



# Climate Change Adaptation Planning for Hawai'i's Natural Resources

An Analysis of Current Barriers and Future Opportunities

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December 2017



PACIFIC ISLANDS  
CLIMATE CHANGE  
COOPERATIVE

**Produced in cooperation with the Pacific Islands Climate Change Cooperative, with funding from the U.S. Fish and Wildlife Service**

Suggested citation: Brough, K. 2017. *Climate Change Adaptation Planning for Hawai'i's Natural Resources: An Analysis of Current Barriers and Future Opportunities*. Honolulu: Pacific Islands Climate Change Cooperative.

Front cover image: Hawai'i coastline (W. Miles, 2016)

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# Acronyms

CEQ	United State Council on Environmental Quality
CZMA	Coastal Zone Management Act
DLNR	Hawai'i Department of Land and Natural Resources
DOFAW	Hawai'i Division of Forestry and Wildlife
DOI	United States Department of Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
HCA	Hawai'i Conservation Alliance
HEPA	Hawai'i Environmental Policy Act
HGG	Hawai'i Green Growth
HILT	Hawaiian Islands Land Trust
HITAI	Hawaiian Islands Terrestrial Adaptation Initiative
ICAC	Interagency Climate Adaptation Committee
INRMP	Integrated Natural Resources Management Plan (U.S. Army)
KS	Kamehameha Schools
LCC	Landscape Conservation Cooperative
NCR	Natural and Cultural Resources Department, Kamehameha Schools
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NWRS	National Wildlife Refuge System
OEQC	Hawai'i Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
PI-CSC	Pacific Islands Climate Science Center
PICCC	Pacific Islands Climate Change Cooperative
PIFWO	Pacific Islands Fish and Wildlife Office
PIRAMO	Pacific Islands Refuges and Monuments Office
SWAP	State Wildlife Action Plan
TNC	The Nature Conservancy
TPL	Trust for Public Lands
USAG-HI	United States Army Garrison in Hawai'i
USFWS	United States Fish and Wildlife Service
WSFR	Wildlife and Sport Fish Restoration Program

# Preface

The Pacific Islands Climate Change Cooperative ([PICCC](http://www.piccc.net)) commissioned this analysis under the auspices of its Hawaiian Islands Terrestrial Adaptation Initiative (HITAI) to better understand the barriers natural resource managers face in addressing the impacts of climate change on the terrestrial ecosystems of Hawai'i, and to begin to formulate possible responses to those barriers. The HITAI aims to apply the appropriate science, communication, and evaluation products and services to resource managers or decision-makers, enabling the implementation of climate change adaptation within a biocultural conservation framework. The initiative has been driven by management needs and developed in conjunction with resource managers. A multitude of resource managers, scientists, and other experts within Hawai'i have actively participated in and shaped the HITAI since 2014, some of whom were interviewed as subject matter experts for this analysis.

The PICCC partners developed the HITAI and other adaptation initiatives to support two primary shared goals as articulated in their 2014-2019 strategic plan: facilitate climate adaptation + foster partnerships. The first goal is achieved by supporting resource managers with science, tools, and techniques for planning and implementing climate adaptation actions. The second goal is achieved by maintaining and cultivating relationships with partners who are key to creating the optimal policy, organizational, and community conditions for adaptation to occur. Only by working on these two goals in tandem can the PICCC achieve its vision of assisting partners in adapting to climate change for the continuing benefit of the people of the Pacific Islands.

The HITAI was intended to inform the management of landscapes and freshwater ecosystems by combining information, expertise, training and collaboration opportunities that allow partners to achieve climate adaptation goals that would not otherwise be achieved. It was developed in part due to the opportunity to assist managers in the uptake of new information from research projects conducted and/or funded by the PICCC and science partners, with two climate change vulnerability efforts that were led by PICCC staff forming the foundational understanding of climate impacts to terrestrial ecosystems. The results of this research highlighted the urgent need for new conservation actions to prevent forest bird and native plant extinctions, including the exploration of alternative management strategies.

The multi-pronged approach to the HITAI (science syntheses, policy analyses, and communications products) provides resource managers and decision-makers with shared strategies, tools, and information necessary to address current climate change stressors and prepare for significant changes yet to come. The PICCC staff, cooperators, and contractors served as the facilitators for these discussions, due to their technical capabilities and understanding of both the scientific and political issues involved in pursuing conservation and recovery actions.

Learn more at [www.piccc.net](http://www.piccc.net).



# Introduction

This analysis explores the barriers that natural and cultural resource managers face in addressing climate change and begins formulating possible pathways forward. While conducting the research underlying this analysis, we focused on organizations with significant land management responsibilities in Hawai'i.<sup>1</sup> The analysis examines the dynamics that either hold back or encourage planning for (and acting on) climate change, including: legal requirements, organizational relationships, and organizational processes. The research looked at the legal regimes that inform how organizations might or might not consider climate change adaptation, secondary materials describing climate change adaptation barriers in general (or, where possible, for Hawai'i in particular), and most importantly a significant number of interviews with representatives from Hawai'i's natural and cultural resource management community.

This report is divided up into the five following modules:

Module A – Legal barriers and incentives to climate change adaptation in Hawai'i

Module B – Formal planning processes of natural resource management entities in Hawai'i

Module C – Use of climate change information in organizations' planning processes

Module D – Perceptions by managers of barriers to climate change adaptation

Module E – Overcoming barriers to acting on climate change adaptation in Hawai'i

The author notes that the work to-date has only been possible because of the many hours of conversations and insights provided by representatives from various organizations. The sponsors at PICCC are deeply interested in understanding how land and resource managers in Hawai'i can work together better to respond to climate change; they were instrumental in guiding this inquiry and analysis throughout. Emily Gaskins, a law student at William Richardson School of Law also contributed substantial legal research. Ultimately, the most important outcome of this adaptation analysis is a conversation among stakeholders about how to better strategize and collaborate together, and make the most use of scarce resources. Responses, questions, and critiques are very much welcome.<sup>2</sup>

## Findings and Recommendations

Perhaps unsurprisingly, the analysis demonstrated that no silver bullet solution exists. Hawai'i has a set of conditions that create an extremely difficult environment for conservation in a

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<sup>1</sup> At the federal level these consist primarily of a) National Park Service; b) Fish and Wildlife divisions/departments that concern the refuges, wildlife and sport fish restoration program, and the regulatory arm that implements that Endangered Species Act; c) and the U.S. Army. For the state of Hawai'i, this concerns a) Department of Land and Natural Resources, and b) the Office of Hawaiian Affairs, an entity established under the Hawai'i state constitution as an executive agency operating under federal and state law but outside the state executive branch and on behalf of the rights of Native Hawaiians. The NGO members of the PICCC included in this analysis are the Hawaiian Islands Land Trust, Kamehameha Schools, the Nature Conservancy, and Trust for Public Lands.

<sup>2</sup> Feedback can be directed to: Wendy Miles (wendy.miles@piccc.net) and Deanna Spooner (deanna\_spooner@fws.gov).

changing climate. Sea level rise is imposing stresses on the places where humans live and the infrastructure on which they depend, causing prioritization of those elements in climate change adaptation over natural ecosystems. Hawai'i is a generally high-cost market for goods and services, making climate change adaptation investment expensive. Ecosystems in Hawai'i are small and highly individualized, making the ratio of human intervention to ecosystem breadth difficult. Endangered and threatened species counts in Hawai'i are the highest in the nation, with invasive species playing a particularly damaging role. There are historic tensions among the federal, state, and local governments, including members of the Hawaiian sovereignty movement, which can complicate already difficult conversations about which resources to protect first. State financial resources are thin, particularly given the ecosystem management needs; and there is a proliferation of stakeholders and the associated risk of friction between entities or duplication of effort. These are real problems, and in combination create an adaptation challenge unique to Hawai'i.

Overwhelmingly, organizations said three main barriers held them back: a) a lack of resources generally, leading to not enough people hours and an inability to take the time to create a real strategic plan; b) a lack of actionable information; and c) a lack of clarity about the standards for effective climate change adaptation. While it is important to recognize that these are all real challenges, they are also needs without end - there will always be reasons to not act due to resource or information inadequacy or the absence of surety about what the right standard for action is. The question is how to create conditions where those barriers are seen, if not quite surmountable, at least not so formidable as to preclude thoughtful, informed action that amplifies and/or builds on the actions of others.

