

# Briefing Note: Transport Industry Climate Change Adaptation Training Needs

## Background

We are beginning to feel the impact of climate change despite action being taken to mitigate climate change through net-zero and low carbon initiatives. In the UK climate change is causing more frequent and more extreme weather events. These adverse conditions are affecting the reliability and safety of our transport systems and can have significant costs. We can improve the resilience (resistance, robustness, reliability or recovery) of our transport infrastructure to extreme weather through taking action to adapt to climate change by modifying and improving transport systems.

Technological innovations and enhancement schemes can be used to adapt infrastructure. However, fundamental to an increase in the transport industry's capacity to adapt to climate change is improving the knowledge and skills of its workforce. This project is working to support the development of the transport industry's adaptive capacity through education and training. As part of the first phase of work, this research undertook a survey of transport industry professionals to identify the knowledge, skills and training needs of the transport industry. The outputs of this survey will inform the next phases of this project to develop climate change adaptation training materials for transport industry professionals.

## Key Research Findings

The purpose of this study is to understand the breadth and depth of knowledge, types of skills and training needs of transport industry professional to enable them to adapt our transport to the impacts of climate change. Ultimately asking "What knowledge, skills and training do transport industry professionals need to adapt to climate change?"

The survey captured input from a variety of transport industry professionals, identifying an overall picture of the current capability and needs of the industry. The vast majority of respondents agree that transport professionals need to know about the impacts of climate change on transport and need additional training to create resilient transport systems. Meanwhile, only one fifth of respondents thought that transport professionals generally have the skills necessary to adapt transport infrastructure to climate change.

**96% think transport professionals need to know about the impact of climate change on transport.**

**20% think that transport professionals generally have the skills to adapt transport to climate change.**





**92% think transport professionals need additional training to create resilient transport systems.**

Respondents were asked for their thoughts on the competence level across 11 broad transport industry roles. There were five competence levels included, awareness, understanding, applying, leading, expert. Whilst many respondents thought these were adequate, a number of responses indicated there should be a greater inclusion of professionals in operations roles as well as for drivers.

Perspectives were gathered on the need for personnel in each of the 11 transport roles to have competence in 4 core knowledge elements and 6 skills to support adaptation across transport networks. Where the knowledge and skills elements were selected by over half of respondents these can be considered as required knowledge and skills for different transport roles. Combining the specific knowledge and skills elements identified with the level of competence expected by most respondents to develop a Climate Change Adaptation Competence Matrix.

## A Climate Change Adaptation Competence Matrix

Knowledge and Skill Elements		Transport Roles										
		1 Policymakers	2 Strategic Planners	3 CEO or Directors	4 Economists	5 Project Sponsor	6 Project Manager	7 Infrastructure Designer	8 Infrastructure Engineer	9 Asset Managers	10 Maintenance Technicians	11 Asset Inspector
K1	Knowledge of current adaptation strategy	Expert	Leading	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying
K2	Knowledge of climate change impacts on transport infrastructure	Expert	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying
K3	Knowledge of adaptation actions for transport systems	Expert	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying
K4	What a resilient transport system looks like	Expert	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying	Applying
S1	How to create strategic climate change adaptation plans	Expert	Applying									
S2	How to apply future climate projections	Expert	Applying					Applying	Applying	Applying		
S3	How to assess climate change risks	Expert	Applying		Applying			Applying	Applying	Applying		Applying
S4	How to design for future climates		Applying					Applying	Applying			
S5	How to evaluate the costs and benefits of adaptation options	Expert	Applying		Applying	Applying	Applying	Applying		Applying		
S6	How to evaluate transport resilience	Expert	Applying		Applying	Applying	Applying	Applying	Applying	Applying		Applying

 Awareness  
  Understanding  
  Applying  
  Leading  
  Expert

**Transport industry professionals agreed that understanding (as a minimum) of all four knowledge elements are required by nearly all transport roles.**

**Policy makers, Strategic Planners and Infrastructure Designers need leading expertise across nearly all knowledge and skill elements.**

**All respondents agreed that Economists should be competent at applying cost benefit evaluations to adaptation options.**

**Further engagement with industry is required to identify the climate change adaptation training needs of transport operators and vehicle drivers.**

### Next Steps

Utilising the matrix of transport roles and knowledge and skills elements, a modular climate change adaptation training package will be developed. The training will address each of the core knowledge and skills elements for the transport roles identified through this stakeholder engagement activity. The training content developed will enable appropriate transport professionals to increase their competence relating to climate change adaptation to Awareness as a minimum starting point in the initial instance.

**The next stages of this project will deliver climate change adaptation knowledge and skills training modules for the transport industry. The outputs will be made available for other areas of the industry.**

**If you'd like to be kept up to date with this project, please contact Dr Rachel S Fisher [R.S.Fisher@bham.ac.uk](mailto:R.S.Fisher@bham.ac.uk).**

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