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# TfN Future Travel Scenarios and Decarbonisation Pathways

## 1. Executive Summary

- 1.1 This note provides an overview of TfN's work to develop Future Travel Scenarios and Decarbonisation Pathways and how the two parallel workstreams relate to one another.
- 1.2 TfN's Future Travel Scenarios will be used to explore how different uncertain trends in society, the economy and national policy could influence the level and distribution of travel demand in future. By using a series of different Future Travel Scenarios we aim to future-proof our decision making as much as possible, making it resilient to wide ranging and cross-sector uncertainties.
- 1.3 The Future Travel Scenarios represent factors that are external to TfN's direct control and are used as 'reference case' scenarios to test different TfN strategies and policies in terms of their performance against objectives.
- 1.4 TfN's Decarbonisation Pathways are intended to show what policies and measures are likely to be required to achieve TfN's target of a zero emission transport system before 2050. The level of additional action required to achieve this target will vary depending on which TfN Future Travel Scenario is being considered. In each scenario, the level and distribution of travel demand is different, as is the level of national Government ambition and support for decarbonisation in the North. Assessing the decarbonisation 'policy gap' in each scenario will allow TfN to develop a resilient Decarbonisation Strategy that can adapt to different future circumstances.

## 2. TfN Future Travel Scenarios

- 2.1 Scenario planning is a technique used to inform medium to long-term strategic analysis and planning. TfN has adopted this approach to help future-proof decision making and ensure it is informed by vision-led strategic transport planning. Starting in late 2019, TfN has been working with Local Authority Partners, National Delivery Partners and academic experts to develop a new set of Future Travel Scenarios. These stakeholders have been involved throughout and have provided valuable expertise, intelligence and viewpoints, particularly regarding local strategies and priorities. The scenarios represent uncertainty across the the following five external factors:
  - Growth in the population and economy;
  - Spatial planning policy and the distribution of growth;

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- National environment and sustainability policy;
  - Technological change; and
  - Social and behavioural change.

2.2 The Future Travel Scenarios will be used by TfN in the following ways:

- **Communicating our approach to uncertainty:** TfN will publish a report on the refreshed scenarios in early autumn 2020. This will articulate the process of developing the scenarios, our understanding of key drivers and policies, the implications for future travel patterns and how the scenarios will be used in to help TfN continue to develop its strategy for an uncertain future.
- **Use in TfN programmes:** The scenarios will be used to test a range of plans under TfN's Investment Programme and are key to enhancing TfN's Analytical Framework to strengthen business case development. By assessing which interventions perform best in a range of scenarios, we can develop transport policies and strategies that are robust, resilient, flexible and innovative.
- **Refining the TfN and Partner vision:** The Future Travel Scenarios represent a set of plausible futures with different outcomes for the North. The development and use of these scenarios helps to inform a discussion with TfN Partners on what a preferred set of outcomes should look like. Along with the other workstreams to develop the Northern Transport Charter, the scenarios can be used to help to establish a more detailed and holistic representation of this TfN vision.
- **Improving understanding of policy interactions:** The scenarios include assumptions on key policy areas where TfN influence is to some extent indirect, such as technology uptake and spatial planning. Scenario analysis provides a way for TfN to test the interactions between these policies and its transport strategy to identify synergies that contribute towards realising the overall vision. This analysis will provide new evidence on the local and national policies that complement TfN's strategy, and that TfN and partners should support.

2.3 The scenarios have been finalised in qualitative narrative form, with work to produce quantified representations of the scenarios currently underway. The key elements of these scenarios can be summarised using the following set of 'what if' questions:

- **Scenario 1: Just About Managing** - What if society keeps developing broadly following existing trends? This scenario is led by markets, without much political direction, with its biggest driver being economic.