Individual organizations are hard-pressed to address these inherent challenges, and while certainly no organization associated with PICCC (or any unaffiliated organization we spoke with) suggested that it was defeated by climate change or was avoiding it, there was a clear sense that these difficulties give organizations pause in developing individual responses. In fact, while nobody said this explicitly, a clear takeaway, and perhaps the most important insight emerging out of the analysis, is that the lack of alignment and strategic cohesion among the various stakeholders makes the inherent challenges of conservation in a changing Hawai'i much harder. To make the best use of limited resources, organizations ideally would be coordinating more closely, working together towards commonly shared goals. In other words, where resources are limited and the needs great, organizations would ideally be finding synergy and pursuing a "sum greater than the parts" outcome. It does not appear that resource managers in Hawai'i are yet at that point where they can confidently say they are all rowing together towards a common goal.

The insights shared in this report are the result of stepping back and listening to themes, thinking through barriers and responses, and considering examples from other Landscape Climate Cooperatives (LCCs) and other similarly-situated organizations and issue areas. What organizations said they needed, and what this analysis would suggest, are not entirely overlapping.

The analysis suggests that a path forward is through the establishment of a collective impact model<sup>3</sup>, or something like it, through which the resources of the group can be cataloged and mapped against an agreed-upon set of needs and priorities, and the group can thereby achieve the most “adaptation return” on its available investment. The basic goal of a collective impact approach is the creation of a meaningful collaborative strategy map and accountability and feedback mechanisms to ensure this collective strategy actually drives collective action<sup>4</sup>. A primary value of such an effort is that it begins to knit together the otherwise somewhat disparate efforts of a group of well-meaning but often cross-purposed organizations. Through a collective impact model, a group of organizations working on a desired collective outcome but struggling to find a path forward does five things:

- Agrees on a common agenda and strategy
- Creates a shared measurement system, which involves both data collection and ensuring accountability for partner activities and outcomes
- Pursues mutually reinforcing activities, which can involve different approaches coordinated through a codified action plan
- Involves continuous communication that builds trust
- Critically, has a backbone organization or dedicated pool of staff with sufficient resources to stage convenings and to coordinate participants<sup>5</sup>

As of 2017, nothing quite like this exists for natural resource managers in Hawai‘i. The state has undertaken relevant work in the pursuit of its sea level rise analysis and report. Through the HITAI’s [Hawaiian Islands Climate Synthesis](#) project, the PICCC worked with the non-governmental organization (NGO) EcoAdapt to catalog potential climate change adaptation strategies proposed by local natural and bio-cultural resource managers. There are also meaningful cross-sector efforts to address climate change impacts, including Hawai‘i Green Growth (HGG) and the Governor’s Sustainable Hawai‘i Initiative. But this analysis nevertheless found that there remains a need for a more concerted effort to create a collective impact strategy and hub.<sup>6</sup>

Such a “hub” could be based in an existing organization with embedded institutional capital; with possibilities including the PICCC, the Pacific Islands Climate Science Center (PI-CSC), the University of Hawai‘i, an existing NGO such as the Hawai‘i Conservation Alliance (HCA), or the recently created Hawai‘i Climate Change Mitigation and Adaptation Commission, established

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<sup>3</sup> See Kania and Kramer, Collective Impact, *Stanford Social Innovation Review*, Winter 2011.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Identifying funding for such an organization is a key item. The analysis did not begin to probe specific sources of possible funding, but some obvious places to look would be through the federal grant process, included as part of state policymaking, and through one or more philanthropies. Philanthropies are in particular very interested in funding interventions that are a) incremental to what already exists, b) based on a sound logic model, c) have evidence that supports the logic model, and d) lead to outcomes that can be measured and evaluated.



under Act 32<sup>7</sup>. It could also be built around something quasi-new (e.g., a spin-off of the PICCC) or entirely new (a new NGO, for example, with seed funding from a conservation- or adaptation-focused philanthropy). Wherever this hub might be placed, the recommendation of this report is to develop a bold collective action strategy with real teeth and meaningful management.

Beyond the need for an organizing strategy and home for it in some form of hub, other important practical insights emerged through the analysis and are discussed in Module E of this report. Some of them are related to or could be provided through a collective strategy approach, which is why the need for that kind of community problem-solving is the paramount insight. Nevertheless, there are ways the community can begin to start addressing some of their barriers even in the absence of a collective strategy, and these smaller steps could build useful momentum in demonstrating progress towards responding to a monumental challenge.

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<sup>7</sup> While the Commission could well be an ideal home for such an effort, it is unclear what the priorities of the Commission will be. Some early reports suggest it will, after addressing the built environment's response to sea level rise, focus on climate mitigation efforts like renewable power and energy efficiency. It would be worthwhile to revisit the impact and evolving mandate of the Commission following the sea level rise report to determine if it could serve as the catalytic force some hope it will become.

# Module A: Legal barriers and incentives to climate change adaptation in Hawai'i

## Legal framework overview

One potential source of barriers and incentives is legal: federal and state laws, regulations, and internal agency rules and manuals that help determine how land managers approach climate change and interact with each other. This is an overview of the key legal elements that might hold back or provide incentives for effective planning, plan implementation, and cooperation among stakeholders.

## Takeaways

As an initial matter, while the overall project examines climate change adaptation barriers for both public sector and social sector natural resource managers, the question of how statutes and regulations and any of the agency policies promulgated thereunder affects resource managers only applies to federal and state agencies. There are likely legal mechanisms available through contract and property law that affect how NGOs acquire, manage, and pass on land – for example, easements – but this has not been a focus of this bigger picture legal review. Follow-up research might include an analysis of these more property-level or project-level legal issues. While it is not clear that these types of mechanisms are either advancing or slowing climate change adaptation, if designed well (or poorly) they might have a positive (or negative) effect.

This analysis is based on review of the actual statutes, regulations, and agency policy statements (where available), interviews, and a literature review. While the literature review suggests that there is the potential for some frictions in federal law around effective adaptation planning and implementation, the key takeaway from the legal review is that there do not appear to be *explicit* legal barriers (either federal or state) to the incorporation of climate change and adaptation needs into planning, operations, or inter-organization cooperation for any of the PICCC members. Certainly, in 30+ interviews the issue of legal barriers was rarely if ever raised - perhaps because it trails other issues in its prominence, or perhaps because, as the review of the laws themselves suggests, the barrier simply is not that high.

At the same time, some of the mandates contained in the enabling legislation of several of the federal agencies could be interpreted to limit their adaptive capacities - for example, in confining the National Park Service to the maintenance of lands in historic conditions even as the physical environment thwarts that mission, or in compelling U.S. Fish and Wildlife (USFWS) to watch

species die off *in situ* rather than migrating them to other locations where they might survive.<sup>8</sup> This potential outcome (if indeed it is playing out this way) is not, however, the result of any explicit mandate but would come from some combination of statutory language that did not anticipate climate change and regulatory implementation that has not figured out how to shoehorn adaptation into the statutory framework.

Indeed, rather than any direct barriers, there is instead an emerging collection of both federal executive orders and agency policy statements and state statutes, rules, agency interpretations, manuals, and so forth that attempt to address climate change and ecosystem adaptation. In other words, both federal and state policymakers have attempted to create either agency catalysts, in the case of the federal government, or statutory and agency catalysts, in the case of the Hawai'i state government, that drive climate change planning.

Unfortunately, to the extent there is a legal barrier, it is likely this layering of laws (with their often vague application), regulations, and organization pronouncements (manual, strategy statements, etc.) is making things more difficult, in that most of these legal and quasi-legal (or quasi-compulsory) instruments provide some impetus for adaptation planning but very little guidance on what that looks like, how it must be done, or what the urgency or incentives are.

Nevertheless, there are some key legal elements that should be understood to be most relevant to a discussion of barriers and incentives – or to be the legal mechanisms with the most real heft behind them. At the federal level, these are the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), with the latter being a fairly flexible tool to control and drive federal agency action.<sup>9</sup> At the state level, the key law is probably Hawaii Environmental Policy Act (HEPA), which parallels NEPA in key ways. Under Acts 83 and 286 Hawai'i has also required climate change and adaptation to be considered through certain planning functions at the state and county level – and while these do not mandate any specific projects or activities beyond planning, they are formal, statutory recognitions of the need for climate change adaptation planning to take place throughout the state.

