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Measuring and Valuing the Inclusive Growth Impact from Infrastructure Investment

For Scottish Futures Trust

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Executive Summary

Inclusive growth has been a growing area of policy focus for some years and, alongside achieving increased wellbeing of citizens and a just transition to net zero emissions, is currently one of the Scottish Government's core aims. As highlighted in the National Performance Framework (NPF), Scotland's Wellbeing Framework, the focus is on:

> "creating a more successful country with opportunities for all of Scotland to flourish through increased wellbeing, and sustainable and inclusive economic growth."
>
> **National Performance Framework**

Aims and Objectives

The focus of the research is to enhance and improve the evidence base of how investment in infrastructure supports and helps deliver inclusive growth. Specifically, the research will:

- Improve how Scottish Future Trust (SFT) and partners evidence the contribution to inclusive growth in relation to infrastructure and recommend a suite of indicators and metrics that will enable a more consistent approach to appraising and prioritising resources.
- Provide recommendations on different approaches and suitable inclusive growth indicators and metrics to support the prioritisation of infrastructure being developed by Scottish Government's Infrastructure Investment Division (IID) for the next Infrastructure Investment Plan (IIP).

Understanding the Context

The starting point for the research was to establish a working definition of both inclusive growth and infrastructure – both of which have been subject to varying degrees of interpretation and ambiguity in recent years. The Scottish Government definitions have been employed as follows:

Inclusive Growth: "Growth that combines increased prosperity with greater equity; that creates opportunities for all and distributes the dividends of increased prosperity fairly."

Figure 1: The Four Capitals – Defining Wellbeing

Research note: The research team would note that, while the focus of the study is inclusive growth, as outlined in the recently published Scotland's National Strategy for Economic Transformation (2022), wellbeing is an emerging policy priority. We have therefore sought to reflect the wider economic, social, and environmental dimensions encapsulated by wellbeing within the Evaluation Framework in terms of how inclusive growth contributes to the four capitals.

Infrastructure: "The physical and technical facilities, natural and other fundamental systems necessary for the economy to function and to enable, sustain or enhance societal living conditions. These include the networks, connections and storage relating to the enabling infrastructure of transport, energy, water, telecoms, digital and internet, to permit the ready movement of people, goods, and services.

They include the built environment of housing; public infrastructure such as education, health, justice and cultural facilities; safety enhancement such as waste management or flood prevention; natural assets and networks that supply ecosystem services and public services such as emergency services and resilience."

There are three core portfolios that comprise infrastructure: enabling infrastructure, the built environment, and natural infrastructure.

Relationship between Infrastructure and Inclusive Growth

The precursor to the research was a study undertaken by the Fraser of Allander Institute in 2019 that concluded that the linkages and synergy between infrastructure and inclusive growth are more theoretical and do not have a strong supporting (quantitative or qualitative) evidence base.

To provide an update to the Fraser of Allander research and consider the new/emerging approaches, the study reviewed a broad spectrum of research, academic papers and work undertaken by practitioners from Scotland, the UK and internationally.

The purpose was to establish how other organisations have sought to evidence both the rationale for investing in infrastructure (in the context of inclusive growth) and measuring the contribution of infrastructure in delivering inclusive growth.

Our main observations from the desk-top review are:

- The theoretical link between inclusive growth and infrastructure is by-and-large strong, however, some areas of investment may be more amenable to evidencing the direct role with inclusive growth than others. For example, our understanding of how infrastructure can support economic growth is well established, but how infrastructure contributes to more intangible areas such as social and environmental outcomes is less well developed.
- Different approaches and interpretations of inclusive growth have resulted in competing definitions – there needs to be greater consensus on the parameters before any meaningful prioritisation or measurement framework can be developed. This is a fundamental first step before we can progress and start to develop our thinking on how to prioritise investment.
- Some researchers and practitioners view inclusive growth as an input in the design of "inclusive infrastructure", while others view it as an intended/aspirational outcome of infrastructure investment. Both are critical for inclusive growth to be embedded. Any new or revised approach to achieving inclusive growth should include a commitment to embed the appraisal and evaluation of investments into every stage of the project cycle.
- Viewing infrastructure through a more holistic lens is becoming ever more prevalent within mainstream policy, with initiatives such as the G20 Global Infrastructure Hub now viewing the development of 'inclusive infrastructures' as a priority.
- Decision makers need to understand and consider all the positive and negative spillover impacts resulting from infrastructure investment - thinking more holistically about people and place and integrating social and environmental considerations will lead to more informed decision-making and reduce failure demand. To some extent this is more about influencing cultures and behaviours as it is about the process.
- As Scotland develops its approach and thinking on wellbeing (and the evolving policy that guides the approach), further investment within social, human and natural infrastructure will be an important factor in achieving wellbeing outcomes.

For example, the international research has highlighted interesting relationships between infrastructure as an enabling capability that can support positive societal outcomes, including:

- Breaking the feedback loop between poverty and mental health issues.
- Developing social infrastructure that engenders trust in Government/public bodies.
- Utilising natural capital investment to support a diverse range of improvements within health outcomes, such as cardiovascular health, cortisol levels (indicators of stress) and obstetric outcomes, together with positive impacts on mental health and pro-social behaviours.

Current Practice

To inform the development of a new Evaluation Framework it is important to understand the current policy and practice with regards to investment prioritisation, appraisal, and measuring progress at a delivery and operational level across infrastructure programmes and projects.

We undertook a review (desk-top review and consultation with key stakeholders) to consider:

- A cross-section of policy documents and action plans related to infrastructure to better understand the stated objectives and intended outcomes from the delivery of different types of infrastructure, how they measure success in relation to delivering inclusive growth, and if there is consistency across the measures and indicators.
- The specific approaches to measurement and evaluation being undertaken through a wide range of infrastructure projects to identify good practice, gaps, and challenges. The programmes/projects for review are broadly categorised as:
  - City-Region and Growth Deals.
  - Major infrastructure programmes as identified in the IIP 2020/21 – 2025/26.
  - Infrastructure projects where SFT has a key facilitation and/or delivery role.

From the research we would highlight the following key messages:

- While inclusive growth is often highlighted as a key objective of policy in Scotland it is unclear how this translates to actions and deliverables, and how (if at all) progress to delivering inclusive growth is being measured.
- The goals across different policy workstreams lack co-ordination and this has emerged as a key challenge in achieving inclusive growth. For example, Scotland's commitment to both environmental stability and inclusive growth requires many trade-offs (such as attempting to reduce fuel poverty whilst promoting the installation of expensive renewable technologies) which are not yet reflected in the policy guidance.

- Across Scotland there are areas of strength and good practice but also gaps and limitations in the way in which we prioritise and appraise programmes/projects and measure their progress. To some extent this has been driven by the legacy issues alluded to earlier with regards a lack of definition and guidance on inclusive growth.
- There are practical challenges with measuring inclusive growth where this is not an intended or explicit objective of the investment. Notably, in areas of social infrastructure investment such as education or health or environmental/ natural infrastructure where the linkages may be more indirect or casual. The tendency is to focus on the immediate short-term outputs (construction and Community Benefits) or discount inclusive growth from the measurement framework entirely. In addition, there is often a lack of clarity about how inclusive growth outcomes would be achieved.
- At an operational level, the reporting requirements of funders, availability of resources, and other external influences such as political pressure are significant drivers for the approaches adopted to both appraisal and measurement.
- There is emerging good practice from international comparators that, while the focus is on wellbeing and not specifically inclusive growth, they are adopting a more holistic approach to appraisal and measurement that goes beyond traditional economic metrics.
- Transformational changes linked to infrastructure investment will only become a reality if they are viewed in the context of a strategically coherent portfolio of policy initiatives i.e. investment should not be considered in isolation.
- A focus on promoting cultural and behavioural change and capitalising on Scotland's existing policy architecture will be as important to the success of inclusive growth outcomes as designing the framework.
- Given the complexity and fluidity of our socio-economic environment it is unrealistic to expect that a single framework (or a specific set of metrics) will provide all the answers.
- There is a role for public engagement/views to guide on inclusive growth priorities and identify which trade-offs are acceptable to achieve longer term ambitions.

Developing a New Approach

The research has shown that, with regards to the linkages between inclusive growth and infrastructure, this is a dynamic and fluid relationship that continues to evolve.

Traditional approaches using definitions that centred on purely economic measures of growth (measured through macroeconomic indicators such as production and Gross Value Added - GVA) have started to adopt a more holistic approach and now include wider considerations such as the effect on society, people, and the environment. Indeed, some frameworks and countries have taken this further and the thinking and narrative on infrastructure/inclusive growth is now being embedded within the wellbeing economy agenda.

The research has also highlighted that infrastructure covers a broad range of activity with complementary and sometimes competing aims and objectives. The difficulty in attributing and measuring the effects of infrastructure stem from its predominant nature as an enabler within a much wider 'system' where different types of infrastructure will create interdependencies – both positive and negative.

Therefore, we have suggested a **principles-based framework and guide** that reflects good practice (from within Scotland and internationally) to influence the pre-appraisal stage and prioritisation of future infrastructure, as well as setting appropriate indicators and metrics to measure and track performance.

The Principles of Reframing our Approach to Reflect Need

We first need to understand what the need and specific challenges are in relation to inclusive growth that infrastructure investment could address. Once we understand the problem(s) that we are trying to address, then we can set objectives for what we want to achieve with the investment. When we have set objectives, then we can start to consider and set indicators and metrics for measuring progress and success.

Unless inclusive growth measurements are viewed, and included, as part of a new decision-making framework, infrastructure investment is unlikely to address or make limited progress to tackle the systemic issues and challenges faced by Scotland's people and communities.

Through the study we mapped the 11 national outcomes (and numerous indicators/measures) as outlined in the NPF and considered them through a different lens - framing them as "inclusive growth challenges". We have then set objectives that could make a meaningful contribution to our definition of inclusive growth and set out a dashboard of relevant indicators.

In effect, the research team sought to work backwards, or top down, to ensure a needs-based approach and link the inclusive growth challenges to appropriate indicators of progress.

The Principles of Pre-Appraisal and Prioritisation of Infrastructure Investment

To support the prioritisation of infrastructure investment, we would encourage decision-makers to think about the following:

1. Decision-makers and funders need to adapt the lens through which they view investment. Infrastructure investment is not simply a supply-led process focused on delivering inputs and activities. Instead, infrastructure should be viewed as a needs-led delivery mechanism and enabler of inclusive growth focused on delivering outcomes i.e. the overall change we want to achieve. Fundamentally, objectives that address the root cause of the challenge (not the observed outcome) need to be set.

2. Decision-makers and funders need to think broader and move away from a siloed project/programme mentality to one that considers the role of infrastructure within the wider 'system'. This could include engaging with other portfolio leads and stakeholders to better understand the mix of proposed activities at different thematic, sectoral, and spatial levels. This will help decision-makers to consider the interdependencies and the potential positive and negative effects on other investments and forms of capital (economic, social, human, environmental).
3. The overall long-term goal is sustainable, inclusive growth rather than absolute growth. As noted in Scotland's National Strategy for Economic Transformation (2022), the vision is to "create a society that is thriving across economic, social, and environmental dimensions, and that delivers prosperity for all Scotland's people and places…while respecting environmental limits". So, in practical terms, there may need to be trade-offs in the short to medium-term to achieve longer-term change.
4. Prioritisation of investment/programmes/projects should be informed by the outcomes that we are seeking to achieve (this may include some form of weighting to address policy priorities[1]) with a focus on people and places. In addition, any weighting should remain flexible so that changing priorities can be accommodated or where progress is made and/or focus needs redirected to other areas of activity.
5. Prioritisation should include a review of the 'project/programme' landscape at the local authority/ national level – what is already there, and consider the short-, medium- and long-term needs.
6. Prioritisation should include a review of how infrastructure interacts across different thematic areas and sectors to inform decisions or trade-offs with regards to failure demand and maximising benefits and impacts.

To support the pre-appraisal and prioritisation stage and help decision-makers develop a more robust strategic case for intervention, it is recommended to adopt a 'gateway' approach whereby key stakeholders need to address/consider a series of key questions to inform how investment decisions are prioritised.

[1] In this context, investment that helps mitigate against any negative spillover effects (for example, within an already disadvantaged area or group of people) should hold similar weighting to those investments that generate a measurable positive impact.

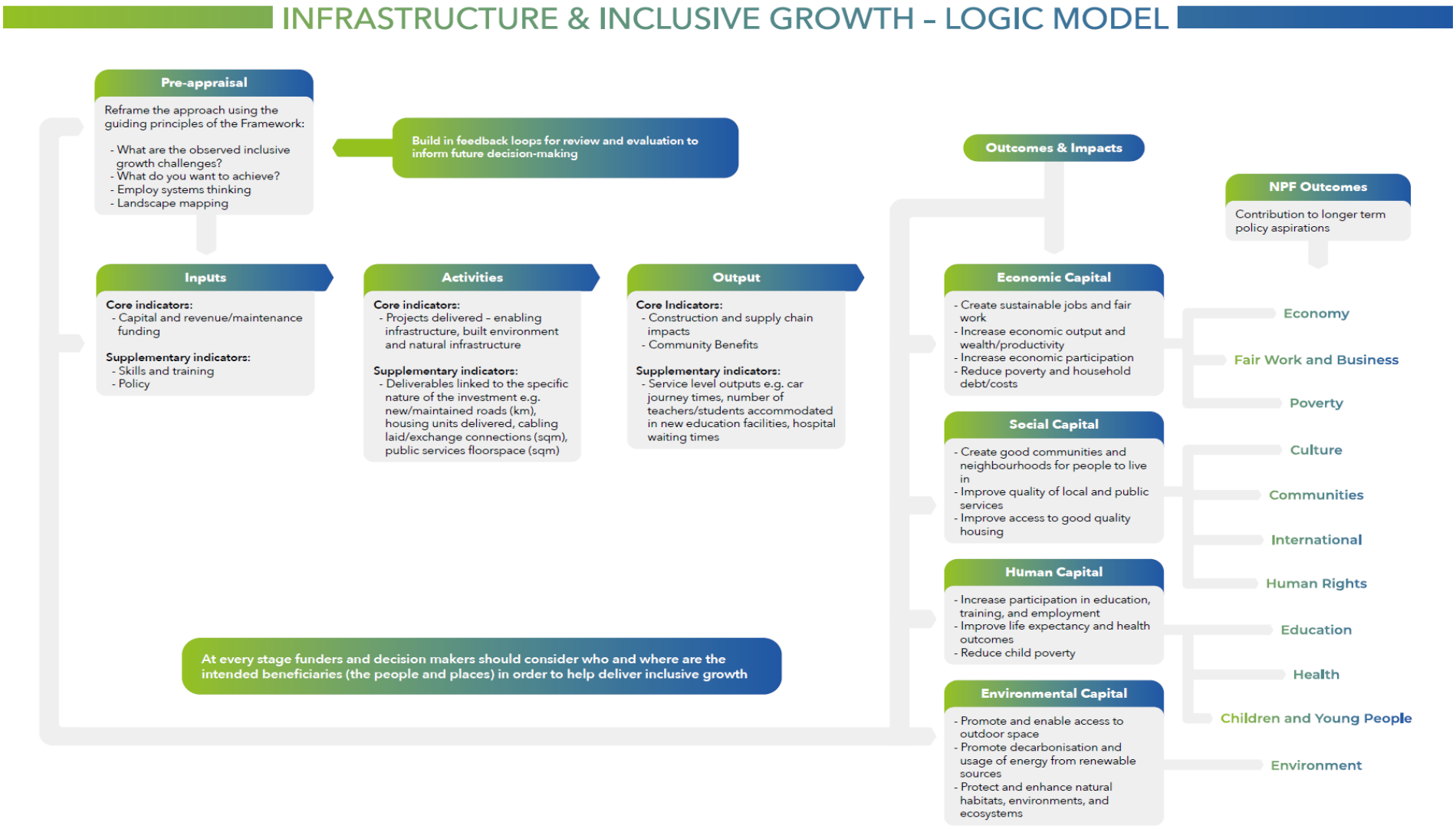
The Principles for Setting Metrics and Indicators to Measure Inclusive Growth

1. At an early stage, project leads should identify (with the use of empirical or other baseline evidence) the specific inclusive growth challenges with a focus on: People - who are the intended beneficiaries; and Place – what is the intended spatial impact of the project and what are the considerations. The next step is to set and agree a range of objectives linked to the inclusive growth challenges i.e. what do you want to achieve? The inclusive growth challenges are distinct and will be influenced by the intended beneficiaries and spatial impact of the infrastructure.
2. Identify the core and supplementary metrics and set clear targets for each, illustrating a 'where we want to go' approach (rather than comparing to historical positions).
3. Metrics and indicators to use relative as well as absolute measures of change and growth. For example, objectives could relate to growing overall economic output of a region (considered as GVA) as well as reducing the gap in median earnings of the lowest and highest earners (earnings being a component of GVA).
4. Identify the appropriate timescales for reflection and evaluation (recognising that some effects will be immediate and short-term, and others will have a longer lead-in time before change is evident) – build in feedback loops and a learning cycle to inform future decisions and/or approaches to monitoring. In a practical sense, different types of infrastructure will also generate outcomes and impacts over differing timescales. For example, transport and other enabling infrastructure will likely have a more immediate effect when compared to some elements of the built environment like civic infrastructure.
5. The framework needs to recognise that not all infrastructure investment will have an explicit inclusive growth objective or intended outcome (e.g. it may be a secondary or unintended effect due to other activities across the logic chain). This suggests an element of contribution analysis is required and where linkages start to become indirect and casual then we need to consider different approaches to collecting and providing evidence, for example, engaging directly with beneficiaries or undertaking case studies.
6. Partners need to commit resources to tracking and reporting at the ex-ante, delivery and ex-post stage - identify the point at which it is appropriate and proportionate to measure and attribute change to infrastructure.

Logic Model and Dashboard of Outcome and Impact Indicators

The logic model presents the high-level theory of change that illustrates how investment in infrastructure produces the intended outcomes and impacts, and the various intermediary stages. A summary of the outcome and impact indicator dashboard is also presented that identifies the expected contributions and relevant indicators, set against the four capitals.

Figure 1: Infrastructure and Inclusive Growth



Economic Capital

Inclusive growth includes promoting prosperity and a fairer distribution of wealth within the economy through ensuring people and places have equitable and accessible opportunities for participation, trade, employment, and business growth.

Core Enablers for Delivering Inclusive Growth:

- Create sustainable jobs and fair work.
- Increase economic output and wealth/productivity.
- Increase economic participation.
- Reduce poverty and household debt/costs.

Table 1: Economic Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objective - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Economic Capital -System Indicators
More businesses are involved with exporting directly or can benefit via supply chain linkages. Specifically, to ensure that regions and places that are under-represented have an opportunity to engage in exporting	Number/percentage of Scottish business involved with exporting - directly and/or within the supply chain Value (£) to Scottish suppliers involved with exporting - directly and/ or within the supply chain	Exports as % of GDP	
Increase overall economic growth but with a focus on those regions and/or groups of people where the average output per employee is lower than the Scottish average	Jobs created/safeguarded that pay the Real Living Wage Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000 Relative and absolute change in GVA Turnover created/safeguarded	Wages gap/variance Median wages (proxy for productivity) Average (GVA) output per employee	Household debt Investment in R&D (gross) Distribution of wealth
Increase the % geographic coverage for superfast broadband in Scotland and with a focus on rural and less densely populated areas	% of residential dwellings that have access to fast internet download speeds (min 30mbps) % of commercial premises that have access to fast internet download speeds (min 30mbps)	% of residential dwellings that are using fast internet (min 30mbps download speeds) % of commercial premises that are using fast internet (min 30mbps download speeds)	

Encourage more people from different backgrounds to start a business and grow the overall rate of annual business births	Business starts per 10,000 population Survival rates (%) of businesses at 1 and 3 years old	Employment rate Economic activity rate Long term unemployment rate	
Increase the total proportion of businesses that are innovation active - in sectors and regions that are typically less engaged in innovation activity	Businesses reported to be engaged in innovation R&D jobs created/safeguarded	Average (GVA) output per employee Business Expenditure on Research & Development (BERD)	
Increase the overall participation or employment rate in Scotland – targeting specific groups of people and regions/areas where the median average rate is notably below the Scottish average	Job density ratios Working age people claiming benefits (for those that are able and seeking to work) Jobs created/safeguarded that pay the Real Living Wage Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000 - split by FT/PT % of population that can access employment within 30-minute drive by private or public transport	Employment rate Economic activity rate Long term unemployment rate	
Increase the absolute and relative proportion of people that earn the Real Living Wage with a focus on those groups that are disproportionately affected by low pay and unsecure work	Jobs created/safeguarded that pay the Real Living Wage Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000	Wages gap/variance Median wages	
The gender pay gap is a significant issue and the aim is for median average wages of female employees to increase (at a % greater rate) to help reduce the pay gap	Jobs created/safeguarded taken by females that pay the Real Living Wage Jobs created/safeguarded taken by females that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000	Wages gap/variance - male/female Median wages - male/female	
Reduce the overall level of households/individuals in relative poverty by reducing housing costs – with a focus on certain target groups	Proportion of homes meeting SHQS standards Number/percentage of households in fuel poverty Housing affordability - median cost of new homes	The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	
Reduce the % of net income spent on housing, food, fuel and achieve a 'minimum' per household/per person with a focus on the groups that are disproportionately affected)	Proportion of homes meeting SHQS standards Number/percentage of households in fuel poverty Housing affordability - median cost of new homes	The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	

Social Capital

Inclusive growth means that all people have access to good quality places and spaces where they have good quality housing, feel connected, safe, and have an effective voice in their community.

