the NPIER work.

By articulating the strategic economic ambition for the North, the NPIER supports partner business cases for investment and decision making, but without constraining local policy development, given the importance of place-based economic development thinking and delivery. It is not intended to be a top-down plan for the North, but rather to continue to be an evolving programme of economic development research, delivered collaboratively across the region for the region.

Northern partners can use the updated NPIER evidence, to determine the specific policy recommendations and investment interventions needed to realise the North's economic potential.

6.2 Developing the NPIER research and evidence base

In looking forward to the next phase of the development for the NPIER research programme, partners have identified some key areas for further research, which would provide more detailed evidence to inform policymakers about the specific interventions necessary to achieve the economic ambitions identified. These are set out below and will be scoped further over the coming months.

- **Place-based:** the North is a diverse region, so developing a greater understanding of the implications of economic, social and environmental research by place, and the necessary policy development, would build the evidence base. Such analysis would enable bodies like TfN to further incorporate place into its work, such as refreshing the Future Travel Scenarios⁴⁶ to reflect post-pandemic travel behaviours, working practices and changes in demand.
- **Population growth:** further economic modelling on assumptions around population growth, including migration patterns, consumer and business consumption in response to the climate challenge and changes to the labour market driven by disruptive technologies, such as AI, to address evidence gaps that will help better understanding of the policy mix and likely impact across the change scenarios.
- **Supply and demand of skills:** the 'technology and innovation' change scenario highlights the need for the supply of skilled workers, both in the prime and enabling sectors of today, and the emerging sectors when looking further ahead. Integrating this work with Local Skills Improvement Plans (LSIPs)⁴⁷ could help to identify demand and supply at a more local level across the North, supporting partners with policy development.
- **Labour market participation:** The 'inclusive productivity' scenario again focuses on skills development amongst the North's labour market to deliver the capacity that would support the jobs created if the economic opportunity in the NPIER was realised. There is now a need to look at the wider emerging patterns in labour market participation, and therefore update the original TfN work on connectivity and labour markets⁴⁸ in the North, utilising the organisation's social inclusion research programme that has been developed over the last two years⁴⁹.
- **Social housing supply:** in the 'development supply' change scenario, the need for a large build programme of social housing to support population growth has spatial implications that need to be understood, and specifically how these align with existing local housing development plans. Coupled with this is the need to align housing developments with employment opportunities.
- **Decarbonisation:** in the 'net zero' scenario, more work is needed to clarify the interventions necessary to decarbonise the economy of the North. TfN is already undertaking a programme of research relating to decarbonisation of the transport system, including the provision of electric vehicle charging infrastructure, but more work will be needed, for example in areas such as behaviour change across transport modes and technological developments.

⁴⁶ See [Future Scenarios Report](#)

⁴⁷ For further information on LSIPs and designated sub-regional bodies delivering these see [Local skills improvement plans - statutory guidance](#)

⁴⁸ See [Connectivity and Labour Markets in the Northern Powerhouse](#)

⁴⁹ See [Social Inclusion | Transport for the North - Transport for the North](#)

Some research may be directly led by TfN in its role as the North's Sub-national Transport Body, working and aligning with partners as appropriate.

The NEN has also developed a long-term research plan that seeks to focus on the competitiveness of the North (including in an international context), levelling up and sustainability & decarbonisation.

Since the 2016 NPIER, TfN and NP11 have worked closely with Northern partners and undertaken frequent consultation to develop a NPIER research programme that has aimed to fill key evidence gaps and meet their needs. As the governance and policy context continues to evolve, we will work with partners to review the purpose and audience, scope and boundaries, as well as frequency of updates and granularity of detail of the NPIER, to ensure it remains relevant.

In 2016, it was proposed to establish an independent panel, supported by a small-scale secretariat and a private sector partner, to provide economic analysis and forecasts at the level of the North. While that model has not been adopted per se, current arrangements – which draw upon expertise from TfN, NP11 and partner organisations through the NEN (and utilises the TfN and NP11 boards) – functions well.

Nonetheless, the governance of the NPIER and challenge of delivering the ambition for the North remains a live conversation as structures at the local and regional level evolve and evidence/research needs change in response to the operating environment. The proposed shift in the function of LEPs into local government will represent a further evolution of the policy development landscape at a pan-Northern level. But the North's existing depth and maturity of partnerships – in particular through the NEN – means that there is the opportunity to continue the pan-Northern level collaboration on the NPIER will ensure a robust economic evidence base to make the case for investment and change across the region to realise the North's economic potential.



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