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Foreword

Shaping a positive future

Infrastructure influences every aspect of our lives. Access to energy and water are essential goods whilst digital and transport infrastructure are key to accessing services including employment, education, and social wellbeing.

It also inherently long-term. The decisions made today will shape the way we live over the next 50 years and play a key role in our ability to respond to challenges including the net zero transition and supporting growth across all parts of the UK.

Since today's infrastructure decisions will determine how we will live in the future, it would therefore seem obvious that we should seek input from exactly those people who will need to live with these decisions.

This document aims to do exactly this. It lays out a set of recommendations for the second National Infrastructure Assessment.

We have spoken to young professionals across the UK to understand their concerns, priorities, and ultimately the changes they would like to see over the next 10-30 years.

We have also engaged with policymakers and subject matter experts, as well as leveraged our own experience as infrastructure professionals, to translate these into practical recommendations that we would like to see as part of the second National Infrastructure
Assessment.

Beyond these specific recommendations, we emphasise the need for stronger public engagement across all groups, especially those who are currently underrepresented in decision-making processes.

Ultimately infrastructure must meet the needs of all its end users. It can only do so if decision-makers know what these needs are.

Building on citizen-led examples such as the Global Assembly and public forums can offer a far more accessible way for local communities, including younger generations, to shape infrastructure decisions and ultimately maximise their value.

Executive Summary

This report sets out the key priorities that the National Infrastructure Commission Young Professionals Panel (NIC YPP) has identified for the UK's economic infrastructure. These priorities have been informed by a combination of direct engagement with young people, engagement with wider stakeholders, and supporting research carried out by the NIC YPP.

These recommendations were shared with the National Infrastructure Commission as part of the development of the second National Infrastructure Assessment (NIA2).

The NIC YPP has identified three key areas of recommendations for NIA2 from the perspective of the next generation:

- **Reaching net zero**. We need to make it easier for people to make green decisions. This includes expanding support for insulation beyond the current Energy Company Obligation (ECO) and focusing on areas where either incentives are misaligned, e.g. the private rental sector, or alternatives such as heat pumps are more challenging to implement. Planning permission should also be streamlined for the installation of low carbon technologies. Beyond heat, the introduction of a standardised lifetime cost labelling scheme that reflects the carbon impact of products and services can help people to make more informed decisions and highlight trade-offs between net zero and other pressures such as cost or preferences.
- Maximising value of resources and investments. Investments in improving infrastructure need to reflect the realities of funding and financing challenges. It is therefore key to maximise the value per £ of investment, whether this is coming from private or public funding sources. This requires better targeting investment towards areas with the greatest potential impact, which is itself enabled by greater devolution of decision-making and funding, and making the most of our existing infrastructure. It also means ensuring that infrastructure investments are delivered in an efficient way, deploying good resource management to minimise waste and the corresponding financial and environmental cost.
- Enabling a just transition. All change risks can lead to winners and losers. A just transition ensures that we identify where action, or inaction, risks exacerbating existing inequalities and implement changes to mitigate these impacts. This is particularly important for recommendations around climate resilience, which has interdependencies with spatial inequalities, and we therefore recommend all policy recommendations should be informed with a distributional analysis, both before and after implementation. The Commission should also explore options for socialisation of costs and benefits where changes are expected to disproportionately benefit higher-income groups.

1 REACHING NET ZERO

The YPP recommends:

Increase support for energy efficiency in the private rental sector

Streamline planning permission for low carbon technologies

Introduce lifetime carbon labelling

1.1 A whole system approach to decarbonising heat

Recommendation: Increase support for energy efficiency in the private rental sector

The private rental sector currently faces several barriers to energy efficiency improvements and adoption of low-carbon technologies (LCTs) for heating. The YPP have set out some short-term solutions for energy efficiency improvement for Government to consider, alongside its medium-to-long term goals of accelerating technology adoption such as heat pumps. It is hoped that this action will ensure young people in private rented accommodation are not left behind, and do not suffer economically, in the clean energy heat transition. We suggest that government:

- Develops interventions to address the split incentive of energy efficiency or technology improvements made to private rental properties.
- Strengthens agency for renters by educating them on their rights and minimum energy efficiency standards they should be receiving in rental accommodation. This could be via programmes extended into schools, colleges, and universities to target young people leaving home for the first time and who are unaware of minimum legal standards.
- Increases public awareness of easy win, low regret energy saving measures (e.g., adjustments to boiler flow temperatures).