Core Enablers for Delivering Inclusive Growth:

- Create good communities or neighbourhoods for people to live in.
- Improve quality of local and public services.
- Improve access to good quality housing.

Table 2: Social Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Social Capital - System Indicators
Promote greater diversity and accessibility of local areas: with improved quality of facilities; wider range of activities; and improved quality and diversity of local areas	% of population that have access to community or civic facilities within a 20-minute drive or by public transport	% of residents that report their local community is a "good" place to live	
Increase awareness and accessibility of social services and activities such that they are holistic and interconnected. This can be supported by greater digital connectivity for these groups	% of population that have access to community or civic facility within a 20-minute drive or public transport % of residential dwellings that have access to fast internet download speeds (min 30mbps)	% of service users who are fairly or very satisfied with the quality of local services (local health services, local schools, and public transport)	Trust in others Trust in Government
Build the capacity of communities to ensure all places and groups have the same access and opportunity to take relevant assets into community ownership	Assets in community ownership (private v community)	% of residents that report their local community is a "good" place to live	Diversity of land and asset ownership
Ensure all local areas and neighbourhoods are safe places to live for all people, particularly those who are at the greatest risk of being victims of crime	% of people that say they feel safe walking alone at night % of people that say their neighbourhood is safe No. of CCTV per capita % of people that say their neighbourhood is well lit	Crime rates	

Improve access to the outdoors and quality local green spaces through the repurposing of vacant/derelict land	HA of vacant or derelict land restored/reclaimed % of population within a 10-minute walk to greenspace	Number/percentage of residents accessing local greenspace at least once a week % of residents that perceived their local area has a "good" environmental quality	
Increase accessibility to cultural events and places specifically targeted at those less likely to attend or visit	No. of cultural events No. of (public/private/community) venues % of population that have access to (public/private/community) venues within 20 minutes (private or public transport)	No. people attending a cultural event % of people who had never attended a cultural event before	
Increase participation in cultural activities amongst those groups who are less likely to participate	No. of cultural events No. of (public/private/community) venues % of population that have access to (public/private/community) venues within 20 minutes (private or public transport)	No. people participating in a cultural event % of people who had never participated in a cultural event before	
Increase the % of households that report they are satisfied with their housing in the SIMD top 20% most deprived communities is in line with the national average	SIMD Housing Rank Proportion of homes meeting SHQS standards Home ownership rates Housing stock Vacant/derelict homes	% of households who report being either "very satisfied" or "fairly satisfied" with their house or flat	
All early learning and childcare services are rated as good or better	% population that have access to funded Early Learning and Childcare (ELC) within a 20-minute drive or by public transport	Rating of ELC facility	
Greater involvement and engagement with all communities in design and operation of public services so that public services are accessible to and designed for all	% of population that have access to local services within a 20-minute drive or by public transport Quality of community and public services assets - heat, light, public transport, etc Age of community and public services assets Level of investment in community and public services assets	% of residents who are fairly or very satisfied with the quality of local services (local health services, local schools, and public transport	

Mange population growth (natural change and net inward migration) in areas of Scotland currently suffering from depopulation	Population change	Population Dependency ratio Net migration	

Human Capital

Inclusive growth means that people are healthy and skilled and have access to good quality education and healthcare provision, and greenspace/infrastructure.

Core Enablers for Delivering Inclusive Growth:

- Increase participation in education, training, and employment.
- Improve life expectancy and health outcomes.
- Reduce child poverty.

Table 3: Human Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Human Capital - System Indicators
Support a high level of educational attainment in all areas of Scotland, closing the gap between the most and least deprived areas	% population that have access to school, further or higher education facility within a 30-minute drive or by public transport Asset condition of schools and other education institutions (A-D) % of population participating in education, training, or employment	Educational attainment % with no recognised qualifications	Life expectancy at birth Premature mortality levels Affordable housing stock Household debt Distribution of wealth
Decrease the overall level/proportion of children with developmental concerns, specifically, closing the gap between low- and higher-income families	% population that have access to GP practice within a 20-minute drive or by public transport GP practices and list sizes Proportion of homes meeting SHQS standards No. and/or % of households in fuel poverty Housing affordability - median cost of new homes	% of children with a developmental concern The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	
Improve the proportion of the population reporting good mental health in all areas, with particular attention paid to the most deprived areas	% population that have access to GP practice within a 20-minute drive or by public transport GP practices and list sizes No. of people/ % of residents accessing local greenspace at least once a week	Self-reporting of good mental health or being "happy" Average score on Warwick-Edinburgh Mental Wellbeing Scale	

A higher proportion of adults are a healthy weight in all parts of Scotland, with particular attention paid to closing the gap between the most and least deprived areas	% population that have access to shops that sell fresh produce (fruit and veg) within a 20-minute drive or by public transport % of population within a 10-minute walk to greenspace % of population within a 10-minute walk to dedicated walking and cycling infrastructure	Obesity levels/rates No. of people/ % of residents accessing local greenspace at least once a week	
Increase levels of physical activity in all parts of Scotland, closing the gap between the most and least deprived areas.	% population that have access to sports/leisure facility within a 20-minute drive or by public transport % of population within a 10-minute walk to dedicated walking and cycling infrastructure	No. / % people meeting the daily or weekly physical activity/exercise recommendations	

Environmental Capital

Inclusive growth is about protecting and enhancing the natural environment and historic sites, promoting the use of green and blue space, and diversifying and increasing use of energy from renewable sources.

Core Enablers for Delivering Inclusive Growth:

- Promote and enable access to outdoor space.
- Promote decarbonisation and usage of energy from renewable sources.
- Protect and enhance natural habitats, environments, and ecosystems.

Table 4: Environmental Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Environmental Capital - System Indicators
Ensure all people have access to outdoor space within a reasonable journey time – focus on those from target groups	% of population within a 10-minute walk to greenspace HA of vacant or derelict land restored/reclaimed for public greenspace	Number/percentage of residents accessing local greenspace at least once a week	Material footprint Ecological footprint Net greenhouse gas emissions
Maintain a high % protected nature sites found to be in favourable condition	Designations of Sites of Special Scientific Interest (SSSIs) and Natura 2000	% of natural features on protected nature sites which are in satisfactory condition	
Reduce the overall cost of energy for households and increase the % of energy consumption which comes from renewable energy sources	Number/ type of renewable assets/ renewable energy sites % of electrified heating systems (hydrogen and biomethane)	Energy generated from renewable sources	
Increase recycling rates and reduce waste	No. of waste recycling facilities per capita % population that have access to municipal waste recycling centres/facilities within a 20 minute drive % of businesses demonstrating circular economy practices	Tonnes of waste going to landfill Recycling rates	
To reduce consumption and switch to alternative energy sources to reduce CO2 output	% of public transport fleet that is electric or hybrid % of housing that is energy efficient / zero emissions heating % of public sector buildings that are energy efficient	CO2 output Air quality	

Improved natural habitats – Coastal, Inland surface waters, Raised and blanket bogs, Grasslands, Heathland, Woodland and forest, Unvegetated or sparsely vegetated, Cultivated agricultural, Montane, and Artificial habitats	Ecological footprint SEEA, Aichi Targets & SDG indicators depending on the specific requirements	Capacity of Scotland's terrestrial ecosystems (The Natural Capital Asset Index) Water quality Soil quality Air quality	
Increase the % of biogeographic regions with acceptably low levels of contaminants – supporting, safeguarding and enhancing the marine environment	Marine designations marine equivalent material footprint	Levels of contaminants	

1 Introduction

The research has been undertaken by EKOS Ltd in collaboration with Dark Matter Labs on behalf of Scottish Futures Trust (SFT) and Scottish Government to help improve the understanding and develop approaches to better evidence the contribution that investing in infrastructure makes to delivering and enabling inclusive growth.

1.1 Background

Inclusive Growth

Inclusive growth has been a growing area of policy focus for some years and, alongside achieving increased wellbeing of citizens and a just transition to net zero emissions, is currently one of Scottish Government's core aims. As highlighted in the National Performance Framework (NPF)[2], Scotland's Wellbeing Framework, the focus is on:

> "creating a more successful country with opportunities for all of Scotland to flourish through increased wellbeing, and sustainable and inclusive economic growth."
>
> **National Performance Framework**

This policy driver stems from a wealth of evidence that shows that previous interventions to deliver economic development such as "picking winners" and "trickle-down economics" were not working and that the inequality gap (however it is measured, for example, between groups of people or regions) was growing across Scotland. Inclusive growth policy therefore has a focus on supporting a fairer distribution of opportunity and outcomes for people and places.

As we will note in **Section 2**, Scottish Government economic policy has continued to develop, particularly in response to the pandemic, to place greater emphasis on green recovery and the collective wellbeing of current and future generations. The National Strategy for Economic Transformation (NSET) sets a vision to build a wellbeing economy, based on the principles of prosperity, equality, resilience. and sustainability.

[2] Please note that the NPF is currently under review over the period 2022/23. At this stage it is unclear whether there will be any shift in focus or emphasis in terms of the overarching focus and purpose.

The Infrastructure Commission and Infrastructure Investment Plan 2021/22 – 2025/2026

The Infrastructure Commission for Scotland (ICS) was established by Scottish Ministers in 2019 to provide independent, informed advice on the vision, ambition, and priorities for infrastructure in Scotland to meet our 30-year economic growth and societal needs. In additon to bringing their own expert analysis and review, the work of the ICS included extensive consultation and engagement with a range of stakeholders, including industry, interest groups, national and local government, Non-Departmental Public Bodies (NDPBs) and the public.

The overarching objectives for the work included:

- Delivering sustainable inclusive economic growth across Scotland.
- Managing the transition to a more resource efficient, lower carbon economy.
- Supporting delivery of efficient, high quality, modern public services.
- Increasing industry competitiveness, whilst tackling inequality.
- Enhancing societal living conditions now and in the future.
- Ensuring alignment with the new National Planning Framework (4).

The output of the work was the publication of two reports: Phase 1: Key Findings Report sets the ambition, vision and strategic priorities and Phase 2: Delivery Findings Report is focused on delivery, with recommendations for improvement.

Both reports have supported the development of the Scottish Government five-year investment programme - The Infrastructure Investment Plan (IIP) which provides a vision and strategic plan for Scottish infrastructure and highlights the important role infrastructure will continue to play in supporting the Scottish Government's ambitions for an inclusive net zero emissions economy. Equally, infrastructure is key to building resilient and sustainable places. **Figure 1.1** provides an overview of the IIP's core aims and thematic priorities for intervention.

Figure 1.1: Infrastructure Investment Plan 2021/22 – 2025/2026 – Summary

Vision	**Our infrastructure supports Scotland's resilience and enables inclusive, net zero, and sustainable growth**		
Different	• A coherent, strategic plan – based on long-term trends across 3 Themes under a common vision • An expanded infrastructure definition to include Natural Infrastructure. • Consistent portfolio coverage from 2021-22 to 2025-26 – matching National Infrastructure Mission delivery • A new common investment hierarchy – enhancing and maintaining existing assets ahead of new build • Based on outcomes, not inputs – with a 5 year programme of improvements in our assessment framework • Promoting meaningful public engagement		
Three themes	**Enabling Net Zero Emissions and Environmental Sustainability**	**Driving Inclusive Economic Growth**	**Building Resilient and Sustainable Places**
More +	**Decarbonising Transport & Supporting Active Travel** • Reducing the need to travel unsustainably • Investing in bus and rail decarbonisation • Encouraging a shift to more sustainable modes of transport **Decarbonising Heat & Boosting the Energy Efficiency of Buildings** **Decarbonising Industry** **Supporting a Circular Economy** **Boosting Resilience & Adaptation** • Adapting to change at our coasts • Flood risk management • Climate resilient trunk road network **Investing in our Natural Capital** • Woodland creation • Peatland restoration • Vacant and derelict Land	**A World-Class Digital System** • New digital public service transformation funding • Digital health • Emergency Services Network **Strengthening Connectivity** • Full fibre broadband • A safe, sustainable, integrated and resilient strategic transport system **Boosting Competitiveness** • Strategic tourism investments • Manufacturing & Innovation **Inclusion and Growth** • City and Regional Growth Deals • Improving outcomes for island communities	**Better Local Places:** • 20 minute neighbourhoods • Community-led Regeneration • Town Centres • Digital planning **Suitable, Warm, Affordable Homes** **High Quality Social Infrastructure** • Enhanced local & elective health services, to reduce acute need • Learning Estate Investment Programme • New Justice facilities • Improving our water and waste water infrastructure
5 year implementation plan	• Develop an infrastructure needs assessment • Develop a new infrastructure assessment and prioritisation framework to meet our net zero and inclusive growth aims • Develop an enhanced approach to public engagement and participation in infrastructure investment		

Source: Infrastructure Investment Plan 2021/22 – 2025/2026

A key recommendation to emerge from the ICS's work and development of the IIP is in relation to the evidence-base to support decision making:

> "The Scottish Government should….. develop and publish a new infrastructure assessment framework and methodology that will enable system wide infrastructure investment decisions to be prioritised on the basis of their contribution to inclusive net zero carbon economy outcomes".
>
> **Infrastructure Commission Scotland Recommendation**

This recommendation was supported in part by a study commissioned by the ICS into The relationship between infrastructure and inclusive economic growth: evidence review (Fraser of Allander Institute, 2019). This showed that the evidence base for any relationship between inclusive growth and infrastructure was weak, and instead primarily relied on a theoretical understanding of impacts.

This research study seeks to support the ambition of the ICS recommendation, and the IIP which provides a routemap to support the development of this new decision-making framework.

1.2 Research Objectives

The focus of the research is to enhance and improve the evidence base of how investment in infrastructure supports and helps deliver inclusive growth. There are two over-arching study objectives that the research has addressed:

- To improve how SFT and partners evidence the contribution to inclusive growth in relation to infrastructure and recommend a suite of indicators and metrics that will enable a more consistent approach to appraising and prioritising resources.
- To provide recommendations on different approaches and suitable inclusive growth indicators and metrics to support the prioritisation of infrastructure being developed by Scottish Government's Infrastructure Investment Division (IID) for the next IIP.

1.3 Reporting Format

To address the research questions, the report has been structured as follows:

Chapter 2: provides further background context to the research, including a working definition for both infrastructure and inclusive growth and a review of the overarching rationale for investing in infrastructure.

Chapter 3: Sets out the rationale for investing in infrastructure in the context of inclusive growth, and considers a broad spectrum of research, academic papers and work undertaken by practitioners. Importantly, we have reviewed literature from outside Scotland and the UK.

Chapter 4: Considers the current approach and practice to measuring the outcomes, effects, and impacts of infrastructure investment – within Scotland and internationally.

First, we have reviewed a broad cross-section of policy documents and action plans related to infrastructure to better understand the stated objectives and intended outcomes from the delivery of different types of infrastructure (enabling, built environment and natural).

In addition, we have examined how they intend (or propose) to measure success in relation to delivering inclusive growth and if there is consistency across the measures and indicators.

Secondly, through consultation we have reviewed the specific approaches to measurement and evaluation being undertaken through a wide range of infrastructure projects to help identify current good practice, gaps, and challenges. The programmes/projects for review are broadly categorised as:

- City-Region and Growth Deals.
- Major infrastructure programmes as identified in the IIP 2020/21 – 2025/26.
- Infrastructure projects where SFT have a key facilitation and/or delivery role.

Chapter 5: Presents the suggested approach to appraisal and monitoring and we have outlined the key principles that lie behind the development of the Framework – both in terms of the pre-appraisal and prioritisation stage, but also for setting metrics and indicators to measure inclusive growth.

Chapter 6: Brings the key findings of the research together and presents an emerging Logic Model and Evaluation Framework. This maps out the indicators and metrics that policy makers, funders, and project managers should consider in terms of both prioritising investment and measuring progress.

Chapter 7: The final section has been prepared in recognition that this current piece of research is necessarily short-term and focused to meet the immediate needs of SFT, decision-makers and funders. As Scottish Government start to develop the IIP Route Map, we have set out a series of considerations for the future that is intended to both inform and challenge the current approach to prioritising, delivering, and measuring the effects of infrastructure investment.

The report is supported by the following appendices:

Appendix A: Policy Review – Current Approaches to Measuring Inclusive Growth.

Appendix B: Measuring Impacts – Projects and Current Practice.

Appendix C: National Performance Framework and Inclusive Growth Challenges.

Appendix D: Evaluation Framework – standalone Excel-based Appendix.

1.3.1 Dark Matter Labs

Please note that the specific role for Dark Matter Labs was to bring an international good practice perspective to the research and provide an element of 'provocation' with regards to future considerations for prioritising and measuring the effects of infrastructure investment.

Their input was framed as a series of questions that have been referenced at appropriate sections within the report, with the full detailed research output provided as a separate standalone **International Good Practice Annex**, available here.

2 Understanding the Context

2.1 Introduction

The starting point for the research was to establish a working definition of both inclusive growth and infrastructure. We have used the Scottish Government definitions as outlined below.

2.2 Inclusive Growth

In terms of understanding the background context, at the national level, the Scottish Economic Strategy (2015) was the first significant/visible policy document where inclusive growth was noted as one of the "4I's" - key priorities for delivering economic growth which also includes innovation, investment, and internationalisation. The definition of inclusive growth was somewhat narrow with a strong focus on fair work, regional cohesion and inequality. Notably, infrastructure sat underneath the investment priority.

Off the back of the economic strategy and the emergence of inclusive growth as a policy driver, the Scotland's Centre for Regional Inclusive Growth (SCRIG)[3] was established. SCRIG sought to develop the evidence base on approaches that can accelerate regional inclusive growth and inform policy and decision-making. For example, providing guidance and access to a wide range of data analytics tools that allow users to identify areas of strength and weaknesses and where intervention may be required.

More recently, the development of the National Performance Framework (NPF) in 2018 sought to provide an over-arching framework for everyone in Scotland to work together to deliver against the five core aims/objectives, one of which is to create sustainable and inclusive growth. The NPF sets out a range of themes (based on United Nations Sustainability Goals) linked to measures for performance.

At a regional level building on work undertaken in Ayrshire, and specifically North Ayrshire, Community Wealth Building (CWB) is now being recognised as a 'good practice' people-centred approach to local economic development, which seeks to redirect wealth back into the local economy, and places control and benefits into the hands of local people.

[3] Please note that SCRIG is currently under review to ensure continued alignment with evolving Scottish Government policy in relation to wellbeing and securing a just transition to net zero emissions.

CWB is a practical tool that adopts an outcome-focused approach to economic development that seeks to help deliver a wellbeing economy and inclusive growth. The approach is based on five core principles – 1. progressive procurement; 2. fair employment and just labour markets; 3. shared ownership of the local economy; 4. socially just use of land and property; 5. making financial power work for local places.

2.2.1 Defining Inclusive Growth

The Scottish Government's definition of inclusive growth is:

> "Growth that combines increased prosperity with greater equity; that creates opportunities for all and distributes the dividends of increased prosperity fairly."
>
> **Scottish Government**

The specific role of infrastructure in contributing to inclusive growth is outlined further within the IIP (2020/21 – 2025/26).

> **Theme 2: Driving Inclusive Economic Growth:** "We can boost productivity and competitiveness, and create good jobs and green jobs, by enhancing our transport and digital connectivity and capacity in all areas of Scotland, and by stimulating innovation. We will embed fairness and inclusion, seeking to ensure no-one is left behind."
>
> **Infrastructure Investment Plan**

When considering the spatial dimension, we have adopted a slightly nuanced position that looks at '**inclusive economies**'. While there is no shared or broadly adopted definition of 'inclusive economies', for the purpose of the research we have outlined a working definition which suggests a redistribution of economic, social and wider opportunity, as opposed to linear or traditional growth i.e. there will be benefits within certain spatial/ geographic areas which may be offset by dis-benefits or restricted growth in other areas. At the macro/Scotland level there may (or may not) be growth but takes account of the potential distributional impact of infrastructure.

This is an element that is often overlooked, for example, not uniquely, the draft National Planning Framework 4, which is the over-arching document to guide spatial planning and development provides a limited view on how planning (and infrastructure development) can promote inclusive growth across Scotland's regions – the focus is more on achieving net zero and broader notions of wellbeing.

2.2.2 Study Teams Observation – Progression to Wellbeing

It is worth noting that the definition of inclusive growth is (necessarily) broad and the traditional view has largely focused on economic notions and measures of growth such as employment and productivity (measured as Gross Value Added/GVA).

While economic measures are relevant and often readily quantifiable, it is important that we retain an element of open mindedness in our understanding of inclusive growth that gives due consideration to the indirect and casual effects across other types of social and environmental indicators.

Specifically, we would note that, as outlined in the recently published Scotland's National Strategy for Economic Transformation (2022), wellbeing is an emerging policy priority.

> "Our vision is to create a wellbeing economy: a society that is thriving across economic, social and environmental dimensions, and that delivers prosperity for all Scotland's people and places. We aim to achieve this while respecting environmental limits, embodied by our climate and nature targets."
>
> **Scotland's National Strategy for Economic Transformation**

Scotland (alongside Iceland, New Zealand, Finland and Wales) is a founding member of the Wellbeing Economy Governments (WEGo) group, an initiative where member countries are working together to understand the key priorities for a wellbeing economy. For example, Scottish Government are currently developing a wellbeing economy monitor[4] to help measure Scotland's progress – the monitor builds on the SCRIG dashboard and includes wider measures related to environmental sustainability and inequalities.