Finally, it should be noted that there is interplay between federal politics and policy and state politics and policy. The overall trend in the United States towards recognition of the role of climate change – and the need for adaptation – is positive. There is, on balance, likely a net increase in policymaking directed at climate. Assuming the models are shown to be accurate (or even conservative), climate change impacts will drive adaptation responses across a variety of sectors in the future, and so the policymaking trend is likely to extend across sectoral lines (e.g., to include coastal zones, agricultural areas, urban zones affected by heat, etc.) and deepen in resources deployed. For the last eight years, much of this drive has come from the federal

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<sup>8</sup> For a discussion on how federal agencies may be limited in their ability to respond to climate change, see Camacho and Glicksman, *Legal Adaptive Capacity: How Program Goals and Processes Shape Federal Land Adaptation to Climate Change*, *Colorado Law Review* 87(3), 2016

<sup>9</sup> It should be noted that the federal situation is dynamic. Withdrawal of recent executive guidance on the role of climate change data in NEPA evaluations could in and of itself change NEPA implementation and could signal the establishment of further legal barriers. This is an area that could change substantially over the coming months and years.

government, but over the next timeframe it may be state and municipal policymakers forced to deal with climate change. Hawai'i is already out in front of that policymaking trend.

## Specific legal regimes

### Key federal elements

#### ***Federal Statutes***

Federal statutory authority provides potentially strong incentives to consider climate change adaptation in the overall matrix of environmental and ecological protection that the statutes address. These statutes, however, were enacted well before climate change and adaptation needs were a part of policymaking discussions, and as a consequence it has been a challenge to determine how climate fits within their existing boundaries, if indeed it does. Where it can be determined that the statutes permit or mandate climate change response, federal law brings substantial resources and legal mandates to bear on the problem.

1. **Endangered Species Act** - The ESA is the primary statute that authorizes and compels U.S. Fish and Wildlife Service (USFWS) to act to safeguard ecosystem elements against climate change.<sup>10</sup> The ESA seeks to protect imperiled plants and animals and to facilitate the recovery of those species by the removal of threats to their survival. Species “listed” under the ESA meet at least one of five statutory requirements,<sup>11</sup> and a species is listed through a process by which USFWS seeks to protect the species on its own or when it has received a petition to list a species. Once USFWS makes a determination to list a species, a key conservation tool the USFWS has is the establishment of “critical habitat” to protect the species and facilitate its recovery, and the creation of a Recovery Plan to guide and evaluate the species’ restoration. After a critical habitat is established, federal action cannot imperil that habitat; state and private actors are often brought in under the critical habitat designation because their development interests implicate some sort of federal action (e.g., Army Corps of Engineers activity), and thus those non-federal players are forced to comply with the ESA regime. The ESA has changed over the years due to significant amendments (often dealing with questions around evaluating the economic impact of protecting species) and in its implementing regulatory regime. One constant, however, has been an implementing focus on maintaining historical fidelity to the native ranges of species. This is in part a statutory construct and in part a regulatory one, but it has been in any case a long-term part of the DNA of the USFWS itself.

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<sup>10</sup> USFWS shares implementation responsibilities for the ESA with the National Marine Fisheries Service.

<sup>11</sup> 1) There is the present or threatened destruction, modification, or curtailment of its habitat or range; 2) An overutilization for commercial, recreational, scientific, or educational purposes; 3) The species is declining due to disease or predation; 4) There is an inadequacy of existing regulatory mechanisms; or 5) There are other natural or manmade factors affecting its continued existence.

**Challenges under climate change** – Climate change threatens to overwhelm the traditional boundaries of the ESA, as notions of preservation of historic ranges and safeguarding individual species are lost to a tsunami of changes in temperatures, water conditions, soil conditions, and invasive species successes. The ESA itself neither specifically contemplates nor mandates climate change adaptation, but it does require the USFWS to “provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved.”<sup>12</sup> Depending on executive leadership of the agency, this language could be interpreted to require significant investment by USFWS in climate change adaptation and demand wholesale rethinking of the traditional conservatism that has marked the agency.

2. **National Environmental Policy Act** - NEPA could be considered the federal government’s broadest environmental protection law and has been interpreted to require the review of the environmental impact of nearly every significant federal action or anything that requires federal action - including all federal agency planning and permitting activities. As a consequence, NEPA review is implicated in many state projects, both because they often rely on federal money and because they require federal permitting. NEPA itself does not require any specific type of environmental intervention, but it does require a thorough and public evaluation of a project’s effect on the environment and an examination of reasonable alternatives to the project’s proposed course of action.<sup>13</sup> NEPA often provides the most robust environmental platforms for stakeholders to influence public works projects through litigation, because the statute permits litigants to argue in court that the project’s sponsor(s) have not considered all reasonable alternatives to a project’s proposed course of action.<sup>14</sup> NEPA’s language gives broad authority to the Council on Environmental Quality (CEQ), which was also created under NEPA, to determine the standards for evaluating environmental impact under the statute - and thus for determining what has to be considered in the impact and alternatives analysis. In 2016 the CEQ finalized guidance on how federal agencies<sup>15</sup> should consider the effects of climate change in their funding, should seek to quantify emissions, and should seek to mitigate the effects of climate change. This guidance specifically calls for NEPA review to consider the effects of climate change on a proposed action and to consider alternatives that promote resilience, which can in some contexts be code for climate adaptation. As of March 28, 2017, however, this guidance was [withdrawn by Executive Order](#) for further consideration.

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<sup>12</sup> 16 U.S.C. 1531(b).

<sup>13</sup> NEPA has three different levels of analysis: 1) Categorical exclusion, under which the federal agency involved determines there is no impact on the environment; 2) an Environmental Assessment, which is a lighter examination of impacts and possible alternatives, coupled with a Finding of No Significant Impact, and 3) an Environmental Impact Statement, which is the full version of a NEPA review requiring extensive public consultation and a thorough examination of impacts and alternatives.

<sup>14</sup> Because NEPA does not mandate any specific course of action or even require the project sponsor to choose the least environmentally damaging course of action, NEPA litigation is often focused on slowing down projects and forcing concessions through the threat of endless delay. Hawai’i is no stranger to this process - the high speed rail project in Honolulu has been the subject of failed NEPA challenges, which while unsuccessful have slowed the project’s development.

<sup>15</sup> Each federal agency has a self-determined approach to managing the NEPA process.



**Challenges under climate change** – It appears from secondary sources that climate change adaptation considerations were just beginning to manifest themselves in alternatives analysis under an Environmental Assessment (EA) or Environmental Impact Statement (EIS) towards the latter part of the Obama administration. As with other open-ended mandates concerning adaptation requirements, the lack of specific standards for what constitutes climate change adaptation would likely have led to a more robust public discussion about adaptation needs but possibly less actual investment than the conservation community might have desired. On a positive note, the requirement for projects to consider resilience should lead to an opportunity for conservation advocates to make the case for inclusion of “green infrastructure” or “ecosystem services” in the alternatives analysis. For example, access to fresh water is a significant policy question in Hawai‘i, with traditional water sources in lower-lying urban areas threatened by sea level rise. Under NEPA, infrastructure projects to update the water supply might be forced to consider the utility of conserving or restoring watersheds and forest corridors that often serve as freshwater engines for urban areas. This could lead, somewhat indirectly, to an increased emphasis on conservation and ecological adaptation. What happens with NEPA requirements going forward under the new administration is an unknown.

3. **National Wildlife Refuge System Improvement Act** - The system of wildlife refuges in the United States under federal law has a long history rooted extensively in hunting and recreation. While federal land acquisition to support wildlife began prior to the formalization of the refuge system, the passage of the National Wildlife Refuge System Administration Act of 1966 organized federal oversight of its acquisitions and gave specific instruction to consider ranges and threats of existence to the management of lands and species. The National Wildlife Refuge System Improvement Act of 1997, however, is what established conservation as a core principle of the refuge system. It mandated conservation planning for each refuge and required that the biological integrity of ecosystems be a core management principle. USFWS, which is the agency charged with refuge maintenance, has consistently approached the requirements of the various refuge Acts through the framing of the Endangered Species Act - namely, by treating conservation as an exercise significantly about preserving historic baselines rather than looking to a broader (and more abstract) notion of ecological function. The NWRSA requires the development of a management plan for each refuge at a minimum every 15 years, more often if it determines a need, and any time USFWS determines a significant change has occurred. Administration of the Act(s) takes place through USFWS policy promulgation and rulemaking, with the real meaningful action at the refuge plan level. Within those refuges, land managers have a fair degree of latitude to implement the mandates of the Act(s), USFWS policies, and refuge plans.

**Challenges under climate change** – As with the ESA, management of the refuges under climate change provides a challenge to the USFWS to reconcile its traditional mission of historic preservation with ecosystem changes occurring at a scale and velocity that was unimaginable until recent times. Management plans for the terrestrial

refuges rarely reflect climate change needs at this point; coastal refuges are apparently further ahead, driven by the obvious impacts of sea level rise, but lack other climate change considerations. Nevertheless, there is little other than administration policy within the framework of the refuge Act(s) that would prevent adaptation thinking and planning, and likely most adaptation efforts could be fit in under the requirements to preserve ecosystem integrity.

