

Why GAO Did This Study

The federal government invests billions of dollars annually in infrastructure, such as roads and bridges, facing increasing risks from climate change. Adaptation—defined as adjustments to natural or human systems in response to actual or expected climate change—can help manage these risks by making infrastructure more resilient.

GAO was asked to examine issues related to infrastructure decision making and climate change. This report examines (1) the impacts of climate change on roads and bridges, wastewater systems, and NASA centers; (2) the extent to which climate change is incorporated into infrastructure planning; (3) factors that enabled some decision makers to implement adaptive measures; and (4) federal efforts to address local adaptation needs, as well as potential opportunities for improvement.

GAO reviewed climate change assessments; analyzed relevant reports; interviewed stakeholders from professional associations and federal agencies; and visited infrastructure projects and interviewed local decision makers at seven sites where adaptive measures have been implemented.

What GAO Recommends

GAO recommends, among other things, that a federal entity designated by the Executive Office of the President (EOP) work with agencies to identify for local infrastructure decision makers the best available climate-related information for planning, and also to update this information over time. Relevant EOP entities did not provide official comments, but instead provided technical comments, which GAO incorporated, as appropriate.

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CLIMATE CHANGE

Future Federal Adaptation Efforts Could Better Support Local Infrastructure Decision Makers

What GAO Found

According to the National Research Council (NRC) and others, infrastructure such as roads and bridges, wastewater systems, and National Aeronautics and Space Administration (NASA) centers are vulnerable to changes in the climate. Changes in precipitation and sea levels, as well as increased intensity and frequency of extreme events, are projected by NRC and others to impact infrastructure in a variety of ways. When the climate changes, infrastructure—typically designed to operate within past climate conditions—may not operate as well or for as long as planned, leading to economic, environmental, and social impacts. For example, the National Oceanic and Atmospheric Administration estimates that, within 15 years, segments of Louisiana State Highway 1—providing the only road access to a port servicing 18 percent of the nation's oil supply—will be inundated by tides an average of 30 times annually due to relative sea level rise. Flooding of this road effectively closes the port.

Decision makers have not systematically considered climate change in infrastructure planning for various reasons, according to representatives of professional associations and agency officials who work with these decision makers. For example, more immediate priorities—such as managing aging infrastructure—consume time and resources, limiting decision makers' ability to consider and implement climate adaptation measures. Difficulties in obtaining and using information needed to understand vulnerabilities and inform adaptation decisions pose additional challenges.

Key factors enabled some local decision makers to integrate climate change into infrastructure planning. As illustrated by GAO's site visits and relevant studies, these factors included (1) having local circumstances such as weather-related crises that spurred action, (2) learning how to use available information, (3) having access to local expertise, and (4) considering climate impacts within existing planning processes. As one example, the Milwaukee Metropolitan Sewerage District managed risks associated with more frequent extreme rainfall events by enhancing its natural systems' ability to absorb runoff by, for instance, preserving wetlands. This effort simultaneously expanded the sewer system's capacity while providing other community and environmental benefits. District leaders enabled these changes by prioritizing adaptation, using available local-level climate projections, and utilizing local experts for assistance.

GAO's report identifies several emerging federal efforts under way to facilitate more informed adaptation decisions, but these efforts could better support the needs of local infrastructure decision makers in the future, according to studies, local decision makers at the sites GAO visited, and other stakeholders. For example, among its key efforts, the federal government plays a critical role in producing the information needed to facilitate more informed local infrastructure adaptation decisions. However, as noted by NRC studies, this information exists in an uncoordinated confederation of networks and institutions, and the end result of it not being easily accessible is that people may make decisions—or choose not to act—without it. Accordingly, a range of studies and local decision makers GAO interviewed cited the need for the federal government to improve local decision makers' access to the best available information to use in infrastructure planning.