Inclusive growth is a component of wellbeing and the strategy has identified 'Fairer' as one of three strategic ambitions and 'A Fairer and More Equal Society' as one of five programmes for action. Inclusive growth therefore remains a policy priority, albeit as part of a move towards a wider and more holistic scope framed under the over-arching umbrella of 'wellbeing'.

To inform the research we have placed some definition/parameters around 'wellbeing' and it is useful to consider this in relation to the 'four capitals' as illustrated in **Figure 2.1**.

[4] The diagnostic tool that sits behind the Wellbeing Economy Monitor is currently being piloted with Clackmannanshire Council and is due to be published in 2022, with the aim of rolling it out across all local authorities. Further information is available here.

Figure 2.1: The Four Capitals – Defining Wellbeing

Source: Towards a Robust, Resilient Wellbeing Economy for Scotland

2.3 Infrastructure

With the recent inclusion of natural infrastructure (for example, green and blue infrastructure) within the IIP, the Scottish Government's definition of infrastructure is one of the broadest and most comprehensive in the world.

2.3.1 Defining Infrastructure

"The physical and technical facilities, natural and other fundamental systems necessary for the economy to function and to enable, sustain or enhance societal living conditions. These include the networks, connections and storage relating to the enabling infrastructure of transport, energy, water, telecoms, digital and internet, to permit the ready movement of people, goods, and services.

They include the built environment of housing; public infrastructure such as education, health, justice and cultural facilities; safety enhancement such as waste management or flood prevention; natural assets and networks that supply ecosystem services and public services such as emergency services and resilience."

Infrastructure Investment Plan

The working definition covers three broad types of infrastructure:

- Enabling Infrastructure – transport; energy; water; telecoms; digital and internet.
- Built Environment - housing; public infrastructure (education, health, justice and cultural facilities; waste management and flood prevention; public services, etc).
- Natural Capital - natural assets and networks that supply ecosystem services and public services such as emergency services and resilience.

2.3.2 The Rationale for Investing in Infrastructure

The rationale for investing in infrastructure is well developed and previous research undertaken by the Office of the Chief Economic Adviser/OCEA - Infrastructure Investment: Evidence Summary (2018) provides a clear way forward, see **Figure 2.2**.

Figure 2.2 How Infrastructure Investment Enables Inclusive and Sustainable Growth

The five main areas where infrastructure is viewed as having a positive contribution are:

- Supporting the foundations of economic activity – infrastructure underpins economic resilience, provision of lifeline services and the effective operation of the economy.
- Demand side economy impacts – the construction phase of infrastructure projects is an important source of employment and can provide wider supply chain benefits that support economic activity across the country in the short to medium-term.

Source: Scottish Government

- Supply side economic impacts – infrastructure spending can enhance the productive potential of the economy, if investment is effective, through improving its supply side.
- Market impacts – facilitating the development of key sectors and technologies; improving private sector competitiveness; and unlocking private sector capital.
- Social and environmental impacts – reducing regional disparities; reducing emissions and improving environmental quality; and improving health and wellbeing.

Importantly, the research highlights that delivering standalone infrastructure is not an end, in, and of, itself. The focus should be objective-driven and demand-led - what do we want to achieve by delivering infrastructure. This could include, supporting place-making, acting as a catalyst to attract investment and stimulate new activity, improving service users experience and outcomes and addressing economic, social, or environmental change, etc.

2.3.3 Study Team Observation

As considered further at **Chapter 6**, as we look to develop approaches to support the prioritisation of infrastructure investment, there is emerging thinking that as well as stimulating demand within the construction sector, the type of infrastructure you design, and build can also influence future demand. This is highlighted within HM Treasury supplementary guidance to the Green Book (2015) and notes the following example:

> "Efficient public transport provision or the laying of good cycling infrastructure may reduce dependency on cars and other road traffic. A reduction in efficiency, for example through limited capacity and congestion, can also result in a change in preferences and behaviour.
>
> **HM Treasury, Valuing Infrastructure Spend: Supplementary Guidance to the Green Book**

While it is very challenging to predict or evidence how the supply of infrastructure might influence future demand, it should be considered as part of the wider "systems thinking" approach.

3 Relationship between Infrastructure and Inclusive Growth

3.1 An Emerging Evidence Base

3.1.1 Introduction

Using the key findings of the Fraser of Allander Institute evidence review (2019) as a starting point, this Chapter provides an update of the evidence review and provides comment on whether the findings can be confirmed, contested, furthered and if there are any gaps or developments that have influenced new perspectives, for example, the impact of the coronavirus (COVID-19) pandemic.

3.1.2 Complementary and Competing Definitions

Defining Inclusive Growth

As noted, Scottish Government defines inclusive growth as "growth that combines increased prosperity with greater equity; that creates opportunities for all and distributes the dividends of increased prosperity fairly" with two areas of focus:

- Tackling levels of inequality within society – gender, ethnicity, social background, etc – no matter the location.
- Differences in economic performance based upon geography – i.e. the regional inclusive growth agenda.

This view of distributional benefit to people and places is shared by Determinants of Inclusive Growth in the Context of the Theory of Sustainable Finance in the European Union Countries (Stawska & Jabłonska, 2022) which identifies that, the aims are to ensure that no person, place, community or group is left behind and that "everyone has an opportunity to participate in socioeconomic life".

That being said, as there is "no universally authoritative definition" for inclusiveness within infrastructure development", an interesting point is noted in Inclusiveness in Sustainable Infrastructure and the Nexus with the Environment (Aizawa, 2020a). Here, the nuances in different definitions are outlined as "some consider inclusiveness as an element of decision-making, while others focus on inclusiveness as an outcome of decisions".

For example, the same document makes reference to Inclusive Infrastructure and Social Equity (Global Infrastructure Hub, 2019) and notes that it "offers a… functional definition (where) inclusiveness is a means to enhance the economic participation and social inclusion of all and to address inequality".

This is an important distinction we return to at **Chapter 6**, and contest that, for inclusive growth to be fully embraced and embedded across policy, it has to be included in both the decision-making process as well as approaches to measuring the progress and success of decision-making – in a continuous cycle of learning and feedback.

Aizawa (2020a) also notes that in looking at cities and densely populated urban areas, "a more utilitarian meaning…is offered by UNESCAP (2011) where "inclusive' in the context of infrastructure planning and decision-making processes means including a broad range of people from across a city, from experts to ordinary residents, with the aim of considering their inputs and reaching mutual agreement. It refers to treating all people in a city equally in their access to work and services, such as public transport and health care".

In comparison to these definitions, the Scottish Government's definition of inclusive growth is most closely aligned to the Global Infrastructure Hub as it views inclusive growth as a means to ensure economic participation and reduce inequalities for all throughout Scotland.

Adopting an inclusive growth approach "poses a challenge to the definition of 'economic prosperity' typically used to help prioritise infrastructure investments" (Fraser of Allander Institute, 2019). For example, BCR and VfM are an assessment of inputs (costs) considered against outputs (typically GVA or other "monetisable benefits"). Therefore, the assessment can encourage a tendency for decision-makers to favour the investment that will deliver the largest absolute (GVA) return relative to costs - which can often increase regional imbalances. In additon, within BCR and VfM assessment there has traditionally been less emphasis placed on the (often important) wider and intangible benefits/impacts.

We would, however, note that, as of March 2022 a further update to the HM Treasury Green Book and supplementary guidance (Wellbeing Guidance for Appraisal: Supplementary Green Book Guidance) has been published and there is now growing focus on wider areas of benefit and impact in relation to wellbeing, health, amenity, environmental effects (clean air) that will allow for a more holistic approach to appraisal.

Defining Infrastructure

As noted at **Chapter 2.2**, it is widely accepted, including within G20 Principles for Quality Infrastructure Investment - QII (G20, 2019)[5], that "infrastructure is a driver of economic prosperity and provides a solid basis for strong, sustainable, balanced and inclusive growth and sustainable development". As stated in the Fraser of Allander Institute evidence review (2019), "investment in infrastructure is one of the most important levers that the government has at its disposal to shape both the direction and type of growth in the Scottish economy", with the following definition of infrastructure adopted by the Scottish Government in 2018.

"The physical and technical facilities, and fundamental systems necessary for the economy to function and to enable, sustain or enhance societal living conditions."

Infrastructure investment: evidence summary

With the inclusion of "social infrastructure such as universities, hospitals, prisons, community housing and parks" (Scottish Government, 2018), the Scottish Government has adopted a fairly broad definition of infrastructure which is consistent with its own inclusive growth aspirations and the wider literature base. Widening the infrastructure definition reflects the increasingly strong theoretical link between inclusive growth and infrastructure with many studies and policies referring to concepts such as 'inclusive infrastructure' and 'quality infrastructure'.

For the Global Infrastructure Hub (2019), inclusive infrastructure is "any infrastructure development that enhances positive outcomes in social inclusivity and ensures no individual, community, or social group is left behind or prevented from benefiting from improved infrastructure". This definition has informed the development of the Principles for QII endorsed by the G20 in 2019.

The five principles relate to: maximising the positive impact of infrastructure to achieve sustainable growth and development; raising economic efficiency in view of life cycle costs; integrating environmental and social considerations in infrastructure investment; building resilience against natural disasters; and strengthening infrastructure governance.

[5] Implementation of the G20's Quality Infrastructure Investment Principles is supported by a Resources Database as well as publication of a Compendium of Policy Good Practices for Quality Infrastructure Investment and an upcoming Implementation Handbook on Quality Infrastructure Investment.

Specifically, Principle 5 – Integrating Social Considerations in Infrastructure Investment - notes how:

> "Infrastructure should be inclusive, enabling the economic participation and social inclusion of all. Economic and social impacts should be considered as an important component when assessing the quality of infrastructure investment, and should be managed systematically throughout the project life-cycle."
>
> **G20 Principles for Quality Infrastructure Investment**

Here, we begin to see how an inclusive growth approach can shape infrastructure investment. In a broader sense, this relates to developments in economic development, such as concept of The Doughnut Economy and the wellbeing economy, which look beyond economic growth and focus on thriving, sustainable and inclusive economies guided by social and environmental considerations.

3.1.3 Empirical Evidence of Relationship

Since the Fraser of Allander evidence review (2019), there has been emerging empirical evidence of the relationship between inclusive growth and infrastructure to support the strong theoretical base.

For example, Fiscal Success: Creating Quality Infrastructure in a Post-COVID World (Langston & Crowley, 2022) analysed the Principles for QII using a project success evaluation model which "offers a 'high' thematic match and therefore provides an opportunity for project managers to ensure investments in quality infrastructure are indeed realized". This model provides "a solution to operationalize the theory into practice" and can contribute to "progressive infrastructure outcomes that take into consideration financial, social, ethical and environmental consequences".

Elsewhere, Infrastructure and inclusive growth in sub-Saharan Africa: An empirical analysis (Mutiiria, Ju & Dumor, 2020) found a "positive link between infrastructure and inclusive growth" with significant results for "energy, transport and information and communications technology (ICT) infrastructures". Also, the study found that "poorer people gain more benefits from [these] infrastructures than the rich, which shows that infrastructure plays an important role in the distribution of income". Although the research analysed sub-Saharan Africa and may be of limited applicability in a Scottish context, a high-level finding was that "infrastructure is vital in reducing income disparities and enhancing shared prosperity".

Further, the Global Infrastructure Hub has produced a range of project case studies which provide lessons learned and leading practices in multiple action areas including: stakeholder identification, engagement and empowerment; governance and capacity building; project planning, development and delivery; and private sector roles and participation.

Each project has a list of targeted stakeholders typifying the shift towards "who needs what from infrastructure and who gets it"[6].

Currently, much of the empirical evidence is concentrated on economic infrastructure (e.g. hard and physical assets) which means, relatively speaking, "we know surprisingly little about social infrastructure" (soft infrastructure e.g. knowledge, institutions and policy frameworks) (Aizawa (2020).

Albeit most of the Global Infrastructure Hub project case studies relate to developing countries, high-level findings can still be applicable across different places and contexts – these have and will continue to help inform good practice guidance.

3.1.4 Crises have Necessitated the need for an Inclusive Growth Approach

Since the Fraser of Allander Institute evidence review (2019), the COVID-19 pandemic has exacerbated existing inequalities. Inclusive growth in infrastructure investment is increasingly being viewed as a necessary and essential approach for economic recovery and to improve resilience for future crises rather than, as noted in The political economy of and practical policies for inclusive growth - a case study of Scotland (Houston, Varna & Docherty, 2021) "a luxury only for when the economy is strong".

In this way, the significance of inclusive infrastructure lies in its ability to fully integrate social, cultural, and environmental considerations into infrastructure. For researchers such as Aizawa (2020) and Investigating the Governance Mechanisms that Sustain Regional Economic Resilience and Inclusive Growth (Sensier & Uyarra, 2021), this is particularly pertinent for green infrastructure and the fundamental challenges that are being posed by the climate emergency especially as infrastructure investment decisions will be locked in for the long-term.

[6] The Economist Intelligence Unit (2019) The critical role of infrastructure for the Sustainable Development Goals

3.1.5 Characteristics of an Inclusive Growth Approach to Infrastructure

Identified in the Fraser of Allander evidence review (2019), the inclusive growth approaches to infrastructure investment are commonly underpinned by several key characteristics which include but are not limited to:

- The importance of a robust and thorough appraisal process throughout the project lifecycle.
- Adoption and greater weighting of wider alternative metrics - as traditional metrics, such as GDP and employment, only "capture a partial picture of economic growth".
- Stakeholder engagement, particularly with vulnerable groups and communities, to inform the design, construction and operation of infrastructure.
- Viewing infrastructure investment through a 'systems thinking' lens (i.e. how different infrastructure systems fit together) to maximise use of infrastructure and avoid a siloed approach.

It is worth looking at some of these characteristics in greater detail. For example, a key finding of the Fraser of Allander Institute evidence review (2019) was that a robust and thorough appraisal process throughout the project life cycle is vital in "providing a robust logic chain for why investments are being undertaken and the outcomes targeted".

As Aizawa (2020a) states "there is no such thing as inherently inclusive infrastructure", the appraisal process is crucial to mitigate the risk "that any policy can be 'badged' as helping to support inclusive growth".

In particular, International Good Practice Principles for Sustainable Infrastructure (UN Environment Programme, 2021) notes that "the lifespan of infrastructure assets is often measured in decades, while infrastructure footprint is measured in centuries [which] tends to lock in any impacts – positive and negative – for the longer term". This is most evident when considering the environment, and as noted in OECD Reference Note on Environmental and Social Considerations in Quality Infrastructure (OECD, 2019) how "poor quality infrastructure [contributes] to air pollution, climate change, changes in water quality and quantity, biodiversity loss and the degradation of ecosystems".

It is widely acknowledged, including in the Workshop on Inclusive Infrastructure (UN Environment and UNOPS, 2019) that this has resulted in the "burden of poor and non-inclusive infrastructure being placed disproportionately on vulnerable groups - women, differently-abled, economically disadvantaged, and other excluded groups" including older persons, indigenous peoples, jobseekers, unemployed persons, pregnant women, refugees, migrants.

This leads to social exclusion and acts as a barrier to inclusive economic growth for these groups. The early adopters of an inclusive infrastructure approach, such as G20 and OECD, note that an appraisal process, informed by stakeholder engagement and alternative metrics, would be able to identify and take corrective action at an early stage.

According to The value of inclusive infrastructure in a post-coronavirus world (Aizawa (2020b), "inclusiveness is realized through transparency and stakeholder identification and engagement" which means infrastructure investments should "systematically include and reflect the needs and aspirations of those who are most vulnerable in the infrastructure building process and in outcomes". Amongst many aspects of the inclusive approach, one of the main lessons highlighted by the evidence review, is that embedding these processes at an early stage is critical to addressing inequalities.

Another important aspect of the appraisal process is the use of wider and alternative metrics to measure inclusive economic growth, particularly as social infrastructures have been incorporated into definitions of infrastructure (as is the case in Scotland).

For example, the Fraser of Allander Institute evidence review highlights alternative metrics that are being used within the NPF that include "educational and environmental outcomes, as well as the prevalence of poverty and fair work practises".

To formalise a systems thinking approach, the infrastructure strategy Sustainable Infrastructure for Competitiveness and Inclusive Growth (Inter-American Development Bank's, 2014) includes an indicator measuring "the number of projects approved that are considered multisector projects incorporating synergies between different infrastructure sectors".

3.1.6 Practical Challenges

Throughout the evidence base, it was acknowledged that the features of an inclusive growth approach bring challenges to the traditional appraisal and evaluation process for infrastructure investment:

- Technical evaluations of infrastructure projects are difficult and will be even more so when targeted at inclusive growth outcomes. For example, there is difficulty gathering consistent and reliable data for alternative metrics such as underemployment, job security and wellbeing, especially when broken down by area and sub-groups.
- Alternative metrics are in their relative infancy – although encouraging findings that theoretical models and metrics are mapping to practical findings (e.g. Langston & Crowley, 2022).

- Poor and/or a lack of monitoring data collection – "this may in part be due to the lack of transparency in the infrastructure sector, but may also be attributable to the sector's ongoing failure to monitor and systematically collect relevant data" (Aizawa, 2020a).

For example, the Fraser of Allander Institute evidence review (2019) stresses the need for a degree of realism when considering the benefits of inclusive infrastructure and the pace at which they can be achieved. This is largely because there will be different impacts from different types of infrastructure projects over a significant period of time:

> "Certain infrastructures – such as those linked to transport and digital – are far more likely to have a short-term and significant impact upon traditional metrics of economic performance, such as growth and employment. Others, but arguably more important for overall economic welfare and inclusive growth in the long-run, such as more social infrastructure elements – such as in health and education – are much less likely to drive major improvements in short-term economic indicators."
>
> **The relationship between infrastructure and inclusive economic growth: evidence review**

Looking at digital connectivity, some studies such as Aizawa (2020a) have highlighted how different infrastructures can also impact on each other. The sector is seen as "the frontier sector in economic infrastructure... [and] has evolved to the point that it is now at the crossroads of soft and hard, and economic and social infrastructure …it has the potential of becoming the latest tangible example of inclusion in infrastructure, such as enabling users to have access to a huge variety of social and economic services". Recognition of these varying and mutual impacts will help to implement a systems thinking approach to make "inclusive infrastructure more holistic and adaptable" (Aizawa, 2020b).

Another point to highlight is that "benefits from investment in infrastructure can vary widely even for similar projects in the same country [as] there [are] differences in institutions, legal incentives, social norms, access to financial resources, technological preferences and prior levels of development" (Global Infrastructure Hub, 2019). This hints to the wider acknowledgement that other factors will have a significant role to play such as "the scale of inequalities, labour market structures, fair work" (Fraser of Allander Institute, 2019).

In Scotland, the scale of poverty is likely to be a significant barrier to maximising the benefits of inclusive economic growth – Poverty in Scotland 2021 (Joseph Rowntree Foundation, 2021) found that Scotland is on course to miss interim child poverty targets for 2023/24 and the current "social security system in Scotland is inadequate to provide families with children a route out of poverty".

Capacity is a further issue identified in Supporting Local Economic Growth (National Audit Office, 2022) as "infrastructure investments alone have little impact on regional growth without adequate levels of investment in people and innovation".

3.1.7 Summary

The evidence review has identified that the rationale for an inclusive growth approach to infrastructure investment is multi-faceted:

- Failings of traditional economic growth (for example, trickle-down economics) to distribute economic prosperity equitably across all people and places.
- Crises, such as COVID-19 pandemic and climate emergency, have exacerbated existing inequalities.
- The inclusive growth policy agenda shifting focus across several policy areas.

The absence of an authoritative or consensus definition of inclusiveness in infrastructure has resulted in competing definitions of inclusive growth and infrastructure.

For example, some consider inclusive growth both as a means to deliver inclusive infrastructure and as an outcome in itself, whereas others view inclusive growth solely as a means to inclusive infrastructure. Closely aligned with the former, the Scottish Government has adopted broad definitions of both inclusive growth and infrastructure (for example by incorporating social infrastructure).

We contest that, for inclusive growth to be fully embraced and embedded across policy and practice it should be included in both the decision-making process as well as a component of how we measure the progress and success of decision-making.

Across policies that highlight the importance of 'quality infrastructure' and 'inclusive infrastructure', the theoretical link between inclusive growth and infrastructure is strong; with infrastructure providing the basis for inclusive growth.

This is increasingly being supported by emerging empirical evidence such as Global Infrastructure Hub case studies and modelling from Langston & Crowley (2022) showing how quality infrastructure can be realised.

For an inclusive growth approach to infrastructure investment to be successful, it is emphasised that all features/processes must be adopted and embedded at an early stage. Common features of an inclusive growth approach to developing and delivering infrastructure include:

- A robust and thorough appraisal process throughout the project lifecycle.
- Adoption and greater weighting of a broader set of metrics (e.g. social and environmental considerations, including wellbeing).

- Meaningful stakeholder and beneficiary engagement - particularly with vulnerable groups and communities to help inform the design, construction, and operation of infrastructure.
- Viewing infrastructure investment through a 'systems thinking' lens.

Further, when making decisions and putting in place frameworks to measure the effects, it is important to consider the potential positive and negative impacts resulting from infrastructure investment as they can be locked in for decades. Thinking more holistically and integrating social and environmental considerations is a feature of the approach to mitigate "the burden of poor and non-inclusive infrastructure being placed disproportionately on vulnerable groups" such as women, people with disabilities, and economically disadvantaged people.

Throughout the evidence review, realism with regards to the pace of change is emphasised as a key feature as it raises practical challenges for measuring progress and change. For example, the impacts from social infrastructure projects (such as health and education) are more likely to be achieved over the longer-term and captured with wider metrics compared to other enabling infrastructure projects (for example, transport and digital).