4. **National Park Service Organic Act** - The National Park Service was established in 1916 by the National Park Service Organic Act (the Organic Act). Designation of a federal land as a national park affords it the highest level of protection in the federal system. The Organic Act as traditionally interpreted by the NPS provides some of the least flexible tools to deal with climate change, in that it puts an extreme premium on historical ecosystems (a more conservative form of historic baselining than in the refuges context) and non-human interference - leaving NPS ecosystems to deal “naturally” with the unnatural effects of climate change. This twin approach of historical reference and non-interference leaves the NPS with, at least in theory, fewer degrees of freedom to address climate change. However, on-the-ground experience belies this legal structure, as there is a fair amount of procedural flexibility described by NPS, examples in some parks of actions to plant trees and deal with invasive species, and almost certainly all park management plans would indicate and park managers would concede that direct intervention in the daily operation of the parks’ ecosystems is a regular feature of park activities.

***Challenges under climate change*** – NPS faces challenges similar to USFWS in that it must reconcile a traditional approach to its statutory authorization with the on-the-ground realities of climate change. In theory, a very conservative approach to implementing the Organic Act could eliminate nearly all adaptation interventions. NPS has responded to the contours of the Organic Act by initiating activities that are clearly within scope, including research and education, and planning for how climate change will affect park experience. The translation of planning into action has been murky, and as conditions accelerate the need for more action the zone of flexibility may become more narrow. However, as with the USFWS, this question likely turns on agency and administration appetite for dealing with climate issues.

5. **Coastal Zone Management Act** - Passed in 1972, the CZMA established the Coastal Zone Management Program and the National Estuarine Research Reserve System. These programs may be good examples of a statutory regime that promotes a cooperative conservation scheme between the federal government and state government. Both the CZMP and the NERRS are cooperative programs between the CZMA’s administrator, NOAA, and (in the case of the Hawai’i) the Office of Planning to manage Hawai’i’s coastal resources. Hawai’i’s CZM Program appears heavily focused on and responsive to climate change.

### ***Executive orders and plans thereunder***

As with other aspects of Congressional and Executive policymaking during the Obama administration, friction between the administration and legislature caused the administration to seek to exercise executive authority in guiding the federal government to respond to climate change. Because the existing statutory authority described above could be considered to provide flexibility to deal with climate change (although this premise has not been substantially challenged in the courts, other than the EPA's attempts to regulate carbon dioxide emissions from power plants), the Obama administration issued several executive orders that serve as the primary federal mandate with respect to federal agency action on climate change and adaptation. Of course, executive orders are more fragile instruments than statutes and can, with some effort, be unwound by subsequent administrations. For purposes of this analysis, we treated executive orders and guidance from bodies like the Council on Climate Preparedness and Resilience, which was established by an executive order, as effectively equivalent mandates. With the arrival of the new administration, however, while the EOs remain active for now, there does not appear to be any current activity by the bodies established under the EOs.

1. **Exec. Order No. 13653, *Preparing the United States for the Impacts of Climate Change*** - This was the key EO signed in 2013 to move the executive branch from a posture of incorporating climate change data into agency strategies to a more active, implementation-oriented posture of managing national resources to address the impacts of climate change. The EO established a high-level coordinating Council on Climate Preparedness and Resilience mandated to prepare an interagency inventory and assessment of changes to land- and water-related policies, programs, and regulations necessary to make watersheds, natural resources, ecosystems, and the communities more resilient to a changing climate; required agencies to track their implementation of federal high-priority adaptation actions; and created a State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience. This EO has been revoked by [EO 13783](#), although the practical impact of that rescission is unclear given that the thinking and expectations may now be embedded in the federal agencies' planning DNA.
2. **Priority Agenda: Enhancing the Climate Resilience of America's Natural Resources** (Council on Climate Preparedness and Resilience, 2014) - The Council created under EO 13643 then in turn moved to outline four priority strategies for building resilience under EO 13653. One intent of this document was to provide guidance on how federal agencies could cooperate to address climate change in their line operations. The combination of EO 13653 and the Council's guidance is the closest thing within the federal government to a mandate for federal agencies to begin adapting national resources to climate change. At this point, however, the Council appears suspended by the new administration.

## ***Federal department plans, guidance, and orders***

Federal agencies also issue their own internal manuals and guidance that, while not having the force of law per se, nevertheless have more impact on federal agency daily operations than the statutory and administrative requirements. The sheer quantity of planning documents makes summary challenging. However, for purposes of this summary we highlight several documents that specifically address PICCC operations.

1. **Department of Interior Secretarial Order 3289** - This order establishes the Landscape Conservation Cooperatives (LCCs) and calls for incorporation of climate change impacts into their planning exercises. Secretarial orders can be superseded at any point by later Secretarial orders or formalization of any aspect of the order in the Department of Interior's Departmental Manual.
2. **Manuals and strategy plans** - The Department of Interior, Fish and Wildlife Service, National Park Service, and others have issued a number of internal documents that provide extensive guidance on how climate change data and inputs should be incorporated in department/agency operations. See, for example, the [National Fish, Wildlife, and Plants Climate Adaptation Strategy](#). The latest National Wildlife Refuge System (NWRS) guidance makes clear that climate change is an important input to the "Landscape Conservation Design" approach, which is core to NWRS planning and drives their involvement with the PICCC.

## **Key State of Hawai'i elements**

### ***State Statutes***

Hawai'i has begun to fill in some of the gaps in federal law through promulgation of state laws. Where federal law boundaries are uncertain with respect to climate change, Hawai'i state law in many cases has the advantage of being designed specifically with climate change adaptation as a policy goal. At the same time, Hawai'i state resources are limited, and in at least one instance a statutory mandate went unfunded and had to be abandoned.<sup>16</sup>

1. **Hawaii Environmental Policy Act** - HEPA was created in 1974 as a parallel statute to NEPA. It operates in much the same way as NEPA, but where NEPA requires federal agencies to analyze the environmental impact of their actions, HEPA requires the same review of Hawai'i state and county actors. Under HEPA, any state or county action that implicates one of the statutory triggers and is not statutorily exempted must perform an "environmental assessment," and any action that is determined to have significant impact on the environment must undertake an "environmental impact statement". As a matter of statutory and regulatory law, neither climate change mitigation nor adaptation are required to be included in an EA or EIS, but there is an emerging convention that

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<sup>16</sup> Act 20, passed in 2009 to create a climate change adaptation task force.

both analyses will include references to climate. In addition to laying out the statutory scheme for EAs and EISs, HEPA created the Office of Environmental Quality Control (OEQC) which helps facilitate the HEPA process. The OEQC has published something called the “Citizens’ Guide” to the HEPA, which provides suggestions on how to respond to HEPA’s requirements. The guidance in the Guide now encourages EAs/EISs to take into account sea level rise and other climate impacts. There has also been some discussion about formally bringing climate into the HEPA process.

**Challenges under climate change** – State policymakers have already begun to consider whether HEPA should be modified to formally consider climate change. Should this happen, it would create some impetus for more thorough formal adaptation planning processes, as policymakers would likely not want project development to drive adaptation planning.

2. **Hawaii Climate Adaptation Initiative Act (Act 83)** - In 2014 Hawai‘i passed the Hawaii Climate Adaptation Initiative Act to specifically elevate climate adaptation as a needed state priority and establish an Interagency Climate Adaptation Committee (ICAC) housed within the State Department of Land and Natural Resources (DLNR) and charged with developing phased statewide responses to climate change. The Committee is expected to produce its first report on sea level rise implications at the end of 2017. Presumably, additional modules will follow, and these outputs could lead to the creation of additional incentives to tackle climate change planning.

**Challenges under climate change** – Because the Hawaii Climate Adaptation Initiative Act is a specific response to climate change, the challenges for implementation of Act 83 will be indexed to and intertwined with the challenges climate change poses. Stresses from climate change will create a need for more resources, including likely an expanded scope and a need for an accelerating response across a number of adaptation axes.

3. **Hawaii State Planning Act** - The State Planning Act, enacted in 1978, is a broad framework law that establishes the need for a state development plan and Office of Planning. It also provided for the creation of a statewide planning system, meant to guide and integrate the creation of comprehensive county-level planning. State and county plans are intended to account for changes to demographics, the economy, physical environment, facility systems, and socio-cultural advancement. The Planning Act was modified in 2012 through adoption of the Climate Change Adaptation Priority Guidelines by the legislature.<sup>17</sup> The amendment added “climate change adaptation” as a “priority concern” to the Planning Act’s statutory requirements. Thereafter all county and state actions must consider climate adaptation in their land use, capital improvement, and program decisions, and formal planning processes should specifically call out adaptation plans and methods for collaboration and coordination across agencies.