What problem does this address?

Decarbonising heat as part of the net zero transition requires progress on multiple fronts. Moving away from gas heating to alternative technologies such as heat pumps will be key to reducing the carbon impact of the buildings sector. However, we also need solutions to reduce overall energy consumption.

At the same time, the cost-of-living crisis and sharp increase in energy prices has highlighted the challenges of energy use for heating this past winter. Millions of Britons have doubled down on their energy expenditure, and along with others, many young people have been negatively impacted. The crisis has further highlighted the need for cleaner and cheaper heating, and better energy efficiency measures in domestic dwellings to reach the country's Net Zero Targets, as well as to keep Britons warm over the increasingly variable winter months.

Rented accommodation presents a strong example of where there is lack of agency for the consumer, which can sometimes inhibit the uptake of longer-term investments and solutions. Whilst lack of agency is often an issue that arises in many markets, it's particularly problematic in terms of domestic dwellings given that inability to keep your home warm affordably can be detrimental to mental and physical health.

The recommendations below are made as suggestions of measures that would benefit consumers:

- Improving energy efficiency for the properties that need it the most. Private rented sector dwellings have the lowest standards of energy efficiency with 45% failing to meet thermal comfort standards and 56% containing a serious hazard to tenants¹. In addition, the private sector has the lowest proportion of insulated solid walls and double glazing².
- **Mitigate fuel poverty.** Although only 19% of homes in England are in the Private Rented Sector, the sector houses 25% of all households in fuel poverty³; this could dramatically increase this year as fuel poverty is expected to double in England⁴. Private renters often do not have decision-making power to make changes to their property and are likely to suffer disproportionately from the consequences of poor energy efficiency both in terms of cost and health and wellbeing.
- Income equity. On average, private renters spent 32% of their household income, including Housing Benefit, on rent. This proportion is highest for those who live in London (42%). Data suggests that under 30s spend more of their earning on rent than any other working age group⁵.
- **Support the long-term transition to LCT solutions.** The temperature stabilising benefits of adequate insulation would also be beneficial to keep dwellings cool during hot summers and heat waves, which are becoming increasingly more common as a result of climate change.

Who needs to be involved?

A whole system approach should be considered in rolling out the proposed short-term solutions. We suggest that:

- Central Government set out an approach and strategy, funding, and parameters around measuring and reporting.
- Empower local authorities to take ownership of implementing initiatives regionally where possible.
- Introduce education materials into universities, schools, Job Aid Centres, etc.

¹ Rugg J and Rhodes D. The Evolving Private Rented Sector: Its Contribution and Potential, 2018. York: Centre for Housing Policy, University of York http://eprints.whiterose.ac.uk/135787/1/Private Rented Sector Report.pdf

² Office of National Statistics (ONS), English Housing Survey. Energy report, 2019-20.

³ Department for Business, Energy, & Industrial Strategy (BEIS), Annual Fuel Poverty Statistics Report, 2022 (2020 data).

⁴ House of Commons Library, Fuel Poverty, May 2022.

⁵ Growing share of under-30s pay unaffordable rent - BBC News

1.2 Streamlining planning permission for LCTs

Recommendation: A full review of planning rules for retrofitting LCTs

Many planning rules for retrofits are outdated and reflect a time when transition to LCTs were not considered a major policy goal. This could be a significant barrier to people who have the means and funding to install LCTs and could be contributing to low uptake of schemes such as the heat pump grant. We recommend that a full review of planning rules for LCT retrofits is carried out and rules streamlined to remove barriers. In particular, aspects such as the 'one metre rule' for outdoor heat pump units should be reviewed in the context of terraced of highly dense housing stock.

What problem does this address?