Other challenges in relation to the collection and reporting of performance monitoring data include: a focus on inclusive growth outcomes that make technical evaluations even more difficult; alternative metrics are in their relative infancy; lack of/ poor monitoring data collection; other significant factors, such as scale of poverty and capacity of communities and organisations, will influence the success of inclusive infrastructure projects.

3.2 The Changing Definition of Infrastructure and an International Perspective

Dark Matter Labs

Research Questions:

Q1: If we use Scotland's wider definition of infrastructure, are there additional studies and/or evaluations that present a different view on the Fraser of Allander study?

Q2 From an international perspective what is the emerging evidence base for the positive and negative impacts of infrastructure on inclusive growth?

Encouraging a Broader Understanding of the Term 'infrastructure'

The Fraser of Allander study derived many useful conclusions and yet, in our view it also confirmed that what we find (or do not find) in our investigations is partly dependent on what we are looking for. Across the breadth of research that was reviewed, the conclusions about the (causal) links between infrastructure and inclusive growth are at least partly coloured by the conceptual framing of the respective terms. The international research has highlighted many interesting relationships between infrastructure as an enabling capability that can support positive societal outcomes, with some key examples highlighted below. These examples include a broader definition of infrastructure beyond the physical asset, to include systems and their relationships.

Key research outputs demonstrating a broader relationship include:

- Social infrastructure: Institutional infrastructures (including judiciary and law enforcement services) and social capital (such as societal and institutional trust), have been found to be core enabling factors for anti-fragility and maintaining growth in the face of external shocks. For example, a study investigating the factors driving the adoption of COVID-19 test-and-trace apps found that trust in government was the most important factor, compared to public spending, professionalism of the civil service and levels of physical infrastructural capacity.
- Human (core) infrastructure: Breaking the feedback loop between poverty and mental illness is a crucial leverage point in achieving inclusive growth.
- For example, a study of 28 European countries found depression alone cost €118bn yearly, of which only 36% related to direct treatment costs, with the other 64% representing lost employment, reduced productivity, and increased insurance and benefit payments.

- Natural infrastructure: Studies investigating links between natural capital investments and health outcomes have found evidence for a diverse range of improvements. These include aspects such as cardiovascular health, cortisol levels (indicators of stress) and obstetric outcomes, together with positive impacts on mental health and pro-social behaviours.
- Maintenance: Achieving a balance between infrastructure maintenance and capital investment has been found to help reduce inequality levels whilst also having a positive effect on productivity outcomes. Lower levels of spending on infrastructure/asset maintenance can lead to a deterioration in infrastructure services, however, if the level of expenditure/investment is increased to ensure infrastructure services are better maintained, then lower income households (without access to privately owned amenities such as outdoor space), experience savings at a comparatively higher rate than more wealthy households.

  Further, there is an observed interesting crossover consequence of investing in natural infrastructure, in that nature-based solutions typically have lower maintenance costs, in addition to more quantifiable benefits such as maximising limited resources and reducing our ecological footprint.

Considering the Unintended Consequences of Infrastructure Investment

If we are working towards societal level prosperity then we must look at investments from a holistic cross-portfolio perspective (as opposed to the current approach that typically considers investments in isolation or within defined portfolios , thus allowing diverse (positive and negative) spillover impacts to be considered and evaluated at all stages of the project cycle. A key challenge is that causality is non-linear and thus when measuring outcomes in aggregate we must consider the distribution of positive and negative impacts across different communities and timeframes. Some specific examples of unintended consequences drawn from our research are as follows:

- Preventative health: A report from the WHO on public health investment emphasised the integrated societal benefits of preventative spending, highlighting a fourfold return to the wider economy for every dollar invested. A wide range of auxiliary benefits were examined with improvements being evidenced in areas such as violence reduction, road traffic accident rates and unemployment levels. Within in an infrastructure context this could be considered as 'failure demand' i.e. future demand that is caused by a failure to do something or make the 'right' investment decision.

- Mental Health: There is strong evidence of links between social determinants (i.e. living conditions, improper heating, employment status, etc.) and health welfare. For example, studies have identified positive correlations between interventions in infrastructure areas such as housing provisions for the homeless and improved levels of mental illnesses, together with urban green spaces reducing depressive symptoms amongst pregnant women.
- Childcare: Delivering early-stage childcare has been shown to have long-term effects both via the future workplace opportunities and as a function of reducing failure demand. For example, a recent IFS study found that the UK's Sure Start education initiative (designed to improve early-year care in children under the age of 4) also reduced hospitalisation rates amongst 10 - 11-year-old children by 30%.

Further detail is provided at **Section 2** of the **International Good Practice Annex**, available here.

3.3 Study Team View - Key Messages

The key messages from the research presented above that have informed and influenced the Logic Model and Evaluation Framework, are:

- The theoretical link between inclusive growth and infrastructure is by-and-large strong, however, some areas of investment may be more amenable to evidencing the direct role with inclusive growth than others. For example, our understanding of how infrastructure can support economic growth is well established, but how infrastructure contributes to more intangible areas such as social and environmental outcomes is less well developed.
- Different approaches and interpretations of inclusive growth have resulted in competing definitions – there needs to be greater consensus on the parameters before any meaningful prioritisation or measurement framework can be developed. This is a fundamental first step before we can progress and start to develop our thinking on how to prioritise investment.
- Some researchers and practitioners view inclusive growth as an input in the design of "inclusive infrastructure", while others view it as an intended/aspirational outcome of infrastructure investment – both are critical for inclusive growth to be embedded. Any new or revised approach to achieving inclusive growth should include a commitment to embed the appraisal and evaluation of investments into every stage of the project cycle.

- Viewing infrastructure through a more holistic lens is becoming ever more prevalent within mainstream policy, with initiatives such as the G20 Global Infrastructure Hub now viewing the development of 'inclusive infrastructures' as a priority.
- Decision makers need to understand and consider all the positive and negative spillover impacts resulting from infrastructure investment - thinking more holistically about people and place and integrating social and environmental considerations will lead to more informed decision-making and reduce failure demand. To some extent this is more about influencing cultures and behaviours as it is about the process.
- While perhaps a consideration for another day - as Scotland develops its approach and thinking on wellbeing (and the evolving policy that guides the approach), further investment within social and human infrastructure will be an important factor in achieving wellbeing outcomes.

4 Current Practice

4.1 Introduction

Chapter 3 has reviewed academic research think pieces and international approaches that consider the strategic relationship between infrastructure and inclusive growth and how this is evolving. Nonetheless, it is also important to understand the current practice with regards to investment prioritisation, appraisal, and measuring progress at a delivery and operational level across infrastructure programmes and projects.

In this Chapter, we have specifically considered the synergies and divergence across organisations and different types of infrastructure, areas of good practice, and the gaps/challenges.

4.2 Policy and Inclusive Growth

Inclusive Growth has been a key policy driver over recent years, and we have reviewed a broad cross section of strategies and plans that inform different areas of public policy in Scotland to establish the extent to which their objectives and outcomes link to both inclusive growth and infrastructure, respectively.

This included the key strategies relating to the different type of infrastructure identified in the IIP: transport, digital, energy, water, housing, justice, culture, health, education and the environment; as well as other relevant strategies and frameworks, including the economy, climate, COVID-19 recovery, tourism, planning, trade and manufacturing[7].

The policy review has informed our understanding on how inclusive growth is currently being defined and measured and has informed the suggested metrics and indicators outlined later in **Chapter 6**.

Overall, we found that references to inclusive growth are common across the board and almost every strategy specifies that investment – whether in housing, water or digital – will contribute to inclusive economic growth.

[7] A summary of the relevant strategy documents that were reviewed is presented at **Appendix A.**

The strategic guiding principles for these policy documents are frequently linked to the NPF and, in some cases, the UN SDGs. We would, however, note that this link tends to be expressed thematically i.e. to one of the NPF's 11 outcomes, rather than explicitly outlining how the policy objectives will contribute to one of the 81 specific indicators that are used to measure NPF performance.

The extent to which specific indicators of inclusive growth or targets have been included in policy varies across strategies and plans. In some cases, monitoring frameworks have been established, or the strategy specifies an intention to do so.

Some specific relevant examples of current practice we would highlight include:

- The Environment Strategy for Scotland (Scottish Government, 2021), following publication of the strategy, a high-level Initial Monitoring Framework (Scottish Government, 2021) was developed and made available as an online dashboard. There are between two and five indicators for each of the strategy's six outcomes, of which two correlate to inclusive growth: the economy outcome, which is measured using natural capital accounts/assets (as this is more about the economy supporting the environment than vice versa); and the society outcome, which is measured through the proportion of the population making visits to the outdoors each week, the proportion of all journeys made by active travel, and the proportion of adults living within a five minute walk of local green or blue space. While these are important aspects of wellbeing, as there is clear evidence that access to greenspace and active travel improve health outcomes, they do not capture any direct or indirect economic benefits. In each instance, the society data is based on the Scottish Household Survey, available at local authority level.
- The National Islands Plan (Scottish Government, 2019) includes the aim of developing a set of indicators applicable to each of its strategic objectives. However, subsequent research found that there are significant gaps in island level data, leading to the commissioning of custom fieldwork to help fill these gaps - the National Islands Plan Survey. This will be used to complement a wide range of existing datasets, listed in the National Islands Plan Implementation Route Map (2020 – 2025), although some of the methods of measurement listed are high-level or more qualitative, for example, island survey feedback', rather than a specific indicator.
- The National Transport Strategy (Transport Scotland, 2020) has supporting inclusive growth as one of its four main objectives, noting that it will help deliver this objective by "*connecting more communities to jobs and services while ensuring more sustainable travel choices*".

A separate Monitoring and Evaluation Framework (Transport Scotland, 2021) sets out a series of headline indicators and their contribution to each of four main objectives. Nine indicators support the inclusive growth outcome: individual and household spend on transport; journey times to basic services; journey times to areas of employment; movement of freight by mode; journey times to and connectivity between transport modes; performance measures of public transport modes; use of smart/integrated technology in public transport; tourism/visitor numbers. Clearly, some of these relate more to economic growth and do not have a direct 'inclusive' benefit, particularly freight. However, other metrics, such as affordability of transport, active travel etc, are captured under a separate Reducing Inequalities outcome, and the strategy recognises that there are overlaps – this is one illustration of how definitions of inclusive growth can vary.

- National Strategy for Economic Transformation (Scottish Government, 2022) sets out priorities for Scotland's economy over the next decade, and the actions needed to maximise opportunities. The strategy has the creation of a wellbeing economy as its core objective, noting that this will build on the 'previous inclusive growth approach'. The strategy outlines 18 projects, one of which is to Measure Success. This includes developing a Wellbeing Economy Monitor to 'build on Scotland's leading work on integrating wellbeing into its measurements and policy development and monitor how we are performing as a wellbeing economy'. This will therefore form the main measure of how the strategy is contributing to inclusive economic outcomes. A draft list of indicators for the monitor was reviewed as part of this study. This contained a wide range of indicators under seven headings: productivity, population, participation, people, place, sustainability and equalities, with considerable crossover with the NPF. Indicators were specified as being at international, national or regional level.

Other strategies set out overarching themes, principles and priorities, but do not specify actions and/or how progress will be measured. In these cases, it is sometimes harder to see precisely how a strategy's contribution to inclusive growth is being defined and measured – there is a general assumption that activities/projects delivered under the strategy will contribute. Therefore, how this ambition for inclusive growth is translated to the operational level – informing project development, prioritisation, and appraisal is less specific.

The strategy review has also identified that policies and investment may be contributing in ways that are challenging to capture due to limitations on what data is available, and at what spatial level. As noted above, the National Islands Plan (2019) is attempting to remedy this by collecting data through primary research.

Our review has found that some strategies have struggled to directly link inclusive growth metrics to their specific investment portfolio area, such as energy, the environment or climate - despite these recent documents stressing the importance of a just economic and social transition to net zero. This reflects the difficulties with isolating the 'green' element of existing economic statistics (for example, there is no means to distinguish polluting and non-polluting industries from official data).

The crossover between environmental outcomes and economic outcomes is one of the key challenges. This is shown by Scotland's Climate Change Plan 2018-2032 (Scottish Government 2020 update), which across its 33 outcomes and 43 indicators, has only two indicators relating to economic growth (measuring productivity by energy use, effectively a measure of energy efficiency) and one related to socio-economic equality (fuel poverty). Therefore, the plan could be measured as wholly successful without necessarily delivering inclusive growth outcomes (and if it does, these are not monitored). Equally, the SCRIG framework has few outcomes relating to the environment/climate, beyond access to green/blue space and fuel poverty.

We would observe that fuel poverty appears commonly as a metric – it is well recognised as a Scotland-wide problem and intersects with numerous policy areas, such as energy, housing, income, rural areas, and climate.

4.3 Appraisal and Prioritisation

While there is no 'standard' approach to appraisal and prioritisation across infrastructure portfolios, most approaches rely on the HM Treasury Green Book (and the various supplementary guidance documents) which provides a Framework for public sector decision-makers to appraise policies, programmes, and projects. It also provides guidance on the design and use of monitoring and evaluation before, during and after implementation.

In particular, the five-case model for developing Business Cases for investment is used to assess the benefits, costs and risks involved.

Figure 4.1: Five-Case Model

Strategic dimension	**What is the case for change, including the rationale for intervention?** What is the current situation? What is to be done? What outcomes are expected? How do these fit with wider government policies and objectives?
Economic dimension	**What is the net value to society (the social value) of the intervention compared to continuing with Business As Usual?** What are the risks and their costs, and how are they best managed? Which option reflects the optimal net value to society?
Commercial dimension	**Can a realistic and credible commercial deal be struck?** Who will manage which risks?
Financial dimension	**What is the impact of the proposal on the public sector budget in terms of the total cost of both capital and revenue?**
Management dimension	**Are there realistic and robust delivery plans**? How can the proposal be delivered?

Source: HM Treasury Green Book

Specifically, the Economic Case requires the calculation/estimation of quantifiable/monetisable costs and benefits, for example, Cost Benefit Analysis (CBA) and Benefit Cost Ratios (BCR) which remain at the centre of the Green Book methodologies. These by-and-large focus on traditional economic metrics such as GVA, productivity, income, etc and therefore play a significant part in the appraisal and selection process.

Although the Green Book is considered best-practice, it is not without its limitations when it comes to informing decision-making (as considered further at **Section 3.3** of the **International Good Practice Annex**). For example, it is a more valuable and reliable tool when it is comparing similar or like-for-like proposals and less amenable for projects or areas of investment that have notably different objectives (economic, social/wellbeing, and environmental).

4.4 Project Selection and Measuring Impacts

To better understand the current approaches (and challenges) to prioritisation and measuring impact from an operational perspective, EKOS reviewed a broad cross-section of infrastructure programmes and engaged with key stakeholders that have responsibility for managing and delivering infrastructure investment.

This included programmes under the following broad headings:

- City-Region Deals.
- SFT-led/facilitated programmes.
- Programmes and projects approved in the IIP (2021/22 to 2025/26).

A list of the projects that were reviewed is presented at **Appendix B** and we would like to extend our thanks to the organisations and individuals that contributed to the research.

A summary of the findings is presented below and for ease of exposition we have set out the study teams views on the areas of strength and good practice and the current gaps and limitations.

4.4.1 City-Region and Growth Deals

City Region Deals (CRD) are packages of funding, agreed between Scottish Government, UK Government and local partners (for example, local authorities, universities and NHS Health Boards). They are designed to bring about long-term strategic approaches to improving regional economies, leverage investment, create new jobs and accelerate inclusive economic growth.

CRD are implemented by regional partners and tailored to reflect regional priorities. The appraisal and programme/project selection processes are structured around the HM Treasury Green Book 'five case model'.

While some Deals have revenue funded interventions, for example to develop skills pathways or the Community Wealth Building pilot in Ayrshire, most of the funding committed is for capital and infrastructure investment.

Our review included four City-Region and Growth Deals that have or are proposing to deliver a wide range of capital infrastructure activity and which are all at different stages of development and delivery. These are Glasgow City Region, Edinburgh and South East Scotland, Borderlands, and Ayrshire.

Areas of Strength and Good Practice

Developing a Clear Process-Driven Logic Model Approach - the CRDs had developed (or were developing) clear and concise logic models that illustrated the expected linkages between inputs, activities, outputs, and outcomes. These were often shown/illustrated as flow charts and linked to Benefits Realisation Plans which set out a range of inclusive growth measures and targets to be achieved at the programme level and which feed down into the project level Business Cases. This approach helps ensure a degree of consistency in terms of data collection and reporting.

Specifically, we would note the approach adopted through the Edinburgh and South East Scotland CRD - Benefits Realisation Plan (2020) - as being 'good practice' with regards to setting out a clear logic model and process that follows through to benefits realisation.

Establishing the Baseline – the Deal partners have gathered a range of supporting baseline data/intelligence that has been used both to help establish the case/need for intervention but also as a starting point to measure progress. This helps to ensure a consistent 'read across' from appraisal to delivery i.e. the data being gathered to evidence need is the same data utilised to measure progress to addressing the need and achieving objectives.

Setting Targets and Developing Evaluation Frameworks – the Deals had (or were developing) a range of supplementary guidance to support the logic models. This includes further definition for the indicators and highlights the relevant data sources and timescales for collection and reporting. In addition, evaluation 'Gateways' (aligned to UK and Scottish Government funding requirements) are set out which notes timescales and areas for consideration within the summative and formative reviews/evaluations.

Mixed-Method Approaches to Data Generation and Collection - in recognition of the localised effects and benefits that were anticipated to be generated, some of the Deals have proposals to directly engage with the intended beneficiaries of the Deal through surveys – adding a rich source of qualitative and quantitative data to the wider evidence base.

Committing Resources – while a requirement of the funding arrangements, all the Deals have committed funding and other resources, first, to develop the Benefits Realisation Plans and secondly, to gather relevant monitoring data throughout the lifetime of the Deal (ranging from 10 to 25 years). This approach will help to measure and capture the longer-term term changes that are often delivered through infrastructure investment, and particularly on outcomes where there is an expected lead-in time for changes to occur or can readily be captured through data collection.

Gaps and Limitations

Limited Influence on Programme/Project Prioritisation - while the Deals have a clear focus on how they will measure progress in relation to inclusive growth, it is less clear to what extent that achieving/delivering inclusive growth outcomes was a factor or influence in programme/project prioritisation and selection. Notably, all the Benefits Realisation Plans are retrofitted, with the programmes/projects already selected (and in some cases delivered/completed) before measures and indicators were selected.

As highlighted in **Chapter 3**, embedding inclusive growth at the outset and within the investment prioritisation stages is crucial and therefore raises an important question as to whether the indicators and measures are the 'right' indicators, and which have been selected for another reason, for example - data is readily available or will show the investment making a positive contribution to targets[8].

It should be noted, however, that while there is a lack of clarity on the role of inclusive growth in prioritisation and programme/project selection, having a strong framework established could support future decision-making.

Resource Intensive and Expensive – the City and Growth Deals have a robust appraisal and programme/project selection process (based on the HM Treasury five case model and managed/administered by a central Programme Management Office) and comprehensive monitoring systems. However, the main limitation is the cost and resources required to implement and operate the Deal process. For example, it was fed back that the development of the supporting logic model and Benefits Realisation Plans have taken 9 - 12 months for the overall Deals, with the individual programme and project level plans taking longer.

The Programme Management Office needs at least a few dedicated personnel to co-ordinate activity and review business case submissions and developing business cases adds significant capacity constraints on public sector partners, many of whom bring in external support as they lack the in-house capacity and/or expertise to develop HM Treasury compliant business cases, which can often be detailed and technical documents depending on the type of capital project.

Evidence for Linkages between Deliverables and Outcomes – in the main we would comment that the logic models are concise with clear linkages between intermediate steps. Nonetheless, it was recognised (by those consulted) that in some instance there is missing evidence or steps between expected outputs and outcomes.

This is particularly the case where the objective/role of the capital infrastructure programme/ project is not directly targeted towards delivering inclusive growth outcomes, or where expected longer-term changes (such as an uplift in productivity) that will be influenced by a wide range of factors are attributed to single intervention. This seems to be driven by a need/desire to demonstrate progress towards the overall Deal objectives, and not necessarily reflecting the specific aims and objectives of the intervention.

[8] Please note that the study team does not offer a view on the appropriateness of the indicators/measures being used by the City-Region and Growth Deals and are simply providing comment on the potential limitations of the approach.

4.4.2 SFT-led and Projects approved in the IIP

Areas of Strength and Good Practice

Clear framework for capturing and attributing benefits at the delivery stage – one of the key methods of how the public sector contribute to inclusive growth through infrastructure investment is using Community Benefits frameworks. In the main this usually includes training and recruitment and sub-contracting opportunities during the construction and delivery phases.

For example, the hubCo social value model approach has recently been adapted to ensure that they are delivering a more targeted approach (focused on need) and their direct contribution to inclusive growth is being captured. For example, they measure the supply chain spend going to Scottish suppliers (and the downstream supply chain) and the beneficiaries that access training and employment opportunities are from 'harder to reach groups' e.g. living in SIMD areas, those without accredited skills/qualifications, long-term unemployed, etc.

Strong theory of change underpinning investment - many of the larger infrastructure portfolios (e.g. education and health) have a strong theory of change and rationale for intervention that sits behind them. For example, in terms of the Learning Estate Investment Programme there is significant research that identities the positive relationship between good quality learning infrastructure and education outcomes, student and staff well-being, teacher retention, etc.

