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Digging Deeper: Integrating Multi-Disciplinary Expert Knowledge into Resilient System Decision-Making

Resilient decision-making is predicated on the ability to rapidly integrate information across distinct knowledge domains as well as temporal and spatial scales, while balancing uncertainty and competing multi-sector goals that are often advanced in isolation and are dependent on strained resources shared by many. Current leading social norms tend to promote silos of highly specialized expertise and professions, reinforcing the practice of advancing goals and decision-making without consideration of cross-sector impacts. However, increasingly researchers and practitioners are acknowledging the importance of interdisciplinary training and stakeholder engagement in informing the decision process, improving the success of projects, and reducing the occurrence of unintended consequences. Moreover, there's increased agreement on the value of using systems thinking to evaluate and address complex environmental and social problems.

The goal of our work was to identify strategies to engage multi-disciplinary experts and stakeholders in a systems analysis to evaluate how alternative scenarios for port management interact across sectors and contribute to coastal resiliency. Expert-informed system maps were used to construct a decision-analysis model, called Analytic Network Process (ANP). Our ANP port model provides flexibility to conduct systems analysis integrated with expert stakeholder engagement in an accessible manner, even when data or resources are limited, or for systems that are strongly driven by social or qualitative factors. Multi-disciplined experts and stakeholders specific to a region or community can rapidly rank variables to identify key factors and perspectives that drive changes in port resiliency for their community. To date, this model is being used to engage U.S. EPA scientists with expertise in coastal, community, and port resilience to identify factors that drive resiliency in coastal port communities. Our next step will be

to introduce the model to practitioners working in local government and community groups to see how rankings may change between stakeholder groups.

In this collaborative *Connect the Dots* presentation, a brief overview of our ANP port model will be provided, and attendees will have an opportunity to interact with the model by ranking variables related to port resiliency using live polling. Results from the polling will be used to inform and refine our model to further promote resilient coastal management for port communities.