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<sup>17</sup> For purposes of this summary, I will treat Act 286, *Climate Change Adaptation Priority Guidelines*, which passed in 2012 as an aspect of state planning law rather than an independent mandate. This Act amended the State Planning Act, while the Hawaii Climate Adaptation Initiative Act (Act 83) set up a new administrative body.



**Challenges under climate change** – Similar to Act 83, these amendments to the Planning Act are meant to address climate change and promote collaboration. The challenges are ones of timing and resources. There is an additional challenge that, while planning is an important activity, there are no binding implementation mandates.

4. **Acts 32 and 33** - On June 7, 2017 Governor Ige signed two bills into law in order to expand the state's portfolio of responses to climate change and to demonstrate the state's commitment to the Paris Agreement, from which the federal government had recently declared the United States would withdraw. Act 32 (S.B. 559) elevated and changed the Interagency Climate Adaptation Committee to the Hawai'i Climate Change Mitigation and Adaptation Commission with greater responsibilities to formulate state policy with respect to climate change. Act 32 may well result in a shift of resources out of climate change adaptation and into mitigation, although the immediate and longer-term focus of the Commission is unknown. Act 33 (H.B. 1578) establishes a "carbon farming" taskforce with the goal of investigating ways to enhance carbon sequestration and greenhouse gas emissions reduction through better agricultural and aquacultural practices. The taskforce will also seek to establish a certification program, perhaps to support a carbon credit funding mechanism. Funding is limited for both efforts: \$105,000 for the first fiscal year of Act 32's activities, and \$25,000 for the first fiscal year of Act 33.

## State plans and policies

Most of the action with respect to climate change adaptation in Hawai'i law and policy appears to be happening through state statute. There are, however, some emerging substate policy efforts that may have impact; these initiatives started late in the project phase but are worth tracking to see how they develop. They are also reflective of a more general movement in the rest of the country to see cities and counties drive a great deal of climate change mitigation and adaptation planning.

1. **Climate Mayors** - The mayors of the state's four counties each signed onto the [Mayors National Climate Action Agenda](#), representing a commitment at the county level to meet the goals of the Paris Agreement. Anticipated actions under this commitment include the development of county-level climate action plans, greenhouse gas inventories, and greenhouse gas reduction targets.
2. **Honolulu Office of Climate Change, Sustainability, and Resiliency** - Established by Oahu's voters through a city charter amendment, and funded through the Rockefeller Foundation's [100 Resilient Cities](#) platform, the Office represents the growing commitment in the Hawai'i community to create policy centers and provide resources to respond to climate change threats.

3. **State Wildlife Action Plan** (SWAP, 2015) - The SWAP outlines DLNR's plan for conserving native species, even in the face of climate change. It defines measurable actions with respect to each of the islands and specifically calls out the need for adaptive management to deal with the impacts of climate change.

# Module B: Formal planning processes of natural resource management entities in Hawai‘i

## Introduction

All organizations surveyed in this analysis had some form of a strategic planning process but the importance of planning varied institution by institution. For some entities, meaningful planning takes place at the organizational level, while for others meaningful planning takes place at a project or property level. For some entities, planning does not seem to be all that particularly meaningful at all - plans could expire, go un-updated for a period of time, and have little impact on organizational direction or resource spending. Some small measure of the meaningfulness of planning can be found in the way organizations either do or do not publish those plans. In our description of the planning processes below, we will include links to plans where possible.

It is important to recognize that lack of meaningful planning is not an indicator of organizational dysfunction per se. In general, the absence of meaningful planning generally indicates either a) lack of sufficient resources to plan with little downside to that lack of a planning process<sup>18</sup>, or b) a planning cycle that is out of cadence with the real needs of the organization - either a cycle that is too long to take account of changing conditions, or too short and thus out of step with how long conservation projects can take to identify, establish, and mature. In either case the organization could be quite successfully pursuing and achieving its mission and so should not be considered dysfunctional - but it should be conceded that almost any organization will do better if it is operating with a meaningful strategic plan.

## Entity approaches

### Federal organizations

As a general matter, federal organizations have substantial planning requirements. Planning takes place at the department level and then also at the agency or project/property level. Federal agencies in this analysis are governed by the Department of Interior (DOI)'s plan, which occurs on a 5-year cycle, with the [current plan](#) running through FY2018.

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<sup>18</sup> For many of the entities in this study funding does not appear tied to planning, at least to such a degree that solid plans are clearly necessary to get a budget. In contrast, many NGOs, startup companies, and corporate departments will devote substantial resources to strategic planning and plan communication, because funding decisions turn on those plans.

**U.S. Fish and Wildlife Service - Pacific Islands Fish and Wildlife Office (PIFWO)** - PIFWO has its own strategic planning cadence, also in five-year cycles, with the [most recent plan](#) covering 2011-2016. Although technically expired, PIFWO staff feel not much would change in a new plan and consider the previous plan fully operational. Changes from plan to plan generally concern where to focus conservation efforts.

**U.S. Fish and Wildlife Service - Pacific Islands Refuges and Monuments Office (PIRAMO)** - In addition to the DOI planning process, PIRAMO is required to produce comprehensive conservation plans (CCPs) for each refuge ([9 on the main Hawaiian islands](#)), and 22 in all across the PIRAMO complex) every 15 years.<sup>19</sup> The latest 15 year cycle was expected to be completed in 2012, but CCPs are not yet complete for all refuges. Completed CCPs, which will be active for 15 years from date of finalization, include:

1. [Kealia Pond](#) (Maui) - completed January 2012
2. [Hakalau Forest](#) (Hawai'i Island) - completed September 2010
3. [Kakahaia](#) (Moloka'i) - completed September 2011
4. [James Campbell](#) (Oah'u) - completed December 2011
5. [Pearl Harbor](#) (Oah'u) - completed February 2011

**U.S. Fish and Wildlife Service - Wildlife and Sport Fish Restoration Program (WSFR)** - WSFR staff indicated that the organization does not do substantial strategic planning independent of the rest of USFWS and DOI. The only [strategic guidance document](#) available on the web is a helpful overview of WSFR activities but is structured more as an introduction to the program and less as a true strategic guidance document.

**U.S. Army** - The Army Garrison in Hawaii's (USAG-HI) Natural Resources Program has several plans but no formalized planning cadence. [Under the Sikes Act](#), the Army is required to generate Integrated Natural Resources Management Plans (INRMPs) to ensure compliance with the Endangered Species Act. USAG-HI does have INRMPs covering Army sites on Hawai'i and on Oahu. Both of these covered 2010-2014, were coordinated with USFWS and state agencies, and remain valid until updated. An update is anticipated in the next 12 months. In addition, USAG-HI has implementation plans covering 1) Hawai'i Island, 2) all of Oahu except Makua, and 3) Makua separate from the rest of Oahu. These appear to be unique to USAG-HI and represent codification of the Army's cross-boundary and interorganizational approach to Endangered Species Act compliance.

**National Park Service (NPS)** - Like all DOI agencies, NPS is subject to DOI's strategic plan. Inside NPS, planning takes place in various ways and through various documents, but there appears to be an effort to coalesce around a standardized set of tools. In 2017 the NPS also issued [its first system plan](#) since 1972 (although NPS has issued a number of strategic

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<sup>19</sup> PIRAMO also manages Marine National Monuments which are subject to 15-year Monument Management Plan cycles. These are outside the scope of this project, which looks at terrestrial resource management.

guidance documents in the interim period, including a 2011 so-named strategic plan). In interviews with staff, they indicated that from their perspective planning is driven by NPS regional offices and takes place primarily through the promulgation of Foundation Documents (also called Foundation Statements). Foundation Documents are park-level strategy overviews and are meant to follow a [specific template](#), which makes clear they are the key planning documents inside the NPS. There is no defined cadence for refreshing these documents. Beyond the Foundation Documents, NPS also issues other planning documents, including Management Plans and Special Studies. The Foundation Document is paramount, however. NPS has a [strategic planning department](#), which is responsible for maintaining the catalog of various planning instruments.

## State organizations

State agencies are mandated under the State Planning Act to create “functional” plans in accordance with state’s general plan. In addition, certain USFWS grant-making requires state agencies to create strategic plans. Both of these requirements affect DLNR and other state agencies; OHA, while a creation of state law, has significant autonomy and does not appear to fall under the State Planning Act or to receive federal funding that comes with planning requirements attached. Nevertheless, OHA has recently enhanced its planning processes to the point where such plans are arguably more meaningful than State equivalents.