Developing approaches to evidencing need/demand and the strategic case - traditionally prioritisation has tended to be led by service and operation need, rather than considering the wider benefits and outcomes (including inclusive growth) that could be delivered.

Recently, portfolio managers and decision-makers have been moving towards a more integrated approach that combines the service and operational needs but set within the wider strategic context so that need/demand is assessed on a broader basis. For example, the NHS strategic capital investment team are developing a data matrix tool to better inform prioritisation (for current and future investment) that brings together various data under five broad themes:

- Community health need.
- Community demographic need.
- Community deprivation need.
- Supporting infrastructure.
- State of the estate.

Under each theme there are several indicators – with the data being used to inform a needs/demand assessment that strengthens the strategic case for intervention and helps address failure demand i.e. helping ensure that the 'right' investment is made.

This approach recognises that developing the NHS estate is about more than just clinical need and there is potential to deliver wider benefits with the investments. This also has further downstream implications in terms of informing the nature and design of the infrastructure.

Gaps and Limitations

No consistent definition of inclusive growth – across the projects under review, while stakeholders had a strong sense of what inclusive growth was from a conceptual perspective, there was no shared agreement on its definition and what should be measured.

This is a challenge that was also noted across the City-Region and Growth Deals (and within the policy review at **Section 4.1**. Without guidance then different organisations will usually default to their own interpretation or use existing data frameworks as part of a 'best fit' approach – these many or may not be appropriate for measuring inclusive growth.

Indicators and metrics do not measure longer term change - by-and-large, the default position tends to be that public sector will use indicators and measures where data is readily available and can be directly attributed to the investment over the short term.

The key metrics for measuring progress and success are linked to the inputs (cost and resource efficiency), activities (construction activity and delivering Community Benefits in the form of training and apprenticeships), and outputs (completing the infrastructure on time, to budget, achieving a good energy efficient rating, etc).

There is little in the way of ongoing monitoring to better understand the wider impacts and benefits in relation to inclusive growth and limited appetite to test the theory of change i.e. the rationale for investment even though a strong rationale and theory of change often sits behind the intervention.

To some extent this appears to be a 'cultural' challenge across the public sector, and while not meant as a criticism per se, the focus is often on target-led delivery to access funding, not on the longer-term changes that can be brought about from infrastructure investment. From an operational perspective there is therefore less 'need' to measure change over the longer-term.

This challenge in terms of only measuring the short-term and direct effect is amplified when:

- Ownership of the completed infrastructure asset is transferred to another organisation such as the local authority who have responsibility for service delivery.
- Inclusive growth is not regarded as a core objective from the investment – see the point above regarding investment prioritisation decision-making being influenced by service and operational need.
- Infrastructure plays a more indirect or casual role in delivering benefits and outcomes.

4.5 Delivering Transformation and New Perspectives for Appraisal and Evaluation

Dark Matter Labs

Research Question

Q3: From an international perspective what is the emerging evidence base for the positive and negative impacts of infrastructure on inclusive growth?

International Comparators and Delivering 'Transformational Effects'

As noted in the HM Treasury Green Book, "transformational effects are rare' and only occur when initiatives are 'part of a coherent strategic portfolio designed to deliver such changes." While challenging to achieve/deliver truly transformative effects, nonetheless, this was a theme that was echoed in the international comparatives with some key best-practice examples being as follows:

- World Bank Infrastructure Prioritisation Framework: This framework has been designed to facilitate active discussion during project appraisals and views the project journey to be as important as the end result.
- Infrastructure Australia Assessment Framework: Each potential project is assessed using three high-level criteria (strategic fit, societal impact, and deliverability) and must pass through four consecutive appraisal stages before gaining approval.
- Global Infrastructure Hub Inclusive Infrastructure Reference Tool: This tool provides practical guidance for maximising the inclusivity and shared prosperity outcomes of infrastructure projects. The tool is centred around six action areas including Stakeholder engagement, empowerment and capacity building and private sector participation.

From a practical perspective this type of transformational shift could be initiated by introducing exploratory prompts at an early stage in the appraisal process. These provocations could include a set of questions designed to broaden the consideration of both benefits (and crucially dis-benefits) that a project could deliver. For example:

- Where does the project sit in the investment hierarchy, i.e. replace or repair?
- What is the end goal in respect of the provision of Assets Vs Services – will the project create one or both? If it is a service, then the return on the investment will be at the level of that service rather than a financial return.

- What kind of organisations and networks will be involved? Will this include scope 1,2,3 type assessments to ensure inclusive growth is considered throughout the supply chain? For example, the direct contribution to inclusive growth (of the service or assets), the indirect contribution (for example are suppliers paying the Real Living Wage), and the wider casual effects within the upstream and downstream value chain and end users.
- What is the global impact? Have we considered the risk of 'green colonisation' that, for example, sourcing components for electrifying transport will bring?
- What is the financing plan? What restraints might this create? Could a fixed percentage be allocated to fund a 'social premium' to generate spillover benefits?

Research Question

Q4: How is the way that we understand and measure value in the economy changing? How is that being evidenced in inclusive growth frameworks internationally?

Incorporating International Best Practice

A clear theme that emerged from the international analysis is that it is very difficult to separate the impact of infrastructure investment from other policies. It is evident that the time and spatial horizons of decision-making are becoming more fluid and consequently we need to remain flexible in our use of frameworks and metrics. Several practical implications for Scotland are outlined below:

- Applying systems thinking: Acknowledging complexity (and taking a systems-based approach) is central to understanding and addressing evolving risks and opportunities. For example, frameworks such as the Canadian Wellbeing Index (CWI), the International Integrated Reporting Framework (IIRF) and New Zealand's Living Standards Framework (NZ LSF) are all centred on taking a systems approach. Conceptually these initiatives are focused on encouraging people to think with an integrated and systemic mindset, rather than relying on specific metrics or rules.

  For example, the NZ LSF Framework and dashboard are designed to provide a high-level analysis tool that is then supported by in-depth specialist frameworks such as the Ara Waiora for a mātauranga Māori perspective on wellbeing. The System of Environmental-Economic Accounting (SEEA) by contrast, has been divided into several accessible modules which are then clearly signposted to policy applications via the designated Applications and Associations Manual.

- A capital / wealth approach: This framing in relation to wellbeing outcomes is emerging as the gold standard in strong international wellbeing frameworks (NZ LSF, OECD, and the Australian National Development Index (ANDI)).

  In our view, linking an inclusive economy to a wealth economy by considering the underpinning Four Capitals is essential, because the capabilities enabled by infrastructure investment (and evidenced by the underlying wealth stocks) provide the means to achieve the targeted inclusive growth outcomes.

- Governance: Strong framework governance and dedicated expert resource is critical for a meaningful translation of outcome metrics to policy, and thus appraisal targets. For example, New Zealand's LSF is housed by its Treasury and used to produce the national budget and both the CWI and ANDI are located in world-class universities. In the context of the rising complexities and associated challenges discussed above, it seems imperative that any emerging infrastructure frameworks are adequately resourced and given appropriate agency and voice to transcend governmental departments.
- Public engagement: Continuous engagement with the public has been found to be an essential factor in creating an enabling environment for progressive future policy (ANDI research, CWI regional outreach).
- Dynamic risk assessment: Investment decision-making pathways in the private sector are no longer static and linear. Concepts such as 'dynamic materiality' are now being deployed and lessons can be learnt in terms of public investment appraisal and evaluation methodologies.

Facilitating Behavioural Change

The international research has illustrated that the existing duality between strong frameworks (specifically in reference to Scotland's NPF) and their realisation in practical terms is prevalent across the globe. The conclusions summarised below (as a series of thought prompts) are therefore focused on encouraging behavioural change as opposed to concentrating on a specific set of metrics.

Some prompts that to stimulate discussion are as follows:

- Look upstream of the frameworks: Strong frameworks can contribute to the design and implementation of meaningful future policy but have limited value without associated behavioural changes.
- If we can shift the values behind the decision making, then the frameworks can be repositioned to act as conceptual aids rather than as prescriptive tools.

- Contextualise the theory: The interconnected nature of the investment landscape can be overwhelming and thus to enable practitioners to enact practical change, the theories must be contextualised in both time and place (for example, using the four-capitals as a proxy for infrastructure investment).
- The end goal does not have to be about delivering 'optimal' investments i.e. maximising benefits and minimising costs from a single investment, but should also consider how to build in adaptability and flexibility in the decision-making frameworks – so as future uncertainties emerge, we can build resilience and reduce fragility.
- Acknowledge the limitations of indicators and targets: Indicators which are used as targets often become less useful when reviewing more complex landscapes (such as infrastructure investment). For example, focusing resources on delivering against specific indicators can enhance their performance (relative to the indicator), however, there is a danger that interventions and investments can be target-led/driven and start to drift away from their intended objectives. Further, using frameworks and targets/indicators in too prescriptive a manner can result in a 'crowding out' of other considerations (i.e. "what we measure is what we value").
- Commit to a direction of travel: Prioritising individual targets can often over-emphasise or over-represent performance or even shift behaviours in unintended (negative) ways. The focus should instead be to commit to a desired direction of travel for Scotland, then we can remain flexible in our evaluation and decision-making pathways.

Further detail is provided at **Section 3** of the **International Good Practice Annex**, available here.

4.6 Study Team View - Key Messages

From the research we would highlight the following key messages:

- While inclusive growth is often highlighted as a key objective of policy in Scotland it is unclear how this translates to actions and deliverables, and how (if at all) progress to delivering inclusive growth is being measured.
- The goals across different policy workstreams lack co-ordination and this has emerged as a key challenge in achieving inclusive growth. For example, Scotland's commitment to both environmental stability and inclusive growth requires many trade-offs (such as attempting to reduce fuel poverty whilst promoting the installation of expensive renewable technologies) which are not yet reflected in the policy guidance.

- Across Scotland there are areas of strength and good practice but also gaps and limitations in the way in which we prioritise and appraise programmes/projects and measure their progress. To some extent this has been driven by the legacy issues alluded to earlier with regards a lack of definition and guidance on inclusive growth.
- As noted in **Chapter 3**, there are practical challenges with measuring inclusive growth where this is not an intended or explicit objective of the investment. Notably, in areas of social infrastructure investment such as education or health or environmental/ natural infrastructure where the linkages may be more indirect or casual. The tendency is to focus on the immediate short-term outputs (construction and Community Benefits) or discount inclusive growth from the measurement framework entirely. In addition, there is often a lack of clarity about how inclusive growth outcomes would actually be achieved.
- At an operational level, the reporting requirements of funders, availability of resources, and other external influences such as political pressure are significant drivers for the approaches adopted to both appraisal and measurement.
- There is emerging good practice from international comparators that, while the focus is on wellbeing and not specifically inclusive growth, they are adopting a more holistic approach to appraisal and measurement that goes beyond traditional economic metrics.
- Transformational changes linked to infrastructure investment will only become a reality if they are viewed in the context of a strategically coherent portfolio of policy initiatives i.e. investment should not be considered in isolation.
- A focus on promoting cultural and behavioural change and capitalising on Scotland's existing policy architecture will be as important to the success of inclusive growth outcomes as designing the framework.
- Given the complexity and fluidity of our socio-economic environment it is unrealistic to expect that a single framework (or a specific set of metrics) will provide all the answers.

Several clear themes emerged from the international analysis of best-practice wellbeing frameworks which have been encapsulated into the design of the logic model presented in **Section 6**. These included using the Four Capitals as a proxy to help visualise infrastructure impacts and the importance of adopting a more 'systems-based' approach to appraisal and evaluation decisions.

5 Principles-Based Approach

5.1 Introduction

To summarise our thinking, the research has shown that, with regards to the linkages between inclusive growth and infrastructure, this is a dynamic and fluid relationship that continues to evolve. Traditional approaches using definitions that centred on purely economic measures of growth (measured through macroeconomic indicators such as production and GVA) have started to adopt a more holistic approach and now include wider considerations such as the effect on society, people, and the environment. Indeed, some frameworks and countries have taken this further and the thinking and narrative on infrastructure/inclusive growth is now being embedded within the wellbeing economy agenda.

The research has also highlighted that infrastructure covers a broad range of activity with complementary and sometimes competing aims and objectives. The difficulty in attributing and measuring the effects of infrastructure stem from its predominant nature as an enabler within a much wider 'system' where different types of infrastructure will create interdependencies – both positive and negative.

Therefore, before we turn to potential measures and indicators of inclusive growth, we have suggested a **principles-based framework and guide** that reflects good practice (from within Scotland and internationally) to influence the pre-appraisal stage and prioritisation of future infrastructure, as well as setting appropriate indicators and metrics to measure and track performance.

5.2 Principles of the Framework

The main aim of setting the Framework as a series of principles is to support practitioners, funders, project managers, decision-makers, etc, to make better informed decisions with regards to delivering inclusive growth.

While we are cognisant that there are numerous other factors such as the political and funding environment that will shape and influence investment decisions - to drive meaningful change inclusive growth needs to be fully embedded and integrated at all stages.

The principles outlined below directly feed into and support the Logic Model and Monitoring and Evaluation Framework at **Chapter 6**.

5.2.1 Reframing our Approach to Reflect Need

As highlighted through the preceding chapters, inclusive growth needs to be embedded at the outset as part of the prioritisation of investment and selection of projects and needs to be followed through to measuring the success of infrastructure investment. However, as noted, our current definition of inclusive growth is broad which means that it is open to interpretation – the result being that there is no shared understanding of inclusive growth, and importantly, how to evidence and or measure it.

Therefore, in terms of the potential role of infrastructure in contributing to/delivering inclusive growth outcomes, we would point to a fundamental issue as noted in the Fraser of Allander evidence review (2019), inter alia:

> "Before turning to measures of inclusive growth per se, an important point for any appraisal process – and wider strategy to guide infrastructure investment – is to be clear upon what the objectives of any investment are".
>
> **Fraser of Allander Institute**

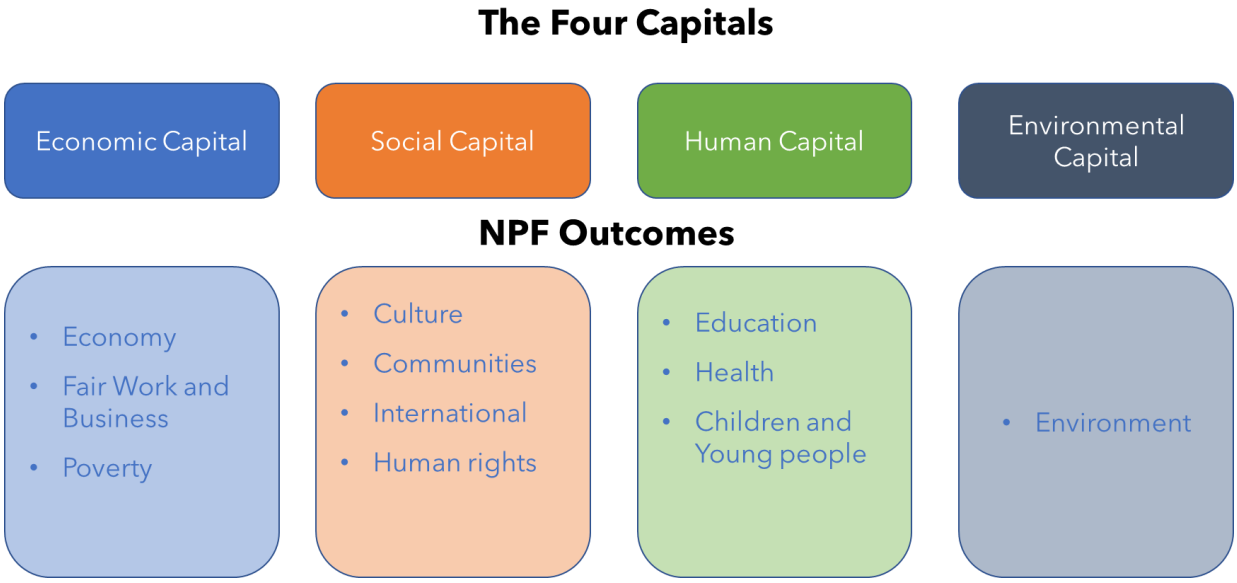
We first need to understand what the need and specific challenges are in relation to inclusive growth that infrastructure investment could address. Once we understand the problem(s) that we are trying to address, then we can set objectives for what we want to achieve with the investment. When we have set objectives, then we can start to consider and set indicators and metrics for measuring progress and success.

Unless inclusive growth measurements are viewed, and included, as part of a new decision-making framework, infrastructure investment is unlikely to address or make limited progress to tackle the systemic issues and challenges faced by Scotland's people and communities.

To start the discussion, we mapped the 11 national outcomes (and numerous indicators/measures) as outlined in the NPF and considered them through a different lens - framing them as "inclusive growth challenges". We have then set objectives that could make a meaningful contribution to our definition of inclusive growth.

In recognition that our objectives are wider than traditional economic metrics and sit within a system, these have been set under the banner of the four capitals, see **Figure 5.1**.

Figure 5.1: NPF and the Four Capitals



Note: The NPF outcomes and indicators have been mapped against the four capitals on a "best-fit " basis

5.2.2 Identifying Potential Metrics that Best Reflect the New Approach

The suggested approach will help ensure alignment across policy - with the NPF acting as an over-arching umbrella policy that sets the purpose, vision, and core values for Scotland. However, as there is 80+ indicators within the NPF, it would not be feasible or practical to include them all within a Monitoring and Evaluation Framework - a key part of which is to ensure that it can be easily embedded and implemented by partners. To generate a short-list of relevant indicators, a two-step process to synthesise the list was undertaken as follows:

Step 1 – Does infrastructure (as defined at **Section 2.3.1**) have a direct, indirect, or casual role in helping to deliver against the indicator?

Step 2 - Does delivering against the indicator make a direct, indirect, or casual contribution to the working definition of inclusive growth (as defined at **Section 2.1.1**)?

To support the readers understanding, we have provided a worked example of the approach to shortlisting indicators at **Table 5.1**

Table 5.1: Approach to Shortlisting Indicators – Worked Example

NPF indicator	NPF indicator reframed as an Inclusive growth challenge	How do we deliver inclusive growth - objectives	Does infrastructure have a direct, indirect, or casual role in helping to deliver against the indicator?	Does delivering against the indicator make a direct, indirect, or casual contribution to inclusive growth	Comment
Economic Capital					
Economic growth - the difference (percentage point) between GDP growth rate and the previous three-year average	Slow and uneven economic growth across different regions and sub-regions	Increase overall economic growth but with a focus on those regions or sectors where the average output per employee is lower than the Scottish average	Direct contribution – there are numerous studies that evidence the key role of enabling infrastructure in promoting economic growth, for example, the availability of public transport to access employment, training/education and services, or telecoms and digital to enable international communication and commerce	Direct contribution – supporting people to access employment, training/education and wider services plays a key role in delivering inclusive growth (for example, providing access to employment is an important component of reducing/alleviating poverty	Relevant indicator with clear linkages between infrastructure and inclusive growth to be taken forward
High growth businesses - the percentage of businesses which are high growth businesses as a share of all registered businesses	High growth businesses are aligned to certain sectors, certain regions, and foreign owned businesses have higher growth than indigenous owned businesses	Achieve a more balanced geographic spread of high growth companies and greater diversity across the sector base and ownership	Indirect/casual contribution – while infrastructure certainly plays a role in supporting high growth companies, for example through access to commercial premises, transport infrastructure, etc, there are several other factors deemed to be more important. Specifically, the NPF notes the higher % of foreign owned high growth businesses as a key challenge	Direct contribution – supporting high growth businesses can help contribute to wider metrics of inclusive growth such as productivity (for example, measured through increased median wages) and employment (economic participation)	The indictor has been discounted as infrastructure was viewed as having a more indirect or casual role in helping to deliver the intended objectives

Please note that there has been a level of 'value judgment' employed by the research team when shortlisting the potential indicators - in this sense we have identified what we believe as providing the 'best fit' for demonstrating and evidencing the linkages between infrastructure investment and inclusive growth. Indeed, there may be a valid rationale for the exclusion of some indicators that made the shortlist, and similarly, inclusion of some indicators that didn't. What we would highlight is that the shortlist of indicators is not meant to be exhaustive but designed to encourage decision-makers and funders to think about the broad range of challenges they face and outcomes they want to achieve.

The full review of reframing the NPF outcomes and indicators as inclusive growth challenges is presented at **Appendix C**.

5.2.3 The Principles of Pre-Appraisal and Prioritisation of Infrastructure Investment

To support the prioritisation of infrastructure investment, we would encourage decision-makers to think about the following:

1. Decision-makers and funders need to adapt the lens through which they view investment. Infrastructure investment is not simply a supply-led process focused on delivering inputs and activities. Instead, infrastructure should be viewed as a needs-led delivery mechanism and enabler of inclusive growth focused on delivering outcomes i.e. the overall change we want to achieve. Fundamentally, objectives that address the root cause of the challenge (not the observed outcome) need to be set.
2. Decision-makers and funder need to think broader and move away from a siloed project/programme mentality to one that considers the role of infrastructure within the wider 'system'. This could include engaging with other portfolio leads and stakeholders to better understand the mix of proposed activities at different thematic, sectoral, and spatial levels. This will help decision-makers to consider the interdependencies and the potential positive and negative effects on other investments and forms of capital (economic, social, human, environmental).
3. The overall long-term goal is sustainable, inclusive growth rather than absolute growth. As noted in Scotland's National Strategy for Economic Transformation (2022), the vision is to "create a society that is thriving across economic, social, and environmental dimensions, and that delivers prosperity for all Scotland's people and places…while respecting environmental limits". So, in practical terms, there may need to be trade-offs in the short to medium-term to achieve longer-term change.