The Electrification of Heat Demonstration Project run by DESNZ is designed to assess and demonstrate the feasibility of widespread use of heat pumps in Great Britain. Under the project heat pumps were installed in a representative range of homes to better understand key technical and practical barriers.

The scheme found that for 5% of properties, whilst there was space for an outdoor unit, it would have been too close to a neighbouring property to meet noise limits and would therefore require planning permission. Planning permission applications were made in some cases but **none were approved**.⁶

Whilst this makes up a relatively small proportion of properties in the trial, it can have wider impacts on heat pump uptake. Our engagement with young people and experts in the field has highlighted that the planning process is perceived to be, or actually is, complex and time consuming. This perception of high hassle factor of making a planning permission application could be a barrier to wider uptake of heat pumps in a far larger proportion of homes.

Who needs to be involved?

We suggest that collaboration between DESNZ, DLUHC, Local Authorities and the sector on the specific issue of planning constraints for LCT uptake is prioritised. Building on the work of the Electrification of Heat Demonstration Project we also suggest that a specific study is carried out that assesses the broader impact of planning constraints on uptake across the UK housing stock.

⁶ Catapult energy systems (2022). BEIS electrification of heat demonstration project. Home Surveys and Install Report.

1.3 Lifetime carbon labelling

Recommendation: A standardised carbon labelling scheme

The introduction of a standardised nationwide carbon labelling programme can support consumers to make informed purchasing decisions. We recognise that the Government is planning to introduce a voluntary eco-labelling scheme for food and recommend that (1) this is a mandatory rather than voluntary scheme and (2) this is extended to other non-food shopping.

What problem does this address?

One of the key messages that came through during the net zero roundtable held between young people and NIC Commissioners is that without a standardised carbon labelling scheme it is impossible for consumers to make informed decisions on the basis of environmental costs. Workshop participants highlighted food and travel as clear examples where the various carbon trade-offs across the supply chain are not obvious (for example the combined trade-offs between local vs. imported, meat vs. plant-based, and resource intensity across different plant-based solutions).

We recognise that the Climate Change Committee has commented that voluntary eco-labelling alone is "unlikely to have a meaningful impact on emissions". We agree and recommend that a standardised mandatory carbon labelling scheme should be introduced, alongside other demand-side measures to encourage more sustainable lifestyles and stimulate markets for new products and services to support this change.

As part of the net zero roundtable, participants discussed going beyond eco-labelling to extend the UK's carbon pricing regime to carbon taxes. Participants reported that oftentimes the less sustainable option is also cheaper, for example domestic flights vs. train travel, and that the UK ETS is not sufficient to reflect the full carbon cost in consumer purchasing decisions.

Who needs to be involved?

The development of a mandatory standardised carbon labelling scheme needs to be led by government or another recognised scientific body that is perceived to be independent by the general public. This is key to ensuring transparency in the system. Workshop participants reported a lack of trust in in-house schemes such as the labelling of 'low carbon' flights or offers to consumers to pay to 'offset their carbon emissions' and often ignored them.

This independent or government body should then work closely with the sector across the supply chain to develop a robust carbon accounting workbook and ensure that the final design is feasible and can be applied consistently across companies. Finally, the government should work with local authorities and local charities to promote understanding of the new scheme amongst consumers.

⁷ CCC (2023). Progress in reducing emissions. 2023 report to parliament

2 MAXIMISING VALUE OF RESOURCES AND INVESTMENTS

The YPP recommends:

Increased devolution of decision-making for transport

Making the most of existing infrastructure and rebuilding confidence in public transport

Address construction waste and resources for infrastructure assets

2.1 Increased devolution of decision-making for transport

Recommendation: Greater local control for transport planning, including capital funding alongside local network management and development.

Infrastructure works best when it reflects local needs. The NIC recognised that local leaders are best placed to understand these local needs and define the solutions that should be delivered with support from government in the form of long-term stable funding as well as other tools and resources.⁸

The YPP supports this push for increased devolution. Local Authorities should be given powers to design their local transport systems, both in terms of planning and funding. This should cover all modes within their boundaries such as active travel, bus, tram, and rail, recognising that for users, it is mobility rather than mode that is the end outcome.

What problem does this address?