***DLNR - Division of Forestry and Wildlife (DOFAW)*** - DLNR does not appear to have one integrated strategic plan governing all its activities. Pursuant to the State Planning Act, however, it has issued a set of different documents laying out inventories and plans for a variety of resources and conditions, including for purposes of this analysis [forests inventory](#), [forest enhancement](#), [outdoor recreation](#), [Natural Area Reserves System](#), [water resources](#), [bird recovery](#), and others. In addition, WSFR’s State Wildlife Grants program requires the establishment of a [Comprehensive Wildlife Conservation Strategy](#), which was issued in 2005 and subsequently updated in 2015 with a [State Wildlife Action Plan](#). None of these plans appear to roll out under any defined cadence, but they are at least efforts to be responsive to state and federal planning expectations and are updated as stakeholders determine that conditions warrant. Despite this fairly exacting expectation around planning, however, DLNR staff indicate that implementation does not necessarily follow a planning process - because action is often driven by field offices, there can be a disconnect between planning efforts at DOFAW headquarters and implementation on the ground.

***Office of Hawaiian Affairs (OHA) - Land Assets*** - OHA has put an emphasis on planning in recent years, attempting to lay out measurable goals and timeframes across each area of activity. OHA currently operates under its [2010-2018 strategic plan](#). With strategic planning a relatively new expectation for the organization it is unsurprising that the metrics contained in the plan can be somewhat high-level, for example, that 15% of OHA land is managed “sustainably”



by 2018. Future versions of strategic plans may look to drill down into such metrics, but there is clearly a concerted effort to develop a meaningful process.

## Non-governmental organizations

The profiled NGOs all described formal planning processes, with the two national/international organizations using a centralized process based out of their national headquarters. Somewhat surprisingly, three of the four not-for-profits did not publish their strategy. Only Kamehameha Schools laid out an explicit process and planning document, while the others described an internal effort.

***Hawaiian Islands Land Trust*** - HILT has a three-year strategic planning cycle, but it does not make the plan available on the website. Strategic planning discussions are active at the Board level, however, and in the future the plan may be publicly articulated. At the moment, the most significant planning takes place through property management plans.

***The Nature Conservancy*** - TNC recently updated its global conservation strategy framework, now called [Conservation by Design 2.0](#). CBD requires use of what TNC calls an “adaptive management cycle,” where staff are constantly learning and iterating on priorities, strategies, and outcomes. In conversations with TNC-Hawai‘i staff, they indicated that this planning process could shift or add priorities, but that the work is still in progress. At the moment, TNC-Hawai‘i does not publish a Hawai‘i-specific strategy. TNC does describe each of its areas under management but does not publish property-level management plans.

***Trust for Public Lands*** - TPL performs a national planning exercise every three years. It does not appear this plan is published. Staff indicated that the local Hawai‘i advisory board provides input on local priorities, which are then fed into the national planning process.

***Kamehameha Schools*** - KS has 25-year planning cycle, broken up into 5 year increments; [the first cycle for 2015-2020 was recently completed](#). The actions for this first phase are based on a land vision for 2040, but with shorter-term goals defined. The 2020 outcomes include: “lands and resources that meet or exceed educational, financial, cultural, community, and sustainability targets.”

# Module C: Use of climate change information in organizations' planning processes

## Introduction

This aspect of the analysis tries to understand how terrestrial resource managers in Hawai'i incorporate climate change and adaptation needs into their strategic planning processes. As with other aspects of the project, we primarily focused on Hawai'i's terrestrial natural resource management entities in performing the analysis.

As a general matter, the role of climate change in the planning process for any organization roughly corresponds to whether the organization is federal, state<sup>20</sup>, or NGO. Federal agencies have recently operated under a set of Executive Orders compelling them to take climate change into account in their planning processes.<sup>21</sup> The specifics of this requirement are challenging, and different agencies implement the requirement in different ways, but all of them have attempted to incorporate climate change and adaptation needs into their processes. The state actors, in contrast, have no formal requirement to include climate change in their planning process and, while it appears to animate thinking, they generally describe planning for climate change as an aspirational goal rather than an active process. Finally, the NGOs are somewhere in between the federal and state positions: there is a strong desire to incorporate climate change and some resources to do so, but it does not yet appear to be mainstreamed into the strategic planning for the NGOs. To the extent practicable, clearer mandates from state and NGO leaders could help drive more formal processes for these organizations, which in turn could spur more collective work among them to address climate change. This has not always necessarily been the case for the federal organizations, but there is hope that organizations with more narrowly tailored Hawai'i-focused missions might find it easier to construct common agendas.

## The planning approach of each entity

### Federal organizations

***USFWS Pacific Islands Fish and Wildlife Office*** - Like all of the federal organizations, PIFWO staff noted at the time that there was a national mandate to take climate change into account in

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<sup>20</sup> For purposes of this analysis we are treating DLNR-DOFAW, OHA, and the Kamehameha Schools as effectively state entities. The first two are state agencies, and KS, while a private landowner, is historically central enough and large enough to effectively operate at a state-wide scale.

<sup>21</sup> As noted in the legal analysis, the specific requirement put in place by the prior administration has been rescinded by this administration, but the practical implications of that change are still to be determined.

planning. However, also like all the other federal organizations, PIFWO staff also struggle to figure out exactly how to incorporate climate data and indeed what specific data to use. In interviews, staff cited three different types of examples of how climate could affect PIFWO planning:

- It can confuse nuanced, highly localized decision-making. One interviewee described coral zones that live at the intersection of the ocean and island rivers, where it appears the cooling effects of the rivers are somewhat mitigating ocean warming. This requires a highly localized analysis, which is hard to do for every single instance but critical when talking about highly circumscribed effects. The obligation to plan for climate change in theory requires marrying highly granular resolution to landscape-level thinking, which is challenging to do in general and very challenging to do with the resources available and given the speed with which habitats are changing.
- However, climate change can also impose certain extreme outcomes, which can in some cases clarify strategy. This interviewee noted that climate change will create a number of binary choices, namely to protect or lose a species. He described how PIFWO could use climate change data to understand where the models made clear that areas or species were facing total destruction, noting, “climate will help draw the maps of areas you’ll want to die over.”
- Current planning approaches do not match up well with expected climate impacts. Historically, PIFWO staff look out 10-15 years in evaluating standard impacts. However, climate impacts range out much further, requiring staff to forecast as far as 2100. There have been conflicting internal signals about how to deal with this timing mismatch.

***USFWS Pacific Islands Refuges and Monuments Office*** - PIRAMO may be the organization that most clearly and consistently incorporates climate change into its planning processes. Each conservation area must have a 15-year comprehensive conservation plan, which must incorporate climate change effects and consider adaptation needs. There is a big push to go to landscape-level planning (which is also the founding goal of the [Landscape Conservation Cooperative Network](#), which includes the PICCC). As a result, each refuge must show how it blends in with the larger ecosystem’s development and maintenance. That larger goal of understanding landscape integration and creating landscape plans remains a significant challenge.

***USFWS Wildlife and Sport Fish Restoration Program*** - Although the overall size of its program is not especially large, WSFR’s grant requirements allow it to create significant leverage with its state partners. Climate change is a specific point of influence in grants outreach generally, and it specifically shows up as “bonus points” in the one grant program (State Wildlife Grants) that WSFR directly manages through the following process:

- a) State participation in the State Wildlife Grants requires a State Wildlife Action Plan (SWAP);
- b) The SWAPs are revisited every 10 years, at which point new requirements can be added;

- c) The first set of SWAPs with an identified conservation strategy were produced in 2005; Hawai'i just finished a revision last year, and the SWAP requirements now include a discussion of climate adaptation;
- d) What this means in practice is that climate adaptation is identified as a need in the SWAP; the state had to identify priority actions and species; and WSFR uses the SWAP as an accountability mechanism.

**U.S. Army** - Staff biologists who monitor and mitigate the Army's environmental and ecological footprint carry a significant burden in addressing impacts that are driven by a combination of Army activity, natural processes, and climate change. While resource constraints make it challenging to have a dedicated climate change planning element or process, staff have a strong interest in understanding climate change impacts in order to inform future resource allocation. As a first planning step, they have begun to incorporate climate vulnerability scores from the USGS in species management plans. They have also undertaken actions that, while not aimed precisely at addressing climate change, will have climate change impact mitigation benefits. For example, their plans (and current actions) include the creation of genetic banks of endangered plants to provide a resource for reintroduction in the event of a catastrophic species loss; and the establishment of management control over diverse areas ecosystems and topographies to try and ensure staff have access to optimal areas to support species reintroduction as the climate shifts. In short, staff biologists are actively engaged with climate and including it in many of their planning activities and on-the-ground actions but do not as yet have a formal program that specifically addresses climate.