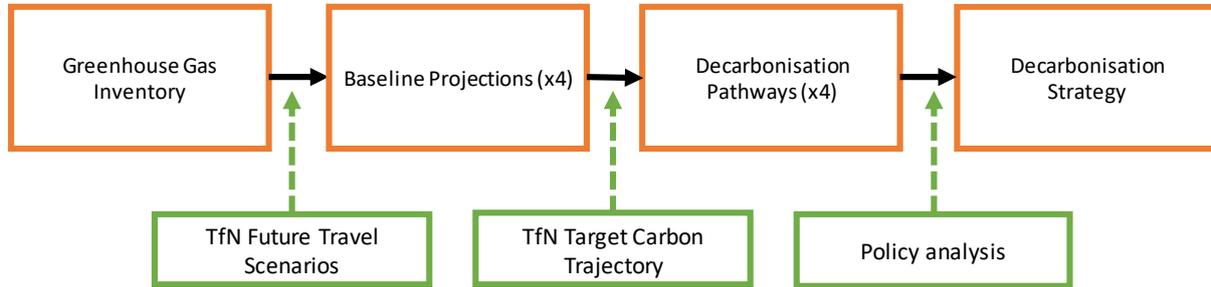
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- **Scenario 2: Prioritised Places** – What if society becomes focused on quality of life, place-making and community, rather than primarily economic growth? This scenario is led by a change in priorities, with its biggest driver being the push for a fairer redistribution of economic prosperity.
  - **Scenario 3: Digitally Distributed** – What if society achieves NPIER outcomes by using technology solutions to create connections and agglomeration across towns and cities? This scenario is led by technology and some policy influence, with the biggest drivers being technical advances and a willingness to embrace mobility-as-a-service and shared mobility.
  - **Scenario 4: Urban Zero Carbon** – What if society achieves NPIER outcomes by using policy interventions to maximise energy efficient city growth? This scenario is led by public and political attitudes to climate action and urban place-making, with the biggest drivers being strong Government policy and urban densification.
- 2.4 The key next step is to represent the Future Travel Scenarios in TfN's Northern Economy and Land-Use Model (NELUM) to quantify the potential changes in travel patterns that could emerge in each future. NELUM is particularly well-suited to this analysis because it allows representation of non-transport policies such as spatial planning and skills.
- 2.5 The quantified scenarios will be reviewed and refined collaboratively with TfN Partners and taken through TfN governance in the form of a report to be published in early autumn 2020, as mentioned above.
- ### 3. TfN Decarbonisation Pathways
- 3.1 TfN's Strategic Transport Plan commits to lead the scoping and development of a 'Decarbonisation Pathway to 2050' so that a zero carbon transport network is at the heart of public policy making and future investment decisions in the North.
- 3.2 An acceleration towards a zero-carbon transport network must therefore be at the heart of TfN's investment programme planning and appraisal processes. The primary objective of the 'Pathway to 2050' will be set out how this can be achieved, based on a clear framework of targets, parameters and policies, which aligns with policy and planning frameworks at both the national and local levels.
- 3.3 The 'Pathway to 2050' will be built up from several components:
- **Greenhouse Gas Inventory.** A Greenhouse Gas Inventory is an estimate of the current or historic emissions from a specific set of

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sources. Following advice from Temple in 2019, we are establishing an inventory for emissions from land transport, covering all travel within the North of England with a base year of 2018 (in line with new TfN transport models). The benefit of developing the inventory in house is that embedding the carbon tools within TfN's Analytical framework will enable us to look at emissions at a more granular level than the tools currently used by DfT, we believe this provides real added value to TfN business case development as well as supporting partners in considering a more place based approach to decarbonisation of transport.

- **Baseline projections.** Taking the inventory as a fixed starting point, baseline projections show how emissions could change in future as the external drivers that affect emissions evolve over time. From a TfN perspective, these external drivers are captured by the TfN Future Travel Scenarios. This means there are four different baseline projections that TfN will use to develop its Decarbonisation Pathways. The scenarios range from projections under which limited progress is made towards decarbonisation targets, to those in which there is a more concerted national effort and progress is consistent.
- **Target trajectory.** The target trajectory is the overall annual emissions trajectory to which the Pathways will be aligned. The specific details of this will need to be agreed by TfN Board, but the end point will be a zero emission transport system before 2050, and an interim trajectory aligned to the rate of progress in the CCC's Carbon Budgets as a minimum.
- **Pathways.** The Pathways will show what additional measures are required to get from each baseline projection (based on each of the four TfN Future Travel scenarios) to the target trajectory. Measures will cover changes that affect both demand and the emissions intensity of vehicles. For some scenarios, the required additional measures will be significant, because of a deficit in national action, whereas in other scenarios more limited additional action will be required.
- **Policy analysis.** The final step will be to analyse the policies required to roll out the additional measures in each scenario and assess the extent to which TfN and Partners can take these steps without national support, or whether additional support is required. This support could be in the form of additional national policy or Government provision of more devolved funding or powers. This analysis will provide TfN and Partners with further evidence of what new policies are required for the North to realise its objectives.

3.4 This process and these components are set out as a flowchart in Figure 1 below.



**Figure 1:** Flowchart of process for developing Decarbonisation Pathways and Strategy using the TfN Future Travel Scenarios

3.5 Use of the TfN Future Travel Scenarios to develop our Decarbonisation Pathways recognises that there remains significant uncertainty in the level of national policy that will be brought forward to reduce emissions and in the wider drivers of demand and technology that can indirectly affect emissions. The result will be a series of Pathways, rather than one single Pathway, but there will be many common features across these Pathways that will allow us to develop a coherent, resilient Decarbonisation Strategy.