With this devolved control of funding, Local Authorities can align land use policies and transport initiatives into long-term plans which can instil greater confidence and stimulate growth through improved connectivity. In short, local control will help to maximise the value of each £ invested. Moreover, transport should be viewed as a whole network. The strategic need to connect people should be at the heart of decision making. Local leaders are best placed to understand the needs of the local communities and how best to direct transport networks to support them, particularly as these needs can be poorly reflected in metrics such as benefit cost ratios which continue to undermine the strategic importance of providing connectivity to all people and for all purposes.

Recent examples of precedent point to Greater Manchester's Bus Franchising and the long-time establishment of the London transport governance model.

Who needs to be involved?

The City Region Sustainable Transport Settlement (CRSTS) makes a great start which the YPP welcomes. But support is also needed beyond capital investment; control is also needed in network management and development.

Expanding CRSTS and control over local transport networks should be offered to all combined Authority City Regions who have resources to manage this. This process should bring together local transit operators (bus, rail, light rail) and city regional transport bodies, and enable synergies with other related areas such as growth and productivity, regeneration, and addressing inequalities. For places outside of city regions, regional transport bodies could be established to help drive and manage the transport networks for that region.

NIC Young Professionals Panel

⁸ NIC (2023). Getting cities moving. Adaptive transport solutions for an uncertain future.

2.2 Making the most of existing transport networks

Recommendation: In places with good levels of existing connectivity, invest in schemes that can maximise use of the existing network

In areas that have good levels of existing connectivity, enable investments focused on maximising value of the existing infrastructure. Locally targeted research can help to understand existing barriers to public transport utilisation, for example challenges around perceived or actual safety and comfort, low awareness of available routes or stops, or low confidence in using public transport, or misalignment of timetables for multi-modal trips.

These learnings should then be used to inform schemes to maximise the value of the existing network, for example:

- Information campaigns to promote use of public transport, particularly given the large number of schemes currently ongoing to support patronage e.g. £2 bus fare, CRSTS transport interventions, BSIP interventions.
- Investments in real-time information or other measures to increase ease of journey planning such as regional apps that cover all relevant bus operators and offer live updates.
- Schemes to support multi-modal trips such as realignment of timetables across modes, or supporting multi-operator ticketing.
- Schemes to improve user experience including improvements in lighting, weather proofing, and stop locations with good natural surveillance.

What problem does this address?

The UK faces a significant infrastructure funding gap, and it is therefore key that we maximise the value of our existing infrastructure networks, particularly in areas where connectivity is already high (for example the Department for Transport has recently developed a new connectivity metric). However, many people have a negative perception of public transport which can act as barrier to patronage. Addressing issues with public transport and communicating these improvements to improve public perception are equally important in maximising the value of our transport network.

This may be particularly important in the context of the pandemic, during which public messaging has been to avoid public transport. There has not been a corresponding national campaign to rebuild confidence in public transport and public perception of public transport can often be negative. For example, as part of its social research the YPP carried out a series of structured interviews with young people on their perception of bus travel. Many interviewees had a negative view of bus travel despite not having used a bus in recent times.

Who needs to be involved?

Central government needs to provide support to local transport authorities in a way that allows them to (1) identify local barriers to utilisation of existing networks, (2) target these issues (including flexibility across capital and resource funding, and (3) promote these changes amongst the general public.

2.3 Address construction and infrastructure waste and resource management

Recommendation: Engage with key working groups focused on mitigating construction and demolition waste with a view to developing policies to address this area as part of circular economy initiatives.

Construction and demolition (C&D) waste is a key area that needs to be addressed – both for the UK to meet its net zero ambitions, and to reduce the financial and environmental impacts of C&D. There is currently a lack of a consistent, high-quality resource management approach across the industry, and C&D activity can often lead to excessive amounts of environmental damage and waste of resources.

We recommend that C&D resource management should be addressed as a priority as part of government thinking. As a first step, we recommend that relevant government organisations, including the NIC, engage with industry bodies and initiatives to identify major barriers to effective waste management and develop policy solutions to address areas of improvement at scale. Some examples of industry initiatives include:

- The UK Green Building Council's work on the <u>Circular Economy</u>
- The Zero Construct Network
- Orms's work on <u>Material Passports for Buildings</u>

What problem does this address?