**National Park Service** - Like other federal agencies/departments, NPS is mandated through Executive Order to take into account climate change in their planning processes. Climate change efforts are coordinated through the [NPS's climate change office](#) in Fort Collins, Colorado. At this point, there is an emphasis on information flow - data about climate change impacts are being collected in the parks and exchanged with the Colorado office. Colorado has disseminated adaptation guidance and encouraged scenario planning for climate change.

## State organizations

**DLNR DOFAW** - DOFAW's approach to climate change in its planning processes exemplifies the general challenge for state organizations. As one interviewee noted, "climate is in the back of everyone's mind, but for managers it is not a big part of their daily lives." In other words, there is broad organization awareness of climate change but little time to effectively plan for it. This is particularly true at the branch level, where much of the key decision-making takes place. Organization leaders note that division headquarters uses climate change as a framing tool to explain actions already undertaken, and to the extent climate does play a role, the approach is opportunistic and focused on where DOFAW can clearly make a difference. As a result, adaptation planning in particular is not a huge part of the strategic planning equation. Having said all this, DLNR-OCCL is engaged in a statewide coastal adaptation/resiliency planning effort

as required under Hawaii's Climate Adaptation Initiative Act (Act 83), and while this does not currently affect DOFAW actions or plans, at some point in the next few years the process may move on to terrestrial resource planning.

**OHA Land Assets Division** - Climate change adaptation considerations were not cited as a firm obligation for the strategic planning functions of OHA, although staff said both climate change and adaptation were percolating throughout multiple departments at OHA, including Land Assets. In the Land Assets division, they do look out 100 years in their process, which naturally requires thinking about climate change. Staff cited two ways in which they are clearly trying to consider climate:

- For agriculture, they are trying to understand future rainfall patterns;
- They are also paying close attention to the Rapid 'Ōhi'a Death problem, and considering how that is both a harbinger of future invasive issues as well as something with direct impact on freshwater supplies.

Beyond these specific points, staff describe themselves as trying to understand and adopt as many strategies as possible. Program staff generally know where lands are drying and shorelines are being eroded. Staff also note that the agriculture team is starting to incorporate responses to climate info; the real estate team is responding to industry standards, and to the extent those drive different decisions climate change will be reflected there.

## Non-governmental organizations

**Hawaiian Islands Land Trust** - Climate change is beginning to emerge as a significant strategic concern for HILT, and is starting to be reflected in HILT's approach to land acquisition. While HILT staff are trained in climate change principles and are believers in the importance of incorporating climate change impacts in organization planning, staff indicated that the Hawaiian Islands Climate Synthesis workshops that PICCC hosted gave the organization the bandwidth to engage with climate change experts and climate strategy. Staff called out two developments that are informing how HILT treats climate in its planning:

- HILT has used the TPL GreenPrint tool on Oahu, although as noted under TPL this tool is not fully activated for Hawai'i yet, but the use of the tool is part of an exploration of how to incorporate climate change into planning;
- HILT is still considering how formally or overtly to address climate change adaptation as an organizational goal. When HILT was going through its conservation values definition, the question of whether climate change adaptation should be specifically called out was debated. The Board felt it was already included implicitly; the Island Councils, which help guide island activities, wanted to call it out in every decision. The Board was concerned about being driven by climate because of potential liability in taking on properties. This remains an ongoing conversation.



***The Nature Conservancy*** - Climate is clearly a programmatic focus in the national organization and is called out as one of four priorities for the state organization. It has played an important and still emerging role in the way TNC thinks about marine ecosystem interventions, as TNC is very focused on attempting to preserve coral reef habitats. In the forest realm climate change is also a priority but has not obviously resulted in any particular change in strategic focus or operations.

***Trust for Public Lands*** - The national organization is pushing the use of climate change as a strategic driver. The national organization has developed a proprietary GreenPrint technology (which allows it to do strategic planning around climate data-driven maps), but they have not been able to implement in Hawai'i yet. As such, with more resources or the right partnership, this tool could quickly come online and serve as a resource for TPL and other users. In the Hawai'i office climate change impacts and adaptation needs were both identified as occasional general discussion points in TPL's acquisition strategy. TPL staff also identified sea level as an infrequent but tangible specific climate impact that could affect strategy. At this point, however, climate change implications are not a systematic part of their review or strategy process.

***Kamehameha Schools*** - Climate change is not an express part of planning processes or organizational life, although it is top of mind for the Natural and Cultural Resources (NCR) Department. Conservation is also not explicitly mentioned in the current organizational strategy document. While not a formal part of the organization's strategy plan, NCR is developing a lands stewardship plan, which will consider conservation and climate adaptation.

# Module D: Perceptions by managers of barriers to climate change adaptation

## Introduction

As part of this study, we looked to gather information on what barriers resource managers in Hawai'i considered to be the most formidable in addressing climate change adaptation. We collected information through two sources: 1) a review of the literature concerning climate change adaptation barriers generally (more plentiful) and specifically in Hawai'i (a smaller set of materials), and 2) interviews with the major federal, state, and NGO land management organizations. The interviews were conducted in a rigorous but often not-comparable way, as we approached the conversations with a set of predefined questions but followed the threads where they took us. As a result, we do not have meaningful quantitative data on responses, but we do have significant qualitative reflections on the answers we heard.

## Types of barriers

Based on the literature review and interviews, we identified the following categories and subcategories of barriers:

- a) **Legal/regulatory** - challenges imposed by laws, regulations, or legal instruments (contracts, easements)
  - i. Federal
  - ii. State
  - iii. Local
  - iv. Contractual
- b) **Funding** - lack of financial resources
  - i. Federal
  - ii. State
  - iii. Philanthropic
- c) **Personnel** - lack of sufficient personnel or adequately trained personnel
- d) **Data** - lack of appropriate or accessible data
  - i. Availability
  - ii. Accessibility
- e) **Strategy setting challenges** - the absence of meaningful climate change adaptation strategy setting

- i. Lack of meaningful strategy setting culture
  - ii. Lack of culture of accountability
  - iii. Lack of agreed-upon adaptation standards
  - iv. Lack of time to do serious strategic planning
- f) **Conservation organization mission overlap** - organizational turf issues or confusion over organizational roles
- g) **Sovereignty tensions** - Tension between federal, state, and sovereign Hawaiian interests
- h) **Value conflicts** - Lack of agreement on what is worth saving and what "saving" means
- i) **Public opposition** - Public opposition to acting on climate change
- j) **Organizational inefficiency or dysfunction** - Bureaucratic or ineffective organizational operations

Some of these barriers have a certain connectedness to them - a “personnel” barrier could be driven by a talent gap but is also clearly related to a funding problem. Similarly, a “lack of time to do serious strategic planning” is related to funding and personnel. Nevertheless this taxonomy seemed to be the cleanest way to frame the barriers and is true to what we read and heard, in that it puts emphasis on some barriers that were regularly cited (notably personnel).

## Intensity of the barrier as cited by the interviewees

Overwhelmingly, interviewees in Hawai‘i reported a lack of personnel and data as the main challenges they face in preparing for and acting on climate change. Resource managers in Hawai‘i face a set of mutually reinforcing issues: a lack of resources, a surfeit of microecosystems and sensitive species, and an intensity of threat from climate change, all of which in combination puts them in perhaps the most defensive position of all resource managers in the United States. At the same time, more than one resource manager described him or herself as “fighting daily fires” and “just trying to keep the weeds down,” indicating that the daily needs of their jobs prevented any significant planning or thinking about the future. One manager said climate change is clearly in the back of everyone’s minds but they are not actively working to manage for it. Resource managers are of course already starting to deal with and in a sense adapt to climate change, but this is happening through the course of daily tactics and in a reactive rather than strategic and proactive way.

Data needs were a major focus of the discussions and show up repeatedly in the literature review. Interviewees made clear that their wish lists included data sets with very local resolution - models that are global or even statewide were cited as somewhat useful but inadequate for actual species and land management. While some interviewees recognized the challenges inherent in providing highly granular data for all potential species and ecosystems, a recurrent

theme was the need for the accessibility of any tools that are produced or do exist. There was an expressed interest by several parties in a greater focus on more user-friendly materials.