4. Prioritisation of investment/programmes/projects should be informed by the outcomes that we are seeking to achieve (this may include some form of weighting to address policy priorities[9]) with a focus on people and places. Note that any weighting should remain flexible so that changing priorities can be accommodated or where progress is made and/or focus needs redirected to other areas of activity.
5. Prioritisation should include a review of the 'project/programme' landscape at the local authority/ national level – what is already there, and consider the short-, medium- and long-term needs.
6. Prioritisation should include a review of how infrastructure interacts across different thematic areas and sectors to inform decisions or trade-offs with regards to failure demand and maximising benefits and impacts.

To support the pre-appraisal and prioritisation stage and help decision-makers develop a more robust strategic case for intervention, it is recommended to adopt a 'gateway' approach whereby key stakeholders need to address/consider a series of key questions to inform how investment decisions are prioritised.

5.2.4 The Principles for Setting Metrics and Indicators to Measure Inclusive Growth

1. At an early stage, project leads should identify (with the use of empirical or other baseline evidence) the specific inclusive growth challenges with a focus on: People - who are the intended beneficiaries; and Place – what is the intended spatial impact of the project and what are the considerations.

   The next step is to set and agree a range of objectives linked to the inclusive growth challenges i.e. what do you want to achieve? See the worked example of the NPF outcomes and indicators framed as Scotland's inclusive growth challenges and delivering towards 'capital wealth' at **Table 5.1**. As noted at **Figure 6.1** (Chapter 6 - Logic Model and Evaluation Framework), the inclusive growth challenges are distinct and will be influenced by the intended beneficiaries and spatial impact of the infrastructure.

2. Identify the core and supplementary metrics and set clear targets for each, illustrating a 'where we want to go' approach (rather than comparing to historical positions).

[9] In this context, investment that helps mitigate against any negative spillover effects (for example, within an already disadvantaged area or group of people) should hold similar weighting to those investments that generate a measurable positive impact.

3. Metrics and indicators to use relative as well as absolute measures of change and growth. For example, objectives could relate to growing overall economic output of a region (considered as GVA) but also reducing the gap in median earnings of the lowest and highest earners (earnings being a component of GVA).
4. Identify the appropriate timescales for reflection and evaluation (recognising that some effects will be immediate and short-term, and others will have a longer lead-in time before change is evident) – build in feedback loops and a learning cycle to inform future decisions and/or approaches to monitoring. In a practical sense, different types of infrastructure will also generate outcomes and impacts over differing timescales. For example, transport and other enabling infrastructure will likely have a more immediate effect when compared to some elements of the built environment like civic infrastructure.
5. The framework needs to recognise that not all infrastructure investment will have an explicit inclusive growth objective or intended outcome (e.g. it may be a secondary or unintended effect due to other activities across the logic chain). This suggests an element of contribution analysis is required and where linkages start to become indirect and casual then we need to consider different approaches to collecting and providing evidence, for example, engaging directly with beneficiaries or undertaking case studies.
6. Partners need to commit resources to tracking and reporting at the ex-ante, delivery and ex-post stage - identify the point at which it is appropriate and proportionate to measure and attribute change to infrastructure.

6 Logic Model and Evaluation Framework

6.1 Logic Model

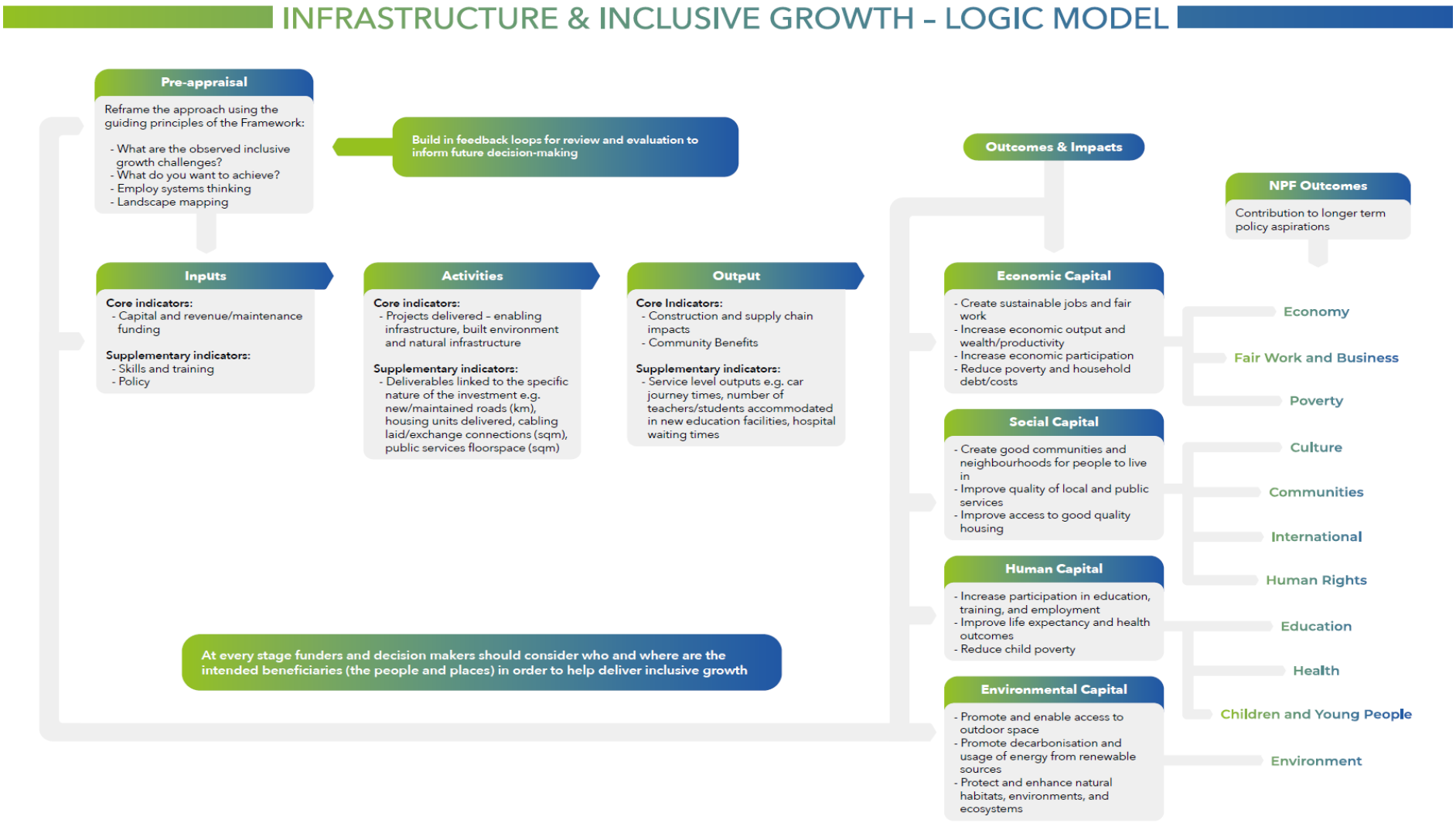
The Logic Model presents the underlying assumptions and rationale that explains how (and why) inputs and activities contribute to a succession of intermediate outputs and outcomes that lead to the intended or observed impacts.

The intended application for the Logic Model is to be used alongside the 'Framework Principles' (as outlined at **Chapter 5.2** and **5.3**) and the Evaluation Framework which will:

- Provide a robust structure and framework for decision-making with a lens/focus on first identifying the problem/challenges and the rationale for intervention (outcomes-focused) before turning to measures of progress and success.
- Support policy and decision-makers better understand how, where, and who will benefit from infrastructure investment and the various interdependencies across the 'system'.
- Provide guidance and help identify relevant indicators for gathering information and intelligence that will evidence the progress and success of the investment and contribute to the various reporting requirements of funders, stakeholders, and partners.
- Identify gaps or weaknesses in available data and the evidence base – intimating where alternative approaches to gathering data need to be adopted.
- Inform future evaluation – making sure the relevant questions are considered/asked and providing a consistent position across appraisal, project selection, delivery and evaluation – did the investment deliver the intended change.

Importantly, when designing the Logic Model and Evaluation Framework we have started with the objectives and longer-term aspirations i.e. what inclusive growth outcomes do we want to achieve through investing in infrastructure (framed under the four capitals) and encourage decision-makers/funder to adopt a similar approach. This enables a more robust 'systems thinking' approach to the framing of intermediate indicators as measures and enablers of progress to delivering systematic change that reflect the intricacies and (direct, indirect, and casual) interactions across the logic chain.

Figure 6.1: Logic Model



6.2 Evaluation Framework Indicators

This final section presents a performance Monitoring and Evaluation Framework (M&EF) which has been designed to help SFT, Scottish Government, and partners to effectively track and measure progress towards delivering against inclusive growth objectives, and whether the activities and actions have delivered the expected outputs, outcomes, and impacts.

We have adopted an approach to developing the indicator menu which brings together both the strategic ('top down') and operational ('bottom up') considerations. These are two key elements which to consider.

1. **Strategic 'top down approach'** - it is important to understand the strategic goals and objectives – this ensures that the data being collected and reported will allow partners to assess and evaluate the progress and contribution to delivering against these priorities - in effect working backwards.
2. **Operational 'bottom up approach'** - we need to consider the routes to impact in order to establish appropriate indicators and targets for measuring success.

The detailed Monitoring and Evaluation Framework is presented within the standalone Excel based appendix document – **Appendix D.**

6.2.1 Inputs

Core input indicators normally relate to the financial expenditure incurred in implementing projects, with the additional aim of tracking the expenditure made by the various partner bodies.

Table 6.1: Inclusive Growth Input Indicators

Indicators
What is being measured – Core Indicators
Capital funding - total
Capital funding by portfolio
Capital funding by region
Capital funding by intended outcome
Revenue/maintenance funding – total
Revenue/maintenance funding by portfolio
Revenue/maintenance funding by region
Revenue/maintenance by intended outcome (for example, is the intended outcome of investment to Increase overall economic growth, improve accessibility to Broadband, improve local services, etc)
What is being measured – Supplementary Indicators
Skills and training
Policy

Note: The input indicators will be consistent across different type of infrastructure and portfolios.

6.2.2 Activities/Deliverables

Activity indicators are designed to measure the scope of actions that are undertaken by the partners, the things that are done – what the inputs were spent on purchasing/procuring. The activities will be based on the capital and/or maintenance works and segmented by portfolio.

Table 6.2: Inclusive Growth Activity Indicators

Indicators
What is being measured – Core Indicators
Projects – total
Projects by portfolio
Projects by region
Projects by intended outcome
What is being measured – Supplementary Indicators
Indicators should be tailored to the type of infrastructure and are not necessarily specific to measuring inclusive growth. They will be determined by the reporting requirements of the various portfolios and funders, for example, new/maintained roads (km), vacant and derelict land remediated (sqm), housing units delivered, cabling laid/exchange connections (sqm), public services floorspace (sqm), etc.

Note: The supplementary activity indicators will be tailored and specific to different types of infrastructure.

6.2.3 Outputs

The output indictors measure the immediate inclusive growth benefits from the activities that, in turn, will contribute to achieving outcomes. The output indicators vary significantly and seek to capture all the positive changes that result from delivering the activities.

Table 6.3: Inclusive Growth Output Indicators

Indicators
What is being measured – Core Indicators
Community Benefits – contract values (direct and supply chain)
Community Benefits - employment
Community Benefits – training and skills development
Community Benefits – business development
Community Benefits – other social value
Construction and supply chain - contract values
Construction and supply chain - jobs that pay the Real Living Wage / pay over 80% of the equivalised Scottish national (gross FT) average - £32,000
Construction and supply chain – training and skills development
What is being measured – Supplementary Indicators
Indicators should be tailored to the type of infrastructure/portfolio and will usually relate to service level changes. They will be determined by the reporting requirements of the various portfolios and funders, for example, car journeys or car journey times, number of teachers/students accommodated in new education facilities, hospital waiting times, etc.
What is being measured – Areas of Added Value
Shared learning
Strategic influence
Leverage/advocacy

Note 1: The supplementary output indicators will be tailored and specific to different types of infrastructure – we would anticipate service level outputs to be detailed at the project/portfolio prioritisation, appraisal, and selection stage, for example, within a Business Case.

Note 2: The areas of added value are qualitative and should be captured through engagement with stakeholders, beneficiaries, and case studies.

6.2.4 Outcomes and Impacts

At this stage we can begin to map the detailed short-medium term outcomes and longer-term impacts. The outcome and impact indicators are aligned to present a coherent "read across". The outcomes are utilised as a proxy intermediary of progress and the impact indicators provide a reflection of wider effects. The level/scope of attribution and causality between outcomes and impacts should be tested and assessed at the evaluations stage(s).

For ease of exposition, the indicators have been considered and presented against the four capitals in terms of their contribution to delivering the core enablers of inclusive growth.

6.2.5 System Indicators

In addition, we have provided a view on overarching indicators/metrics that would be valuable in helping understand the longer-term systematic change and as a proxy for the overall health of the four capitals.

If we use economic capital as an example, an infrastructure investment may demonstrate positive progress against outcome and impact indicators, such as creating jobs that pay the Real Living Wage, improving the economic activity rate, and reducing wage gaps. However, over the longer term, if levels of household debt persist (or worsen) and there remains an uneven distribution of wealth amongst the targeted people or places, then there is a case for revisiting our approach as it could be argued that inclusive growth has not been achieved.

Economic Capital

Inclusive growth includes promoting prosperity and a fairer distribution of wealth within the economy through ensuring people and places have equitable and accessible opportunities for participation, trade, employment, and business growth.

Core Enablers for Delivering Inclusive Growth:

- Create sustainable jobs and fair work.
- Increase economic output and wealth/productivity.
- Increase economic participation.
- Reduce poverty and household debt/costs.

Table 6.4: Economic Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objective - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Economic Capital - System Indicators
More businesses are involved with exporting directly or can benefit via supply chain linkages. Specifically, to ensure that regions and places that are under-represented have an opportunity to engage in exporting	Number/percentage of Scottish business involved with exporting - directly and/or within the supply chain Value (£) to Scottish suppliers involved with exporting - directly and/ or within the supply chain	Exports as % of GDP	
Increase overall economic growth but with a focus on those regions and/or groups of people where the average output per employee is lower than the Scottish average	Jobs created/safeguarded that pay the Real Living Wage Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000 Relative and absolute change in GVA Turnover created/safeguarded	Wages gap/variance Median wages (proxy for productivity) Average (GVA) output per employee	Household debt Investment in R&D (gross) Distribution of wealth
Increase the % geographic coverage for superfast broadband in Scotland and with a focus on rural and less densely populated areas	% of residential dwellings that have access to fast internet download speeds (min 30mbps) % of commercial premises that have access to fast internet download speeds (min 30mbps)	% of residential dwellings that are using fast internet (min 30mbps download speeds) % of commercial premises that are using fast internet (min 30mbps download speeds)	

Encourage more people from different backgrounds to start a business and grow the overall rate of annual business births	Business starts per 10,000 population Survival rates (%) of businesses at 1 and 3 years old	Employment rate Economic activity rate Long term unemployment rate	
Increase the total proportion of businesses that are innovation active - in sectors and regions that are typically less engaged in innovation activity	Businesses reported to be engaged in innovation R&D jobs created/safeguarded	Average (GVA) output per employee Business Expenditure on Research & Development (BERD)	
Increase the overall participation or employment rate in Scotland – targeting specific groups of people and regions/areas where the median average rate is notably below the Scottish average	Job density ratios Working age people claiming benefits (for those that are able and seeking to work) Jobs created/safeguarded that pay the Real Living Wage - split by FT/PT Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000 - split by FT/PT % of population that can access employment within 30-minute drive by private or public transport	Employment rate Economic activity rate Long term unemployment rate	
Increase the absolute and relative proportion of people that earn the Real Living Wage with a focus on those groups that are disproportionately affected by low pay and unsecure work	Jobs created/safeguarded that pay the Real Living Wage Jobs created/safeguarded that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000	Wages gap/variance Median wages	
The gender pay gap is a significant issue and the aim is for median average wages of female employees to increase (at a % greater rate) to help reduce the pay gap	Jobs created/safeguarded taken by females that pay the Real Living Wage Jobs created/safeguarded taken by females that pay over 80% of the equivalised Scottish national (gross FT) average - £32,000	Wages gap/variance - male/female Median wages - male/female	
Reduce the overall level of households/individuals in relative poverty (by reducing housing costs) – with a focus on certain target groups	Proportion of homes meeting SHQS standards Number/percentage of households in fuel poverty Housing affordability - median cost of new homes	The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	

Reduce the % of net income spent on housing, food, fuel and achieve a 'minimum' per household/per person with a focus on the groups that are disproportionately affected)	Proportion of homes meeting SHQS standards Number/percentage of households in fuel poverty Housing affordability - median cost of new homes	The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	

Social Capital

Inclusive growth means that all people have access to good quality places and spaces where they have access to good quality housing, feel connected, safe, and have an effective voice in their community.

Core Enablers for Delivering Inclusive Growth:

- Create "good" communities or neighbourhoods for people to live in.
- Improve quality of local and public services.
- Improve access to good quality housing.

Table 6.5: Social Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Social Capital - System Indicators
Promote greater diversity and accessibility of local areas: with improved quality of facilities; wider range of activities; and improved quality and diversity of local areas	% of population that have access to community or civic facilities within a 20-minute drive or by public transport	% of residents that report their local community is a "good" place to live	Trust in others Trust in Government Diversity of land and asset ownership
Increase awareness and accessibility of social services and activities such that they are holistic and interconnected. This can be supported by greater digital connectivity for these groups	% of population that have access to community or civic facility within a 20-minute drive or public transport % of residential dwellings that have access to fast internet download speeds (min 30mbps)	% of service users who are fairly or very satisfied with the quality of local services (local health services, local schools, and public transport)	
Build the capacity of communities to ensure all places and groups have the same access and opportunity to take relevant assets into community ownership	Assets in community ownership (private v community)	% of residents that report their local community is a "good" place to live	

Ensure all local areas and neighbourhoods are safe places to live for all people, particularly those who are at the greatest risk of being victims of crime	% of people that say they feel safe walking alone at night % of people that say their neighbourhood is safe No. of CCTV per capita % of people that say their neighbourhood is well lit	Crime rates	
Improve access to the outdoors and quality local green spaces through the repurposing of vacant/derelict land	HA of vacant or derelict land restored/reclaimed % of population within a 10-minute walk to greenspace	Number/percentage of residents accessing local greenspace at least once a week % of residents that perceived their local area has a "good" environmental quality	
Increase accessibility to cultural events and places specifically targeted at those less likely to attend or visit	No. of cultural events No. of (public/private/community) venues % of population that have access to (public/private/community) venues within 20 minutes (private or public transport)	No. people attending a cultural event % of people who had never attended a cultural event before	
Increase participation in cultural activities amongst those groups who are less likely to participate	No. of cultural events No. of (public/private/community) venues % of population that have access to (public/private/community) venues within 20 minutes (private or public transport)	No. people participating in a cultural event % of people who had never participated in a cultural event before	
The % of households that report they are satisfied with their housing in the SIMD top 20% most deprived communities is in line with the national average	SIMD Housing Rank Proportion of homes meeting SHQS standards Home ownership rates Housing stock Vacant/derelict homes	% of households who report being either "very satisfied" or "fairly satisfied" with their house or flat	
All early learning and childcare services are rated as good or better	% population that have access to funded Early Learning and Childcare (ELC) within a 20-minute drive or by public transport	Rating of ELC facility	

Greater involvement and engagement with all communities in design and operation of public services so that public services are accessible to and designed for all	% of population that have access to local services within a 20-minute drive or by public transport Quality of community and public services assets - heat, light, public transport, etc Age of community and public services assets Level of investment in community and public services assets	% of respondents who are fairly or very satisfied with the quality of local services (local health services, local schools, and public transport	

Human Capital

Inclusive growth means that people are healthy and skilled and have access to good quality education and healthcare provision, and greenspace/infrastructure.

Core Enablers for Delivering Inclusive Growth:

- Increase participation in education, training, and employment.
- Improve life expectancy and health outcomes.
- Reduce child poverty.

Table 6.6: Human Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Human Capital - System Indicators
Support a high level of educational attainment in all areas of Scotland, closing the gap between the most and least deprived areas	% population that have access to school, further or higher education facility within a 30-minute drive or by public transport Asset condition of schools and other education institutions (A-D) % of population participating in education, training, or employment	Educational attainment % with no recognised qualifications	Life expectancy at birth Premature mortality levels Affordable housing stock Household debt Distribution of wealth

Decrease the overall level/proportion of children with developmental concerns, specifically, closing the gap between low- and higher-income families	% population that have access to GP practice within a 20-minute drive or by public transport GP practices and list sizes Proportion of homes meeting SHQS standards No. and/or % of households in fuel poverty Housing affordability - median cost of new homes	% of children with a developmental concern The % living in private households with an equivalised income of less than 60% of the UK median after housing costs	
Improve the proportion of the population reporting good mental health in all areas, with particular attention paid to the most deprived areas	% population that have access to GP practice within a 20-minute drive or by public transport GP practices and list sizes No. of people/ % of residents accessing local greenspace at least once a week	Self-reporting of good mental health or being "happy" Average score on Warwick-Edinburgh Mental Wellbeing Scale	
A higher proportion of adults are a healthy weight in all parts of Scotland, with particular attention paid to closing the gap between the most and least deprived areas	% population that have access to shops that sell fresh produce (fruit and veg) within a 20-minute drive or by public transport % of population within a 10-minute walk to greenspace % of population within a 10-minute walk to dedicated walking and cycling infrastructure	Obesity levels/rates No. of people/ % of residents accessing local greenspace at least once a week	
Higher levels of physical activity in all parts of Scotland, closing the gap between the most and least deprived areas.	% population that have access to sports/leisure facility within a 20-minute drive or by public transport % of population within a 10-minute walk to dedicated walking and cycling infrastructure	No. / % people meeting the daily or weekly physical activity/exercise recommendations	
Population growth (natural change and net inward migration) in areas of Scotland currently suffering from depopulation	Population change	Population Dependency ratio Net migration	

Environmental Capital

Inclusive growth is about protecting and enhancing the natural environment and historic sites, promoting the use of green and blue space, and diversifying and increasing use of energy from renewable sources.

