

Accounting for Climate Resilience in Infrastructure Investment Decisionmaking

A Data-Driven Approach for Department of the Air Force Project Prioritization

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ISSUE

Climate-driven natural hazards will continue to affect Department of the Air Force (DAF) installations and missions for the foreseeable future. There is a need for the DAF to consider how installation infrastructure projects that improve hazard resilience may be prioritized among all projects under consideration for funding. Although the DAF is taking initial steps to integrate hazard resilience into its existing funding and evaluation processes, DAF processes for allocating funds for infrastructure generally do not account for system performance under different threats and hazards.



APPROACH

Informed by reviews of relevant DAF and U.S. Department of Defense (DoD) policy and guidance documents and interviews with select DAF stakeholders and subject-matter experts (SMEs), we identified a way to compare infrastructure projects based on their ability to improve installation resilience to climate-related hazards. We developed a four-step approach that the DAF could implement (using largely available data) to screen infrastructure projects on the basis of their potential to enhance installation climate resilience. We also undertook a review of other organizations' approaches to climate resilience investment decisionmaking to understand how other organizations approach this challenge, and we provide the DAF with suggestions on how it might structure its own processes moving forward. From this review and insights obtained from DAF policy and guidance documents, interviews with DAF personnel, and our experience applying our own framework to a variety of sample resilience projects, we offer several findings and recommendations for the DAF.



CONCLUSIONS

- A review of DAF documents provided detailed and grounded understanding of policy and guidance regarding resilience, clarifying the roles of organizations that lead climate-related efforts relevant to installations. Additional review of resilience definitions and existing frameworks (e.g., the Resilience Dividend Valuation Model) provided a basis for the structure of our framework.

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- Interviews with key DAF stakeholders and SMEs confirmed the need for a systematic framework for comparing and prioritizing projects based on their climate resilience value.
- Our review of other organizations' approaches to climate resilience investment decisionmaking revealed common practices and process elements, which largely align with key components of our proposed framework and further support the potential efficacy of such an approach. Similar to the DAF, our comparison federal agencies are primarily in the development and evaluation phases of their climate risk assessment processes, whereas private-sector organizations have incorporated climate into their environmental, social, and governance considerations within their standard risk management processes.
- Climate uncertainty presents a key challenge for resilience planning and investment. Therefore, considerations of uncertainty must be integrated into any prioritization of resilience investments.



RECOMMENDATIONS

- The DAF should use a systematic approach to compare projects with either an explicit or implicit climate resilience focus. The presented framework facilitates the comparison of projects with either an explicit or implicit climate resilience focus by enumerating (and, where possible, quantifying) their potential benefits as measured by multiple metrics. The framework is intended to serve as an initial screening tool with additional local analyses guiding project prioritization and funding decisions.
- To implement the presented framework, the DAF will need to
 - Identify specific steps in existing or anticipated project planning, prioritization, and validation processes where such a framework would be most useful; for example, requirements identification and project submission (primarily by installations), project prioritization (at the installation and major command levels), review and validation of projects (by the Air Force Civil Engineer Center [AFCEC] or Air Force Installation and Mission Support Center), and development of installation climate resilience plans (by installations and AFCEC).
 - Identify project pools within which the framework might be applied. For instance, projects could be screened in advance of applying the framework to evaluate only projects with comparable (high) costs or those projects that are tagged as having resilience value in AFCEC's military construction (MILCON) integrated priority list (IPL) tool (discussed in Chapter 2).
 - Compile, adapt, or generate data and information needed to evaluate projects using the framework and identify appropriate entities for carrying out each step. Much of the data requisite for implementing the framework can be generated centrally (e.g., by AFCEC) and ahead of time. For instance, the first step of characterizing the baseline exposure of installation assets (described in Chapter 3) does not require knowledge of specific projects and can be completed ahead of time by a team of analysts with access to the types of centralized datasets that we describe throughout this report.
 - Create concrete methods to inject relevant data into processes. For instance, information could be integrated into planning platforms or portals that AFCEC maintains to facilitate more-efficient application of the framework.
 - Account for climate uncertainty throughout. Those implementing the framework should consider multiple climate scenarios in estimations of baseline exposure and exposure reductions. Robust and adaptive strategies should be favored over those optimized for present conditions only.



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