Title

Expanded Workforce Development Opportunities are Needed for Transportation Sector Climate Adaptation Professionals

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POLICY BRIEF

Expanded Workforce Development Opportunities are Needed for Transportation Sector Climate Adaptation Professionals

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Issue

Early investments in climate change research, policy, and planning focused heavily on climate mitigation—efforts to reduce greenhouse gas emissions. As climate change impacts have increased in severity, this focus has broadened to include a greater emphasis on climate change adaptation—efforts to minimize the adverse impacts of climate change through hardening or relocating infrastructure, changing design standards, improving redundancy, and other measures. Adaptation initiatives are essential to the resilience of the transportation system in the face of increasingly severe climate threats; the failure to adapt will result in repair and recovery efforts absorbing an ever-increasing share of limited transportation resources.

The growing emphasis on climate adaptation has created a demand for professionals with a new, interdisciplinary skillset. However, the pathways for developing the skills and competencies for adaptation careers in the transportation field are not well established. The knowledge base for climate adaptation is changing rapidly and the climate adaptation process itself is inherently complex. Training and educational opportunities in climate adaptation are increasing, but remain relatively limited.

To understand current climate adaptation workforce development needs, researchers at the University of Vermont surveyed state departments of transportation and metropolitan planning organizations about training needs and opportunities at their agencies and analyzed a survey issued by the American Society of Adaptation Professionals as part of their mentorship program. The researchers also catalogued climate adaptation graduate and certificate programs at universities around the country to assess whether these programs aligned with identified needs.

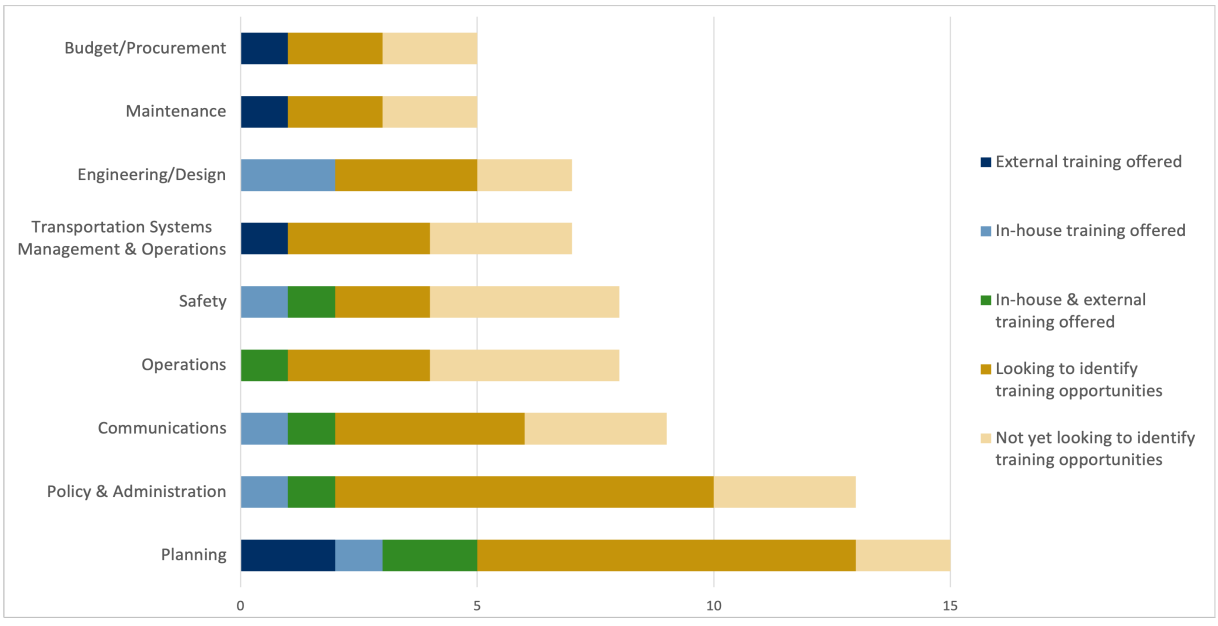

Figure 1. The status of climate adaptation training opportunities within different branches at 17 transportation agencies around the country

Core Competencies for Climate Adaptation Professionals

Climate Science: A basic understanding of climate change and local climate trends needs to be embedded throughout transportation agencies. Staff understanding of the broad pattern of climate threats in their region will inform almost all aspects of agency operations. A more advanced understanding of climate science facilitates collaboration with climate modelers to obtain and understand high-quality, localized, climate forecasts at actionable spatial resolution.

Adaptation Strategies: A broad understanding of responses to climate impacts needs to be widely available, and a more detailed understanding of specific strategies needs to be concentrated within different agency branches.

Communication: Communication skills take on an outsized role in the climate adaptation process. These skills are necessary for managing internal and external climate skepticism, making the case for adaptation funding, engaging stakeholders in scenario planning and complex conversations about risk, and promoting collaboration across siloed disciplines.

Selection and Prioritization of Adaptation Measures/Decision-making Under Uncertainty: Uncertainty in the magnitude of climate change impacts poses a challenge for adaptation initiatives. Planners and engineers must consider a range of conditions, look for design options that maintain flexibility, and engage stakeholders to determine acceptable risk thresholds.

Key Research Findings

Transportation agencies are seeking adaptation training across many agency functions. Of the 32 agencies that responded to the training needs and opportunities survey, 17 identified adaptation training as important to the success of multiple branches in their agencies. Some of these agencies are already offering adaptation training opportunities, while many are still looking to identify training opportunities for their staff (Figure 1).

Developing the capacity to support equitable and effective adaptation will require professionals with an expansive set of skills that put the design and management of the transportation system in a larger environmental, social, and economic context. Surveys and reviews of adaptation initiatives and higher education offerings revealed convergance around four core competencies that are important for climate adaptation professionals (Text Box).

Skepticism about the need for climate adaptation remains a barrier. Over 45% of agencies that responded to the needs and opportunities survey did not believe that adaptation training was important to their agency, and many adaptation initiatives cite climate skepticism as a barrier to adaptation.

Policy Implications

Transportation agency leaders and policymakers can take several actions to grow climate adaptation capacity within the transportation sector, including: 1) continuing to build support for climate adaptation within their agencies and jurisdictions; 2) prioritizing broad-based training in climate literacy and region-specific climate threats; 3) providing resources and time to support staff in pursuing additional training opportunities; and 4) incorporating the climate adaptation core competencies identified above into new hiring decisions, especially for planners and engineers.

More Information

This policy brief is drawn from "Workforce Development Needs of Transportation Sector Climate Adaptation Professionals," a white paper from the National Center for Sustainable Transportation, authored by Jonathan Dowds and Glenn McRae of the University of Vermont. The full report can be found on the NCST website at https://ncst.ucdavis.edu/project/career-pathways-transportation-sector-climate-adaption-professionals.

For more information about the findings presented in this brief, contact Jonathan Dowds at jonathan.dowds@uvm.edu.

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