Core Enablers for Delivering Inclusive Growth:

- Promote and enable access to outdoor space.
- Promote decarbonisation and usage of energy from renewable sources.
- Protect and enhance natural habitats, environments, and ecosystems.

Table 6.7: Environmental Capital – Inclusive Growth Outcome and Impact Indicators

Inclusive growth objectives - what do we want to achieve?	Outcome indicators (Short-Medium Term)	Impact Indicators (Longer-term)	Environmental Capital - System Indicators
Ensure all people have access to outdoor space within a reasonable journey time – focus on those from target groups	% of population within a 10-minute walk to greenspace HA of vacant or derelict land restored/reclaimed for public greenspace	Number/percentage of residents accessing local greenspace at least once a week	Material footprint Ecological footprint Net greenhouse gas emissions
Maintain a high % protected nature sites found to be in favourable condition	Designations of Sites of Special Scientific Interest (SSSIs) and Natura 2000	% of natural features on protected nature sites which are in satisfactory condition	
Reduce the overall cost of energy for households and increase the % of energy consumption which comes from renewable energy sources	Number/ type of renewable assets/ renewable energy sites % of electrified heating systems (hydrogen and biomethane)	energy generated from renewable sources	
Increase recycling rates and reduce waste	No. of waste recycling facilities per capita % population that have access to municipal waste recycling centres/facilities within a 20 minute drive % of businesses demonstrating circular economy practices	Tonnes of waste going to landfill Recycling rates	

Need to reduce consumption and switch to alternative energy sources to reduce CO2 output – across Scotland	% of public transport fleet that is electric or hybrid % of housing that is energy efficient / zero emissions heating CO2 footprint from the top 5 highest emitting sectors % of public sector buildings that are energy efficient	CO2 output Air quality	
Improved natural habitats – Coastal, Inland surface waters, Raised and blanket bogs, Grasslands, Heathland, Woodland and forest, Unvegetated or sparsely vegetated, Cultivated agricultural, Montane, and Artificial habitats	Ecological footprint SEEA, Aichi Targets & SDG indicators depending on the specific requirements	Capacity of Scotland's terrestrial ecosystems (The Natural Capital Asset Index) Water quality Soil quality Air quality	
Increase the % of biogeographic regions with acceptably low levels of contaminants – supporting, safeguarding and enhancing the marine environment	Marine designations marine equivalent material footprint	Levels of contaminants	

7 Future Areas for Consideration

7.1 Introduction

The development of a new framework to better inform prioritisation and measurement is a valuable first step, however, it is not the endpoint, and it is important that supporting actions are considered to ensure that partners get value from its development.

As a final 'provocation', Dark Matter Labs has considered the wider international Frameworks that attempt to measure the wider systemic health of the economy, and how this could be applied in a Scottish context.

7.2 Operational Areas for Consideration and Action

1. SFT and Scottish Government should commit resources to undertake a 'pilot' across a cross-section of infrastructure portfolios and programmes/projects - collecting baseline data and putting the relevant structures in place to support the ongoing monitoring.
2. There is a need to consider and agree how the framework (and importantly the principles that guide it) will be promoted and 'socialised' internally and within wider organisations that have a role/contribution in infrastructure investment (delivery, operation, maintenance, etc). As noted in the research, there will be a need for awareness raising and capacity building to help encourage behaviour and culture shifts.
3. The research has been undertaken within a busy landscape – it is important to understand how it aligns with other workstreams being developed by Scottish Government. For example, the prioritisation and needs assessment work to inform the IIP routemap (2021 – 2026) and how it links to other areas of policy research, such as the wellbeing economy (developing wellbeing economy monitor) and child poverty, etc.

7.3 Measuring Systemic Health of the Economy

Dark Matter Labs

Research Questions:

Q5: How can we evaluate the systemic health of the economy, as opposed to individual sectors or policy areas?

Q6: How can we shift practitioner thinking to consider dynamic rather than utilitarian (allocative) prioritisation frameworks and emerging rather than static systems?

Emerging System-Level Alternatives To GDP

In recent years there have been numerous criticisms of GDP as a measure of individual wellbeing but less has been voiced about its effectiveness as a measure of the economy's systemic health. The 'beyond GDP' movement has led to a variety of alternative measures being proposed, which have broadly fallen into three categories:

- Extending or enhancing GDP (e.g. The United Nation's SEEA).
- Measuring happiness or wellbeing directly (e.g. the Happy Planet Index).
- Dashboard approaches (e.g. the Scottish NPF).

The above approaches (and the specific proposals within them) each have their own merits, but a common limitation is their failure to define a desired direction of travel, or tangible system-level goals with which to evaluate progress.

Looking at systemic evaluation frameworks is beyond the scope of this current research project but there are nevertheless important questions to consider in this context. For example, if an investment project scores highly on a focused set of metrics whilst the overall direction and quality of growth in a region is deteriorating, should we still view it as a success? To begin addressing such questions we have outlined two examples of emerging approaches that seek to address this issue below:

The Healthy Green Growth Compass

The Healthy Green Growth Compass (HGGC) looks at rates of change in ecological and social (particularly in relation to inequality) indicators as a function of GDP and aligns them with science-based targets.

The Compass acknowledges the constant fluidity present in natural and social systems and its framing clearly indicates the direction of progress towards informed targets, rather than using fixed or comparative metrics.

Scotland's 2021-22 Programme for Government was entitled '*A Fairer, Greener Scotland*' and set out the Government's commitment to transitioning Scotland towards a sustainable, equitable and green future. The HGGC illustrates a pathway to define and evaluate such policy targets and could thus provide a clear commitment to the intended future direction of travel for Scotland.

The SAGE Framework

The SAGE framework presents a policy route for recoupling economic and social prosperity and follows a dashboard approach to measurement. The framework consists of four indices (Agency, Solidarity, Environmental Stability and Material Gain) which are represented by a visual matrix designed to identify shifting societal behaviour and norms. A key distinguishing feature of the framework is that it provides a philosophical challenge to our collective cultural definition of success, whereby its indices are not arbitrary and seek to challenge the underlying structures and assumptions of our current economic system.

The framework could provide a high-level cross check on the overall success of Scotland's infrastructure investment portfolio. For example, if Scotland's GDP per capita and agency scores are rising whilst its solidarity and/or environmental scores are falling, this would be a warning light that the overall investment profile is not balanced.

Applying Complexity Theory to Analytical Decision-Making

Complexity theory is an interdisciplinary field that draws from both the natural and social sciences and provides an alternative way of thinking about the systems that we interact with. The theory maintains that there are limitations in the process of identifying and tackling individual discrete issues within a 'system', because issues within social ecosystems can never exist in isolation.

A key implication for informing infrastructure investment pathways is to develop more adaptive and dynamic frameworks – that can respond to changing circumstance, policy priorities, etc.

In practical terms for the future, a dynamic framework approach could initially be explored using a stepped approach. For example:

- Step 1: Facilitate 'systems thinking' amongst SFT and Scottish Government colleagues.

- Step 2: Apply landscape mapping to identify the potential impacts (both positive and negative) of projects.
- Step 3: Include multidimensional/multi-capital forecasts as part of the project business case process.
- Step 4: Evaluate the project mix at the landscape / local authority / national level.
- Step 5: Select a portfolio of projects that have the potential to simulate cross-learning and positive additive interactions.
- Step 6: Set collective intermediate milestones.
- Step 7: Continuously evaluate and adjust the direction of travel to orient each and every decision towards inclusive growth. Look for signs of significant change (or 'pre-emergence') and investigate their root causes.

Further detail is provided at **Section 4** of the **International Good Practice Annex**, available here.

Appendix A: Policy Review – Current Approaches to Measuring Inclusive Growth

The following policy documents were reviewed through the research to better understand current practice and approaches to prioritisation and measurement:

- Scotland 2045: Our Fourth National Planning Framework (2021).
- National Transport Strategy 2 (2020) plus Monitoring and Evaluation Framework (2021).
- Housing to 2040 (2021).
- Infrastructure Investment Plan (2021).
- Justice in Scotland: Vision & Priorities (2017).
- Vision for Trade (2021).
- National Islands Plan (2019) plus Implementation Route Map (2020-2025).
- A Changing Nation: How Scotland Will Thrive in a Digital World (2021).
- Strategic Transport Projects Review 2 Summary Report (2022).
- Scotland's Energy Strategy (2017).
- Environment Strategy for Scotland (2020) plus monitoring framework (2021).
- Making Scotland's Future: A Recovery Plan For Manufacturing (2021).
- Scotland Outlook 2030: Responsible Tourism for a Sustainable Future (2020).
- Climate Change Plan, 2020 Update (2020).
- Delivering Economic Prosperity: Scotland's National Strategy for Economic Transformation (2022).
- Scottish Water Strategic Plan: A Sustainable Future Together (2020).
- OECD Better Life Index.
- United Nations Sustainable Development Goals.
- SCRIG Inclusive Growth Diagnostic.

Appendix B: Measuring Impacts – Projects

The following programmes and projects were reviewed to inform the research. EKOS would like to thank the consultees that participated and provided feedback and input.

City Region and Growth Deals

- Glasgow City Region.
- Borderlands.
- Edinburgh and South East Scotland.
- Ayrshire.

SFT-Led and Scottish Government

- Islands Infrastructure Fund.
- Connected Hubs.
- 4Gi project.
- hubCo Programme.
- Place Programme.
- Learning Estate Investment Programme.
- Wellbeing Economy Monitor.
- Infrastructure Technology workstream.
- Construction Accord.
- NHS Estates.