C&D waste accounts for 40% of UK landfill. On top of that, the production, transport, and installation of materials consumed during construction accounts for over 11% of national carbon emissions.

Despite the significant carbon impact of construction and demolition waste, material management and resulting levels of waste in the sector are extremely poor. 13% of materials delivered to site go directly to waste without ever being used. This highlights the serious misalignment in resource management in construction, resulting in excessive waste production and unnecessary costs, in both financial and environmental terms.

There have been multiple reports, from a range of industry bodies, highlighting not only the risks but the opportunities associated with construction waste management. The risks range from severe degradation of our soils resulting in significant carbon emissions and long-term stability concerns, to a lack of enforcement of current waste regulations resulting in low compliance from waste producers and facilities, and damaging waste management practices. A sample of these reports are highlighted below:

Construction Leadership Council & The Green Construction Board: <u>The Routemap for Zero</u>
 Avoidable Waste in Construction

- The Soils in Planning and Construction Taskforce: <u>Building on soil sustainability: Principles for soils in planning and construction</u>
- Qualis Flow: The <u>UK Construction Industry Waste Report 2023</u>
- A collaborative report by a wide range of industry figures and leaders: <u>Our shared</u> <u>understanding: a circular economy in the built environment</u>
- EPSRC-NSF Infrastructure Workshop: <u>The role of funding, financing and emerging technologies in delivering and managing infrastructure for the 21st century</u> (see Section 6.4)

Who needs to be involved?

The circular economy in construction presents a huge opportunity to dramatically reduce national carbon emissions and costly imports, and to improve national supply chain independence and resilience, while cutting waste generation.

The initiatives and reports listed above are indicative of the work that has already been done in this area, much of which has been led by the private sector and industry bodies. Converting these efforts into a consistent, cross-industry approach to resource management and C&D waste minimisation will require a commensurate effort in policymaking, which the YPP believe the NIC is well-placed to lead.

Following on from the NIC's work on waste and the circular economy in NIA2, the YPP recommends that the NIC and government bodies consult with construction industry working groups, such as those listed above, to establish a consensus for policy recommendations in this area. As examples, these recommendations could be aimed at setting clear targets for reducing C&D waste generation and enabling new opportunities for material reuse and repurposing where appropriate. They may include commissioning further studies if gaps in the evidence base are identified. The YPP also recommends that the NIC adopt a language of 'resource' as opposed to 'waste', as this implies further value to be derived over the full life cycle of a material, as opposed to merely the life cycle of a building or infrastructure asset.

3 ENABLING A JUST TRANSITION

The YPP recommends:

Recognise and account for interdependencies between climate resilience and spatial inequalities

Establish policy requirements to monitor environmental and social impacts post-construction

3.1 Recognise and account for interdependencies between climate resilience and spatial inequalities

Description of recommendation

Place-based impacts should be a cross-cutting theme across all of the Commission's studies to ensure that any infrastructure recommendations take into account spatial inequalities that could either be addressed or exacerbated by these recommendations. This should consider both between- and within-area inequalities (we note that the Bank of England has just published a new index on within-area inequality at local areas at ward level). This is particularly important for recommendations around climate resilience, which has interdependencies with spatial inequalities.

One option is to ensure that all studies are accompanied by a distributional analysis alongside NIA2, its underlying studies and/or future reports (where this is not already the case). This would ensure that the need to implement mitigation measures to avoid negative impacts or enhance benefits to vulnerable communities are identified at the earliest stages of a project and taken into account in decision-making processes.

What problem does this address?

Evidence shows that lower income areas are more likely to be exposed to climate risks, often linked to (lack of) infrastructure. This includes but is not limited to flood risks, surface temperature as well as air and noise pollution (due to proximity to roads, wastewater, energy production or waste management plants). For example, a disproportionate number of homes at high risk of flooding are located in areas with high deprivation (as defined by the Index of Multiple Deprivation), as shown by a recent Defra study. This link does not seem to be recognised in the recent NIC flood resilience study.

