

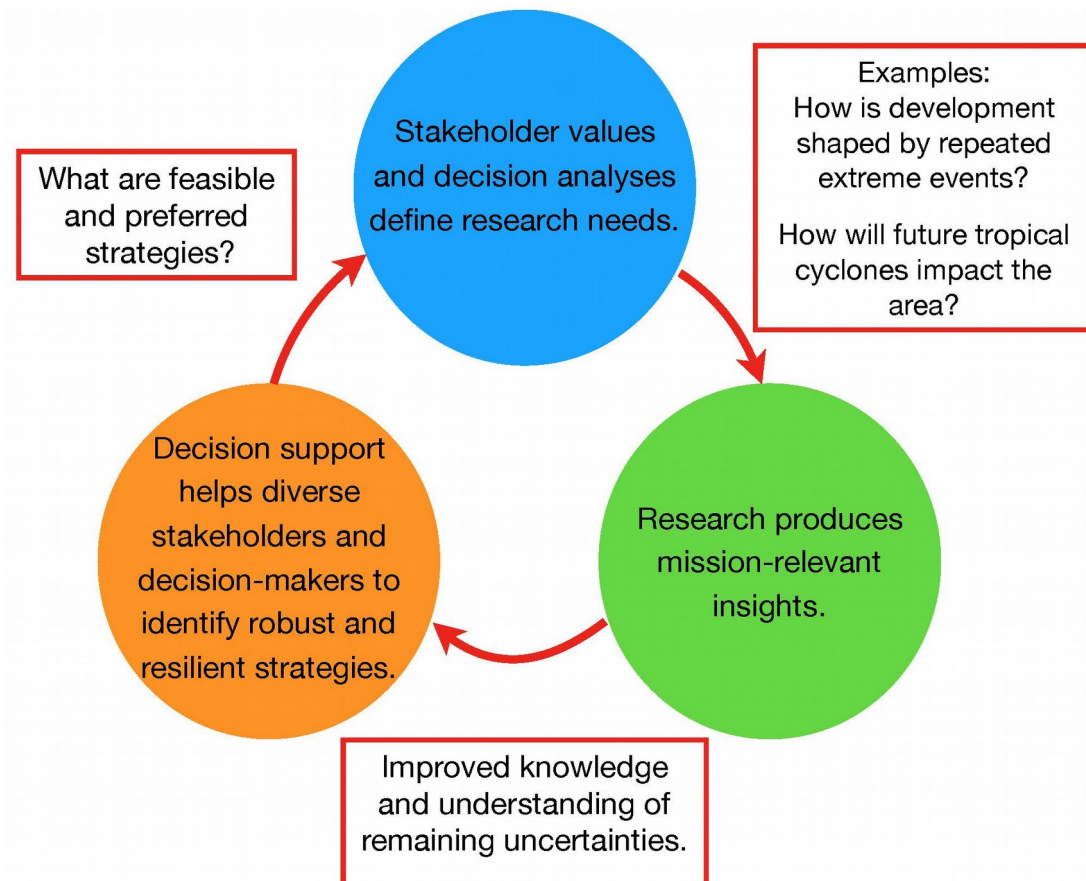
A decision-centric approach to COastlines and PEOple (CoPe)

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Summary

An integrated and iterative process with three main components:

- 1) Stakeholder values and decision analyses define research needs.
- 2) Research produces mission-relevant insights.
- 3) Decision support helps diverse stakeholders and decision makers to identify actionable robust and resilient strategies.



What are specific recommendations?

- Select a region (e.g. by working with federal agencies responsible for coastline infrastructure and disasters to identify communities/regions with wicked problems).
- Establish an *intellectual, virtual hub* with spokes to make the system agile and deployable to any problem area; involved institutions need not be on the coast.
- Integrate a wide array of relevant academic disciplines, stakeholders, and decision-makers in an environment of shared discovery.
- Leverage relevant existing networks and projects.
- Identify an *achievable and sustainable* path toward implementation.
- Design with the required time-scale and resources to allow stakeholder relationships to mature and enable multiple iterations (10 years).

Why is this valuable?

- This impacts stakeholders, decision-makers, and researchers by identifying new, exciting, and decision-relevant questions.
- The process can help to integrate across diverse sets of academic disciplines, stakeholders, and decision makers. Problem-relevant academic disciplines include, for example, engineering, decision science, behavioral science, social science, earth science, economics, political science, architecture, mathematics, and others.
- The hub and spoke system can:
 - implement a convergent approach that starts with a specific set of initial stakeholder-driven problems needing decisions;
 - identify mission-oriented basic or applied science & engineering questions from initial decision analyses;
 - include values and objectives identified in partnership with the stakeholders;
 - collaboratively identify a path for converging toward adaptation solutions that will, when the grant is finished, ensure that the community/region has an articulated path toward successful implementation that could be carried out with no or very minimal additional NSF funding;
 - develop and test decision support systems;
 - have flexibility for multiple iterations as needed.
- The new tools provide instruments to improve real-world decisions and can provide considerable societal benefits (e.g. social, economic, environmental, health, safety, security), and are designed in a way where they can be available and useful in many other locations.
- The community/region chosen will come out the research with a feasible adaptation pathway and brighter prospects for the future than would otherwise exist.

What's the reasoning behind the design?

The need for this overall approach has been discussed in several studies (e.g., Hermann et al, 2015, Garner et al, 2016, 2018, Kwakkel et al, 2016). The overall

approach is applied in several research projects (background publications are provided below). Key success metrics include: (i) involvement of stakeholders and decision makers in the project design and execution, (ii) assessed skill and use of decision support tools, (iii) diversity of the research team and stakeholders, (iv) fundamental new science discovery, (v) quality, quantity, and diversity of the trainees. **The decision-centric approach combines well tested components, is scalable, and can help to meet the urgent needs of coastal populations.**

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