Appendix C: National Performance Framework and Inclusive Growth Challenges

The table below provides a high-level worked example of reframing the NPF outcome indicators as inclusive growth challenges and objectives. The intention is to support decision-makers to think differently about how they consider and set metrics – working backwards from a need/demand perspective. The list is not intended to be exhaustive and the challenges at different spatial levels and across different groups of people may be more or less pronounced.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
Economy - We have a globally competitive, entrepreneurial, inclusive and sustainable economy	Productivity	NPF Indicator Measure: Scotland's Rank for productivity against key trading partners in the Organisation for Economic Co-operation and Development (OECD). Inclusive Growth Challenge: Productivity is stagnant and achieved minimal relative growth for past 10 years. What do we want to achieve: Need to increase/grow productivity through increasing average median wages as a metric of inclusive growth (component of economic output).
	International exporting	NPF Indicator Measure: The value, in GBP millions, of Scottish exports (excluding oil and gas). Inclusive Growth Challenge: The economic value generated through exporting is growing, however, is not evenly distributed across regions. What do we want to achieve: More businesses are involved with exporting directly or can benefit via supply chain linkages.
	Economic growth	NPF Indicator Measure: The difference (percentage point) between GDP growth rate and the previous three-year average. Inclusive Growth Challenge: Slow and uneven economic growth across different regions and sub-regions. What do we want to achieve: Increase overall growth but with a focus on those areas where the average output per employee is lower than the Scottish average.
	Carbon footprint	NPF Indicator Measure: Scotland's carbon footprint expressed in million tonnes of carbon dioxide equivalent. Inclusive Growth Challenge: CO2 emissions contribute to climate change – uneven access to cleaner fuel sources for domestic use and private transport. What do we want to achieve: Need to reduce consumption and switch to alternative energy sources to reduce CO2 output – across Scotland.
	Natural Capital	NPF Indicator Measure: The Natural Capital Asset Index (NCAI) monitors the quality and quantity of terrestrial habitats in Scotland, according to their potential to deliver ecosystem services now and into the future.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
		Inclusive Growth Challenge: Environmental quality is lower and habitat degradation is higher in: proximity to industry sectors that have a large material footprint (i.e. use natural resources such as agriculture or oil and gas exploration), post-industrial and urban areas (particularly where deprivation, as defined by the SIMD is also an issue). What do we want to achieve: Improved natural habitats – Coastal, Inland surface waters, Raised and blanket bogs, Grasslands, Heathland, Woodland and forest, Unvegetated or sparsely vegetated, Cultivated agricultural, Montane, and Artificial habitats.
	Greenhouse gas emissions	NPF Indicator Measure: Greenhouse gas emissions as a percentage change achieved from the baseline figure in 1990. Inclusive Growth Challenge: GHG are having a long-term harmful effect on the environment and contributing to global warming with some sectors (and therefore regions) disproportionally contributing to this. What do we want to achieve: Reduce and minimise GHG output across all industry sectors.
	Access to superfast broadband	NPF Indicator Measure: Percentage of residential and non-residential addresses where superfast broadband is available. Inclusive Growth Challenge: Access to superfast broadband is uneven, with rural and less densely populated areas having greater levels of digital exclusion - engagement and businesses use. What do we want to achieve: increase the % geographic coverage for superfast broadband in Scotland and with a focus on rural and less densely populated areas.
	Spend on research and development	NPF Indicator Measure: This indicator measures Gross Expenditure on Research and Development (GERD) as a percentage of GDP. Inclusive Growth Challenge: Uneven contribution to BERD targets across different industry sectors. What do we want to achieve: Businesses to better recognise the benefits of investing and increase the absolute and relative expenditure on R&D across industry sectors, particular amongst sectors that have a proportionally low level of expenditure (relative to output).
	Income inequality	NPF Indicator Measure: Income share of the top 10% of the population in Scotland divided by income share of the bottom 40% (Palma ratio) expressed as a percentage. Inclusive Growth Challenge: The gap (absolute and relative) in earnings between those in the highest earning brackets and those in the lowest remains high. What do we want to achieve: Increase the earnings of those in the lowest income brackets by ensuring all employees receive a Real Living Wage or employers commit to paying the RLW.
	Entrepreneurial activity	NPF Indicator Measure: Total Early-stage Entrepreneurial Activity (TEA) rate: proportion of the adult working age population that is actively trying to start a business, or that own/manage a business which is less than 3.5 years old. Inclusive Growth Challenge: The overall business start-up rate is low, particularly amongst certain groups (e.g. women, older people). What do we want to achieve: Encourage more people to start a business and grow the overall rate of annual business births.
Fair Work and Business - We have thriving and innovative businesses,	The number of businesses	NPF Indicator Measure: The total number of private sector businesses (registered for Value Added Tax and/or Pay As You Earn) in Scotland per 10,000 adults. Inclusive Growth Challenge: High levels of business failure, start-up rates and survival – lower density in some regions.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
with quality jobs and fair work for everyone		What do we want to achieve: Increase the number of indigenous owned enterprises across Scotland and increase the density of businesses per 10,000 population.
	High growth businesses	NPF Indicator Measure: The percentage of businesses which are high growth businesses as a share of all registered businesses. Inclusive Growth Challenge: high growth businesses are aligned to certain sectors, certain regions, and foreign owned businesses have higher growth than indigenous owned businesses. What do we want to achieve: More even geographic spread of high growth companies and greater diversity across the sector base and ownership.
	Innovative businesses	NPF Indicator Measure: This indicator measures the proportion of businesses that were innovation active during the survey period. Inclusive Growth Challenge: Innovation is considered important to support productive growth, but the number and % of companies reported as being innovation active is declining. Businesses within certain sectors (and therefore regions where there is a higher than average % of the business base) report lower than average levels of engagement within innovation. What do we want to achieve: Increase the total proportion of businesses that are innovation active - in sectors and regions.
	Economic participation	NPF Indicator Measure: This indicator measures the gap between Scotland's employment rate and the rate of the top performing country in the UK. Inclusive Growth Challenge: There is significant disparity in economic participation (employment or economic activity rate) by geography and priority target groups. What do we want to achieve: Increase the overall employment rate in Scotland but with a focus on: • regions, sub region and communities where employment deprivation is an issue • priority and target groups - women , young people, BAME, those with a disability, etc.
	Employees on the living wage	NPF Indicator Measure: This indicator measures the percentage of workers earning less than the living wage. Inclusive Growth Challenge: Around one in seven people in employment earn less than the RLW and are at risk of in-work poverty, with certain groups (e.g. young people) more likely to be in low paid work. What do we want to achieve: Increase the absolute and relative proportion of people that earn the Real Living Wage with a focus on those groups that are disproportionately affected.
	Pay gap	NPF Indicator Measure: This indicator measure the difference between male and female full-time hourly earnings, expressed as a percentage of male full-time hourly earnings. Inclusive Growth Challenge: The gender pay gaps shows that on average men earn more than females (median hourly earnings). What do we want to achieve: The median average wages of female employees increases (at a % greater rate) to help reduce the pay gap.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
	Contractually secure work	NPF Indicator Measure: This indicator measures the proportion of employees (aged 16 and above) who have a permanent contract. Inclusive Growth Challenge: certain groups (e.g. young or older workers and BAME) are more likely to be in 'unsecure work'. What do we want to achieve: Increase the proportions of those in permanent work with a focus on those disproportionately affected.
	Employee voice	NPF Indicator Measure: The percentage of employees who agree that they are affected by collective agreement, defined as whether agreement between trade union and employer affect pay and conditions. Inclusive Growth Challenge: NA. What do we want to achieve: NA.
	Gender balance in organisations	NPF Indicator Measure: Gap between male and female employment rate (positive gap represents higher male than female employment rate). Inclusive Growth Challenge: The employment rate gap is disproportionate across different groups based on ethnicity, gender, social status – suggesting this is not solely down to 'personal choice'. What do we want to achieve: Ensuring equal access to employment opportunities.
Communities - We live in communities that are inclusive, empowered, resilient and safe	Perceptions of local area	NPF Indicator Measure: Percentage of adults who rate their neighbourhood as a very good place to live. Inclusive Growth Challenge: Lower ratings reported for people who live in deprived areas, large urban areas, adults from ethnic minority groups and adults with a disability. A range of factors, such as close proximity to derelict/vacant land, contribute to these ratings. What do we want to achieve: Greater diversity and accessibility of local areas: with improved quality of facilities; wider range of activities; and improved quality and diversity of local areas that also contribute to increased interconnectivity and development of 20-minute neighbourhoods.
	Loneliness	NPF Indicator Measure: Percentage of adults who report feeling lonely "some, most, almost all or all of the time" in the last week. Inclusive Growth Challenge: Social isolation of particular groups, such as older people and people from ethnic minority groups, cuts them off from local facilities, activities and the economy. These existing inequalities exacerbated by COVID-19 pandemic. What do we want to achieve: Increase awareness and accessibility of social services and activities such that they are holistic and interconnected. This can be supported by greater digital connectivity for these groups.
	Perceptions of local crime rate	NPF Indicator Measure: Percentage of respondents who think crime in their area has stayed the same or reduced in the past two years. Inclusive Growth Challenge: Women, people living in deprived areas, people with a disability and people living in urban locations more likely to report higher levels of crime. What do we want to achieve: Ensure all local areas and neighbourhoods are safe places to live for all people particularly those who are at the greatest risk of being victims of crime.
	Community ownership	NPF Indicator Measure: The number of assets in community ownership. Inclusive Growth Challenge: Community capacity to take on community asset ownership is concentrated in areas of less deprivation.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
		What do we want to achieve: Build the capacity of communities to ensure all places and groups have the same access and opportunity to take relevant assets into community ownership.
	Crime victimisation	NPF Indicator Measure: Proportion of adults who have been the victim of one or more crimes in the past year. Inclusive Growth Challenge: People living in deprived areas, people with a disability and people living in urban areas were more likely to have experienced crime. What do we want to achieve: Ensure all local areas and neighbourhoods are safe places to live for all people particularly those who are at the greatest risk of being victims of crime.
	Places to interact	NPF Indicator Measure: Percentage of adults who agree that, in their neighbourhood, there are places where people can meet up and socialise. Inclusive Growth Challenge: People living in deprived areas are much less likely to agree with the above statement as well as people with a disability and people from ethnic minority groups. What do we want to achieve: Increased accessibility and improved sense of belonging to local community for all groups particularly for those groups identified above.
	Access to green and blue space	NPF Indicator Measure: Proportion of adults who live within a 5-minute walk of their local green or blue space. Inclusive Growth Challenge: People who live in deprived areas less likely to have access to local greenspace and make visits to the outdoors. This is further compounded by fact that they are also more likely to live within close proximity to derelict/vacant land. What do we want to achieve: Improved access to the outdoors and quality local green spaces. Repurposing of vacant/derelict land.
	Social capital	NPF Indicator Measure: Social capital is the resource of social networks, community cohesion, social participation, trust and empowerment. The social capital index monitors aggregate changes in levels of social capital since 2013. Inclusive Growth Challenge: Social inequalities exacerbated by COVID-19 (e.g. closure of social hubs). Decreasing populations in rural and island areas, particularly in the west, threatens the vibrancy and resilience of communities. The strength of community spirit varies across communities. What do we want to achieve: Increased community capacity, sustainability and resilience of all communities across all places.
Culture - We are creative and our vibrant and diverse cultures are expressed and enjoyed widely	Attendance at cultural events or places of culture	NPF Indicator Measure: Percentage of adults who have attended or visited a cultural event or place in the last 12 months. Inclusive Growth Challenge: Income, disability and deprivation are factors in those reporting lower attendance at cultural event or place. Also, men were less likely to attend or visit or a cultural event or place. What do we want to achieve: Increased accessibility to cultural events and places specifically targeted at those less likely to attend or visit.
	Participation in a cultural activity	NPF Indicator Measure: Percentage of adults who have participated in a cultural activity in the last 12 months. Inclusive Growth Challenge: Lower proportion of men, those with degrees or professional qualifications, people with a disability, people living in deprived areas, those with a lower household income who have participated in a cultural activity.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
Human Rights - We respect, protect and fulfil human rights and live free from discrimination		What do we want to achieve: Increased participation in cultural activities amongst those groups who are less likely to participate..
	Growth in the cultural economy	NPF Indicator Measure: The amount of income generated by businesses, measured by Approximate Gross Value Added (aGVA), of the Creative Industries Growth Sector (GBP Millions). Inclusive Growth Challenge: Income generated by businesses in the Creative Industries Growth Sector is concentrated in the urban areas of Scotland. What do we want to achieve: Greater economic prosperity generated by Creative Industries Growth Sector for rural and island areas.
	People working in arts and culture	NPF Indicator Measure: The number of jobs in the Creative Industries Growth Sector (culture and arts). Inclusive Growth Challenge: Jobs in the Creative Industries Growth Sector are concentrated in large urban areas such as Glasgow and Edinburgh. What do we want to achieve: Greater proportion of good quality and well-paid jobs in the Creative Industries Growth Sector for rural and island areas.
	Public services treat people with dignity and respect	NPF Indicator Measure: Indicator in development. Inclusive Growth Challenge: Particular groups (e.g. lower income, people from ethnic minority groups) experience greater discrimination when using public services. What do we want to achieve: Greater involvement and engagement with all communities in design and operation of public services so that public services are accessible to and designed for all.
	Quality of public services	NPF Indicator Measure: Percentage of respondents who are fairly or very satisfied with the quality of local services (local health services, local schools and public transport). Inclusive Growth Challenge: Burden of poor and non-inclusive infrastructure disproportionately falls on vulnerable groups such as women, people with a disability, economically disadvantaged people etc. What do we want to achieve: Greater involvement and engagement with all communities in design and operation of public services so that public services are accessible to and designed for all.
	Influence over local decisions	NPF Indicator Measure: Percentage of people who agree with the statement "I can influence decisions affecting my local area". Inclusive Growth Challenge: Levels of perceived influence over local decision making have been consistently low over recent years, and across all communities of identity/ subgroups of the population. Particular groups (e.g. people with lower incomes, people with a disability, people from ethnic minority groups) relatively locked out of democratic and decision-making processes. What do we want to achieve: All communities and people within them have the ability and opportunity to influence decisions affecting their local area.
	Access to justice	NPF Indicator Measure: The proportion of adults who are confident that the Scottish Criminal Justice System, as a whole, makes sure everyone has access to the justice system if they need it. Inclusive Growth Challenge: People living in deprived areas and people with a disability are less confident that everyone has access to the justice system.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
International - We are open, connected and make a positive contribution internationally		What do we want to achieve: Greater accessibility (and confidence) that everyone can access the Scottish Criminal Justice System if they need it, particularly for groups and places which report lower confidence in the system.
	A positive experience for people coming to live in Scotland	NPF Indicator Measure: This indicator is intended to measure one important dimension of migrants' experiences in Scotland – a strong sense of belonging Inclusive Growth Challenge: migrants make an important contribution to Scotland's economy, society and culture. Net inward migration will be vital in meeting the challenges of an ageing population and associated productivity/growth challenges. This will be particularly important in light of Brexit. What do we want to achieve: a positive experience for migrants, support net inward migration and retention of migrants and lowering the dependency ratio across all areas of Scotland.
	Scotland's reputation	NPF Indicator Measure: Anholt GfK-Roper Nation Brands Index (NBI): Average scores of the six dimensions of national competence, given as a value (not percentage) out of 100. Inclusive Growth Challenge: a positive international reputation is important for trade and exports, attracting inward investment, and encouraging visitors to come to Scotland. This influences economic growth. What do we want to achieve: a positive international reputation and relations, with demand for Scottish exports, collaborative activity, inward investment and tourism.
	Scotland's Population	NPF Indicator Measure: Whilst Scotland's total population has grown, this is not uniform across all of Scotland. This measure helps monitor how many councils are experiencing depopulation. Over the latest year to mid-2020, 20 council areas experienced a falling population (mostly island and rural areas, as well as areas in the west of Scotland). This is a worsening position from 8 council areas in mid-2019. Inclusive Growth Challenge: population decline is impacting different parts of Scotland unevenly. A higher dependency ratio in certain areas (particularly island/rural/some post-industrial communities) has implications for the health of local/regional economies and will place pressures on public services. What do we want to achieve: population growth (natural change and net inward migration) in areas of Scotland currently suffering from depopulation.
	Trust in public organisations	NPF Indicator Measure: Indicator in development.
	International networks	NPF Indicator Measure: Indicator in development.
	Contribution of development support to other nations	NPF Indicator Measure: This indicator measures Scotland's contribution of development support to other nations. Inclusive Growth Challenge: global challenges such as poverty and climate change impact on every country and require international cooperation to tackle. Supporting the development of other nations and promoting sustainability and stability will have positive economic and social implications for Scotland, both in the immediate term (reputational) and long term (a more secure and sustainable planet). What do we want to achieve: Scotland makes a positive international contribution, in terms of both aid and other factors influencing international development.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
Education - We are well educated, skilled and able to contribute to society	Educational attainment	NPF Indicator Measure: 7 sub-indicators measuring primary and secondary literacy and numeracy, and school leavers achieving 1+ qualification by level Inclusive Growth Challenge: skills have a crucial role to play in supporting inclusive growth, through meeting the demands of the economy and society, encouraging investment, growing productivity, and allowing people to have rewarding careers at all stages of their life. There is typically an 18-20% pt. gap in literacy and numeracy attainment between the most and least deprived SIMD quintiles. What do we want to achieve: a high level of attainment in all areas of Scotland, closing the gap between the most and least deprived areas.
	Work place learning	NPF Indicator Measure: This indicator measures the percentage of employees who received on the job training in the last 3 months. Inclusive Growth Challenge: to enable the workforce to meet the needs of a changing economy and to improve productivity, it is important that people are able to upskill and reskill as needed. However, education remains concentrated at school level and there is a need for a greater focus on lifelong learning. What do we want to achieve: increase the proportion of employees who have received on the job training in the last 3 months, particularly in lower paid sectors and those more vulnerable to automation.
	Confidence of children and young people	NPF Indicator Measure: Indicator in development.
	Resilience of children and young people	NPF Indicator Measure: Indicator in development.
	Engagement in extra-curricular activities	NPF Indicator Measure: Indicator in development.
	Young people's participation	NPF Indicator Measure: Percentage of young adults (16-19 year olds) participating in education, training or employment. Inclusive Growth Challenge: those living in more deprived areas are less likely to be participating in education, training or employment than then from less deprived areas. What do we want to achieve: maximising the proportion of young people participating in education, training or employment in all areas
	Skill profile of the population	NPF Indicator Measure: Proportion of adults aged 16-64 with low or no qualifications at SCQF level 4 or below Inclusive Growth Challenge: There are regional disparities in the skills and qualifications that people have – particularly related to deprivation. In some areas of Scotland people can be 4x more likely to hold a professional qualification or degree than other areas. Skills/occupational segregation impacts on the gender pay gap, the disability employment gap, and race equality. What do we want to achieve: a higher level of skills/qualifications among all adults, closing the gap between the most and least deprived areas.
	Skill shortage vacancies	NPF Indicator Measure: Proportion of establishments reporting at least one skills shortage vacancy. Inclusive Growth Challenge: not being able to access the right skills or labour impacts on the ability of employers to be productive and expand. Areas that are ageing faster (particularly rural areas) will be more impacted by this than urban centres.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
		What do we want to achieve: employers are able to access the skills they require, enabling them to take advantage of opportunities to be more productive and grow.
	Skills underutilisation	NPF Indicator Measure: Proportion of establishments with at least one employee with skills and qualifications more advanced than required for their current job role. Inclusive Growth Challenge: underemployment can lead to greater levels of in-work poverty and reduced wellbeing (e.g. lower job satisfaction) for individuals. For the whole economy, it creates inefficiencies and represents a poor utilisation of labour. What do we want to achieve: alignment between the needs of the economy and society and the skills system.
Health - We are healthy and active	Healthy life expectancy	NPF Indicator Measure: The estimated average number of years that a new born baby could be expected to live in 'good' or 'very good' health based on how individuals perceive their general health. Inclusive Growth Challenge: health and economic prosperity are closely linked – therefore inclusive growth has an important role in addressing health inequalities. Life expectancy is much higher in the least affluent areas than in the most deprived areas – with a gap of 23.8 years for men and 22.6 for women. Poor health impacts on an individual's ability to actively participate in the economy, as well as leading to higher health-related costs. What do we want to achieve: higher average expectancy of years lived in good or very good health in all areas, with particular attention paid to the most deprived areas.
	Mental wellbeing	NPF Indicator Measure: Average score on Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). Inclusive Growth Challenge: Those living in most deprived areas of Scotland report lower average mental wellbeing compared to those living in the least deprived areas. This impacts on their health and ability to actively participate in the economy, as well as leading to higher health-related costs. What do we want to achieve: improved proportion of the population reporting good mental health in all areas, with particular attention paid to the most deprived areas.
	Healthy weight	NPF Indicator Measure: Percentage of adults (aged 16+) who are a healthy weight. Inclusive Growth Challenge: Obesity rates are consistently higher in Scotland's most deprived areas compared to the least deprived. This impacts on the long-term health of individuals and ability to actively participate in the economy, as well as leading to higher health-related costs. What do we want to achieve: A higher proportion of adults are a healthy weight in all parts of Scotland, with particular attention paid to closing the gap between the most and least deprived areas.
	Health risk behaviours	NPF Indicator Measure: Percentage of adults with two or more health risk behaviours (current smoker, harmful drinking, low physical activity, obesity). Inclusive Growth Challenge: People living in areas with high levels of multiple deprivation were most likely to have a high number of individual risks. This impacts on their long-term health and ability to actively participate in the economy, as well as leading to higher health-related costs. What do we want to achieve: lower levels of risky behaviour in all parts of Scotland, closing the gap between the most and least deprived areas.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
	Physical activity	NPF Indicator Measure: This indicator looks at the percentage of adults meeting physical activity recommendations. Inclusive Growth Challenge: 74% of adults in the least deprived areas met physical activity recommendations, compared with 54% of adults in the most deprived areas. This has an impact on health and wellbeing in both the short and long term. What do we want to achieve: higher levels of physical activity in all parts of Scotland, closing the gap between the most and least deprived areas.
	Journeys by active travel	NPF Indicator Measure: The proportion of short journeys less than 2 miles that are made by walking and the proportion of journeys under 5 miles made by cycling Inclusive Growth Challenge: active travel is important in supporting population health. Encouraging short trips within a neighbourhood also encourages local spending and a greater sense of community and wellbeing. However, active travel as a proportion of all short journeys has been very slow to grow (or not grown at all) over the last decade. What do we want to achieve: growing active travel for shorter journeys, supporting people to be healthier and more active, with benefits for local economies.
	Quality of care experience	NPF Indicator Measure: This indicator measures the percentage of people who describe the overall care provided by their GP practice as Excellent or Good. Inclusive Growth Challenge: The vast majority of NHS contacts are with primary care services. The quality of this healthcare influences wider health outcomes, in turn impacting on social and economic indicators. What do we want to achieve: a high proportion of people rating their GP care as good or excellent.
	Work related ill health	NPF Indicator Measure: This indicator measures the prevalence of self-reported illness caused or made worse by work for people working in the previous 12 months. Inclusive Growth Challenge: work-related ill health has both a human cost to individuals, impacting their quality of life and wellbeing, and a financial cost to the wider economy and society, notably in a loss of production and short and long-term healthcare costs. This therefore impacts on economic performance. What do we want to achieve: lower rates of work-related ill health and injuries.
	Premature Mortality	NPF Indicator Measure: European Age Standardised mortality rates per 100,000 for people under 75. Inclusive Growth Challenge: those living in more deprived areas show a markedly higher rate of premature mortality than those living in the least deprived areas. This points to a higher rate of different health issues and poorer social and economic outcomes in some areas than others. What do we want to achieve: a lower premature mortality rate in all areas, closing the gap between more prosperous and less affluent areas, supporting improved social and economic outcomes.
Poverty - We tackle poverty by sharing opportunities, wealth and power more equally	Relative poverty after housing costs	NPF Indicator Measure: The proportion of individuals living in private households with an equivalised income of less than 60% of the UK median after housing costs. Inclusive Growth Challenge: Poverty has a significant negative impact on outcomes e.g. health, education, wellbeing, etc. Certain groups are more likely to live in relative poverty – children in particular are a high risk group.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
		What do we want to achieve: Reduce the overall level of households/individuals in relative poverty (reducing housing costs and/or increasing the average median wages wages)– with a focus on certain target groups.
	Wealth inequality	NPF Indicator Measure: The Gini coefficient is a measure of inequality where 0 expresses perfect equality (every household has the same wealth) and 100 expresses maximal inequality (one household has all the wealth and all others have none). Inclusive Growth Challenge: there is a growing gap whereby a larger proportion of wealth is retained by a small number of households/individuals. What do we want to achieve: Greater distribution of wealth and opportunity (% increase share of wealth for those at the bottom) - reducing the gap and decrease in the gini co-efficient.
	Cost of living	NPF Indicator Measure: Cost of living refers to the percentage of net income spent on housing, fuel and food by households in Scotland and is measured as a three-year rolling average. Inclusive Growth Challenge: the % of net income spend on household costs is greater for some groups (e.g. BAME or low income households) and regions e.g. rural. What do we want to achieve: Reduce the % of net income spent and achieve a 'minimum' per household/per person (decrease costs related to household spend and/or increase median average wages) with a focus on the groups that are disproportionately affected).
	Unmanageable debt	NPF Indicator Measure: The Unmanageable Debt indicator measures the percentage of households where the household is falling behind with bills or credit commitments and either making excessive debt repayments or is in arrears on monthly commitments (liquidity problems); or where the household is burdened by high debt levels relative to annual income (solvency problems. Inclusive Growth Challenge: NA. What do we want to achieve: NA – see wealth inequality above.
	Persistent poverty	NPF Indicator Measure: The proportion of people in Scotland living in relative poverty after housing costs for three out of the last four years. Inclusive Growth Challenge: Poverty has a significant negative impact on outcomes e.g. health, education, wellbeing, etc. Certain groups are more likely to live in relative poverty – children in particular are a high risk group. What do we want to achieve: Reduce the overall level of households/individuals in relative poverty (reducing housing costs and/or increasing the average median wages wages)– with a focus on certain target groups.
	Satisfaction with housing	NPF Indicator Measure: The percentage of households who report being either "very satisfied" or "fairly satisfied" with their house or flat. Inclusive Growth Challenge: while generally satisfaction levels are high across Scotland, those living within the 20% most depraved communities are less likely to report satisfaction ("very" or "fairly satisfied"). What do we want to achieve: the % that report they are satisfied with their housing in the SIMD top 20% most deprived communities is in line with the national average.

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
	Food insecurity	NPF Indicator Measure: The proportion of adults reporting that, at some point in the previous 12 months, they were worried they would run out of food because of a lack of money or other resource. Inclusive Growth Challenge: food insecurity disproportionately affects certain groups and regions. What do we want to achieve: improve food security with a focus on target groups.
Children and Young People - We grow up loved, safe and respected so that we realise our full potential	Child social and physical development	NPF Indicator Measure: The percentage of children with a concern at their 27-30 month review Inclusive Growth Challenge: Poor health during a child's early years has a risk of impacting them for the rest of their life and is a key mechanism for intergenerational transmission of poverty[10]. Therefore, developmental concerns at an early stage can influence a child's later education, skills, productivity, wellbeing, etc. There is a correlation between areas of higher deprivation/lower income families and developmental concerns. What do we want to achieve: a lower level of children with developmental concerns, closing the gap between low and higher income families.
	Child wellbeing and happiness	NPF Indicator Measure: The proportion of children aged 4-12 who had an "abnormal" or "borderline" total difficulties score. Inclusive Growth Challenge: Behavioural and developmental challenges are likely to impact on a child's education and therefore on their participation in the economy and wider wellbeing. Children living in households with the lowest income (25%) were more than four times as likely to be scored "abnormal" or "borderline" compared to children living in households with the highest income (6%). What do we want to achieve: A lower level of children with behavioural and development challenges.
	Child material deprivation	NPF Indicator Measure: Percentage of children in combined material deprivation and low income after housing costs (below 70% of UK median income) Inclusive Growth Challenge: Growing up in poverty is known to have a harmful impact on a child's development and is likely to impact them throughout their life, including in terms of economic participation and wellbeing. What do we want to achieve: A lower level of children living in poverty.
	Children's voices	NPF Indicator Measure: Percentage of young people who feel adults take their views into account in decisions that affect their lives Inclusive Growth Challenge: Feeling listened to is an important part of overall wellbeing and supports a health and active contribution to society (and may shape perceptions held on to into their adult life). While there are not notable differences between urban and rural areas, children in more deprived areas are less likely to feel their voice is heard than those in the least deprived areas. What do we want to achieve: A higher proportion of young people feel adults take their views into account, closing the gap between the least and most deprived areas.

[10] https://www.who.int/bulletin/volumes/83/10/777.pdf?mod=article_inline

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
	Healthy start	NPF Indicator Measure: This indicator measures the perinatal Mortality Rate per 1,000 births (stillbirths plus deaths in the first week of life). Inclusive Growth Challenge: although low in all areas, infant mortality rates are higher in more deprived areas than the least deprived[11]. There is causal relationship between poverty and some factors influencing infant mortality (smoking, maternal health). What do we want to achieve: a lower perinatal mortality rate in all areas and income groups.
	Quality of children's services	NPF Indicator Measure: Percentage of settings providing funded Early Learning and Childcare (ELC) achieving good or better across all four quality themes. Inclusive Growth Challenge: childcare is a vital enabler of economic activity (it allows parents to go to work), as well as preparing children for later education and helping them to develop, form relationships, etc. These are all factors which will impact their later life. Quality childcare services are therefore important in giving children a good start in life. What do we want to achieve: all early learning and childcare services are rated as good or better.
	Children have positive relationships	NPF Indicator Measure: Percentage of S2 and S4 pupils who report to have "three or more" close friends. Inclusive Growth Challenge: Having friends as a child will help children to form healthy relationships later in their life, supporting their overall wellbeing and ability to be productive. There are also likely to be healthcare and other economic costs (e.g. from lack of participation) from social isolation. What do we want to achieve: children in all areas report having at least three close friends.
Environment -We value, enjoy, protect and enhance our environment	Visits to the outdoors	NPF Indicator Measure: Proportion of adults making one or more visits to the outdoors per week. Inclusive Growth Challenge: using the outdoors has positive effects on physical and metal wellbeing, however, access to, and visits to the outdoors is not proportionate – certain groups e.g. older people, people with poorer health and those from more deprived communities are less likely to visit the outdoors. What do we want to achieve: Ensure all people have access to outdoor space within a reasonable journey time – focus on those from target groups.
	State of historic sites	NPF Indicator Measure: The percentage of pre-1919 dwellings (sites) classified as having disrepair to critical elements. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted. What do we want to achieve: reduction in the number of residential dwellings (pre-1919) that report disrepair.
	Condition of protected nature sites	NPF Indicator Measure: This indicator reports the percentage of natural features on protected nature sites found to be in favourable condition. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted. What do we want to achieve: Maintain a high % protected nature sites found to be in favourable condition.

[11] https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10928-0

NPF Outcomes	National Indicators	NPF Measures vs Indicators Framed as Inclusive Growth Challenges and Objectives
	Energy from renewable sources	NPF Indicator Measure: This indicator measures the percentage of energy consumption which comes from renewable energy sources. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted – potential link to fuel poverty (i.e certain types of renewables have a lower tariff which could contourite to lowering energy costs) – see notes above re poverty/fuel poverty. What do we want to achieve: Reduce the overall cost of energy for households and increase the % of energy consumption which comes from renewable energy sources.
	Waste generated	NPF Indicator Measure: This indicator measures the amount of household waste generated in million tonnes. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted. What do we want to achieve: Increase recycling rates and improve access to recycling facilities.
	Sustainability of Fish Stocks	NPF Indicator Measure: This indicator measures the percentage of fish stocks fished sustainably. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted. What do we want to achieve: Increase the percentage of fish stocks fished sustainably.
	Biodiversity	NPF Indicator Measure: This indicator is a combination of trends for three measures of Scottish species, index of abundance of marine species (based on seabirds), index of abundance of terrestrial species and index of occupancy of terrestrial species. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted. What do we want to achieve: Protection and enhancement of natural environment to safeguard and enhance the abundance of marine and terrestrial species, and occupancy of terrestrial species.
	Clean seas	NPF Indicator Measure: This indicator measures the percentage of biogeographic regions with acceptably low levels of contaminants. Inclusive Growth Challenge: there are no apparent inclusive growth specific challenges noted – potential for contamination near areas of industrial decline and associated deprivation. What do we want to achieve: Increase the % of biogeographic regions with acceptably low levels of contaminants – supporting, safeguarding and enhancing the marine environment.