The theme of spatial inequality with regards to climate resilience and environmental impacts also emerged as part of the Quality of Life Symposium and the related Infrastructure and Quality of Life literature review (Buser et al, 2020).

In addition, our research on the Heat Transition within the Private Rented Sector demonstrates the extent of fuel poverty within lower income groups and young professionals, highlighting that these groups are more likely to face barriers to the low-carbon heat transition, live in poorly insulated homes, and are less resilient to changes in regulations and prices. These households tend to be concentrated spatially in areas of higher deprivation.

Who needs to be involved?

Government guidance on policy development best practice should require explicit consideration of the interrelation of climate resilience and spatial inequalities. This is already captured in part, as part of the Green Book Review, but applies more generally to policy development beyond options captured by the business case appraisal process. This should also be a consideration when making decisions on the geographical area of intervention. As part of this analysis, we anticipate policymakers will need to engage with other government bodies (e.g. DWP, DEFRA, EA), as well as consumer bodies (e.g. Citizens

Advice). Over time, distributional analysis may also become a requirement for developers when carrying out a business case for Nationally Significant infrastructure projects, especially when these require funding contributions from the public sector, or as part of more general planning and consent requirements.

3.2 Establish policy requirements to monitor environmental and social impacts post-construction

Recommendation: Ensure continuous monitoring and evaluation processes beyond the appraisal and design stage

New infrastructure investments often undergo a detailed appraisal process during the planning phase which includes identifying potential adverse impacts and associated mitigations. However, this process often ends at the planning stage with limited to no requirements for ongoing monitoring and evaluation of the effectiveness of these mitigations, and indeed the effectiveness of the intervention as a whole.

The YPP recommends that all schemes are subject to proportionate monitoring and evaluation requirements. This will ensure that (1) every scheme can generate learnings for future decision-making and design and (2) any need for additional mitigations can be identified and addressed.

What problem does this address?

Environmental, health, and socio-economic appraisals are required during the planning stage for new infrastructure investments. Whilst there are opportunities for improvement within this process, such as better consideration of non-monetised socio-economic and environmental impacts, this process is well established and correct application can help to identify negative impacts that need to be mitigated as part of the options development either through adapting the design or monetary contributions to mitigate the risk.

When mitigation measures are identified, their delivery is monitored throughout the construction phase. In addition, the delivery of social value strategies is increasingly required for Nationally Significant projects, to ensure that benefits of the infrastructure development are maximised within the local area and contribute to local communities during construction.

When the construction phase is complete however, these mechanisms are often not continued. Whilst there has been a greater push for ongoing monitoring and evaluation of publicly funded infrastructure projects to generate learnings for future decision-making, there is still significant variation across the public sector infrastructure portfolio. Within private sector funded schemes, there do not appear to be requirements to monitor how implemented strategies or enhancements perform during the operation of the project, or indeed whether the project has delivered its intended benefits at all.

This would be useful to confirm not only that the measures achieved the required results and are effective in sustaining them, but also to identify, correct and/or enhance any potential unintended consequence of the interventions for future decision-making. This should be targeted at monitoring (1) the overall strategic objectives used to justify the investment to begin with and (2) the effectiveness of mitigation measures implemented to meet planning obligations and identified as part of the social value strategy (if carried out) post-construction. If the monitoring identifies negative impacts, additional interventions should be identified and delivered to mitigate them.

Who needs to be involved?

This monitoring should be a joint requirement of the infrastructure operators and the local planning authority. This should follow the delivery mechanisms used for monitoring and reporting during the construction phase:

- Infrastructure operators to be responsible for the data collection, analysis and reporting on their findings. If additional mitigation is required, operators should be responsible for delivery, either directly or through the support of local groups/charities.
- Local planning authorities should be responsible for reviewing the monitoring reports and hold the operators accountable for them. For large and nationally significant projects, this may be complemented by monitoring and evaluation carried out by central government, particularly where this activity would have a high resource cost for local planning authorities.
- Community groups and charities may be involved by the infrastructure operators to support the delivery of any required additional mitigation measure, if negative impacts are identified in the monitoring reports.