Funding is clearly an issue for resource managers. Interestingly, few people expressly said anything like “we need more money,” but many cited the intense resource pressure under which they operate. Federal funding is obviously a major source for both federal and state actors - state actors, for example, are willing to go to significant lengths to get even relatively small federal grants. It could be fair to characterize federal funding as more important than state funding because state funding appears to be significantly smaller than federal funding. A decrease in federal funding, or a policy change modifying how the federal resources can be used, would have incrementally more impact than state funding. Federal funding is also subject to a different set of political forces than state funding. Overall, one might characterize federal funding (or the lack thereof) as a greater barrier to climate adaptation than state funding.

Interestingly, the lack of philanthropic resources was not cited as a significant barrier. This may be because the NGO community believes that the ultimate onus for responding to climate change in Hawai‘i will lie with the U.S. government or state government.

Concerns about strategy setting challenges emerged in several ways but generally were not cited as often as personnel and data. Some people expressed frustration about what the standards were for climate change adaption - what year should analysts model for, what constitutes acceptable change, etc. This lack of agreed-upon standards make it difficult to create meaningful, comparable strategies across organizations. For funders and regulators, this lack of consistency and comparability imposes funding and evaluation challenges.

While a number of organizations do engage in planning, a lot of those plans either do not include climate change in a material way or are “check the box” exercises where the plan does not provide a meaningful way to guide action or resource deployment and provides no accountability function. This appears to be driven in part by a lack of a serious strategy setting culture among resource management organizations in Hawai‘i<sup>22</sup> and, again, by time constraints created by a lack of funding. Several organizations in the feedback from the Hawaiian Islands Climate Synthesis workshops and in interviews were enthusiastic about the strategic engagement provided by those workshops, noting it was one of the few, perhaps only, times they had sat down to talk about the strategic concerns of climate change.

Less frequently cited - but still noteworthy - barriers included issues over values differences and mission overlap among key organizations. On the former, questions were asked about how to evaluate cultural resources versus ecological resources, or how to measure one ecological resource against another. The lack of an agreed-upon approach was highlighted as a reason why organizations might not be able to work together to respond to climate change.

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<sup>22</sup> To be fair to Hawai‘i, this is a problem throughout a lot of the public and social sectors.

Mission overlap concerns were raised in particular with respect to PICCC and PI-CSC. The willingness of these two organizations to share research funding responsibilities has created some confusion over their roles.

Rarely emphasized were the internal operating procedures of the various organizations, and sovereignty tension between the various government actors in Hawai'i. As to the former, the main form of "dysfunction" appeared to be some of the concerns already cited regarding resources and strategy setting, although at least one organization did note that it had a lot of organizational complexity. Similarly, the sovereignty tension issue was hinted at and perhaps showed up through other issues but was only cited by one or two organizations. In the case of both barriers, conversations with interviewees, outside reading, and the author's experience in working with similarly situated organizations suggest that internal operational challenges and tensions between political entities often contribute significantly to a complex working environment like the conservation community experiences in Hawai'i. At the same time, the values of the community around kindness and generosity of spirit, the relatively small pool of professionals, and a general human aversion to airing "dirty laundry" with an outsider often contributes to a willingness to elide over these sorts of factors in interviews. As a result, there is little hard evidence with respect to either barrier, and yet they both appear relevant as organizations consider how to move forward on strategy and collaboration.

Somewhat surprisingly, legal barriers were not cited by anyone. Clearly, law can drive funding, and so to the extent interviewees highlighted resource challenges they were indirectly underscoring the need for legal authority to drive funding. The literature spends a fair amount of time talking about whether federal regimes drive or hold back climate change adaptation. As a general matter, some federal agencies are more obviously able to respond to climate change than others are, but the law as written does not appear to be a meaningful bar. The law as interpreted, however, may be a different matter, and the situation is likely to be dynamic in the new administration.

# Module E: Overcoming barriers to acting on climate change adaptation in Hawai'i

## Introduction

With barriers to addressing climate change adaptation identified by stakeholder resource managers in Hawai'i, the analysis now turns to how to overcome those barriers. Here the literature and interviews are helpful but provide no clear solutions: many of the barriers as described appear effectively insoluble (e.g., the needs for substantially more money and highly detailed models for each ecosystem and species under threat) or were articulated without any suggestions of a path forward (e.g., requests for standards and definitions for climate change adaptation). Of course, while some of the challenges that Hawaiian resource managers face are idiosyncratically local or especially acute, the macro-challenge of needing to address a serious social issue without having the resources or time is not a problem exclusive to Hawai'i or to climate change. Framing the problem as one where we try to help a set of like-minded but independently-acting organizations address this collection of barriers leads to the conclusion that it is unlikely any one of these organizations will succeed on their own. Framing the question in a different way, however, to ask what sort of collective action could be taken to help these organizations pool their resources and work together to address this set of challenges could lead us to conclude that indeed there are steps available and that there is a need for such a coordination function among Hawai'i's resource managers. At its heart, such an effort depends on an agreed-upon strategy map that outlines goals, actions, resources, and gaps. Getting to this kind of map should be the goal.

The [collective impact model](#) is one paradigm that has been used on other issue areas and in other geographies to engage in this kind of collective problem solving. Indeed, several [Landscape Conservation Cooperatives](#) (LCCs) elsewhere in the country effectively already follow this approach, and PICCC itself has begun to move in this direction and away from being primarily a provider of grants and data. There is a clear need for an organization to play a backbone/organizing role. Whether this 'hub' organization operates under a collective impact framework or some other operating principle, this analysis identified the need for an organized, collective effort centered around a shared strategy and accountability system.

The analysis suggested five other practical responses after review of the data and consideration of meaningful answers to the challenges. These opportunities could all be addressed as part of a collective impact strategy or independent of one. Perhaps, by working on these discrete opportunities in advance of something more comprehensive, the community could score early wins that would help it develop momentum towards building a collective strategic approach. In any case, the practical responses outlined below appeared to be the most tangible ways of

responding to the challenges cited by the community – a kind of playbook for what community managers could try to work on right away.

First, community members consistently cited a lack of financial resources and the deprioritization that this funding gap implied as major constraints. In order to increase the opportunity for ecosystem preservation to access greater funding pools, the conservation community needs to continue to embed its work into larger green infrastructure discussions. Human needs will nearly always trump ecosystem needs, particularly in times of uncertainty where the impacts on humans are unknown (in cases of great uncertainty where resource tradeoffs are required, we can expect our response to be an overinvestment in the built environment at the expense of the natural one). However, there are strong reasons why investment in conservation *is* an investment in human welfare – watersheds, air quality, soil quality, and carbon storage, among others. Focusing on that link may help shift the understanding of ecosystem preservation from a purely cost-based viewpoint to one where it is seen as generating positive social return, like a road or a sewer system. This will take time and persistence, but examples from elsewhere show that inroads are possible.<sup>23</sup>

Second, clarity about organizational roles will help players understand where to go to for resources. Community members cited confusion about role division among a number of the leading organizations, including PICCC and the PICSC. Lack of role clarity creates transaction costs and exacerbates problems where resource scarcity is already acute. Resolving and making transparent institutional relationships can be difficult, although the close-knit nature of the conservation community might make it easier. Of course, this kind of clarity could and should emerge through something similar to the collective impact approach, and indeed a conversation about institutional relations could be a prelude to a more intensive conversation about a long-term strategic partnership. In any case there does appear to be need for support-providers like PICCC and the PICSC to clarify their roles and, perhaps uncomfortably for folks in Hawai'i, to take credit and do a little self-promotion so that it is clear who is working on what, with what degree of success, and where gaps exist.

Third, research products and other tools require user-centric design. A consistent point of friction among the user community was the need for easier-to-use tools. The commercial world now understands this concept well - companies can fail or thrive on their ability to understand and respond to their consumers' needs. NGOs, universities, and governments often ignore this concept of the "customer journey" but in so doing diminish their impact, because the difference between a "good enough" product and a "great" product is often exponential growth in the reach and use of the product. From an impact standpoint, it would be better for those creating research and tools for use in planning for climate adaptation to create one great product than 10 mediocre ones. What this likely means in practice is the need to direct resources towards investment in user testing and design consultations to determine the threshold at which a product goes from good enough to great. Existing data from current tools around user

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<sup>23</sup> In California, for example, the legislature passed and the Governor signed AB-2480 to recognize watersheds as elements of the state's water infrastructure and eligible for funding from water resource funding sources. This policy shift allows California to treat forest restoration, for example, as a form of infrastructure investing.



interactions and usage might provide some clues as to what makes for a great tool in the Hawaiian conservation context, and community members and data providers could start there before investing heavily in bringing in expertise. Nevertheless, outside experts will probably be required, and their insights could prove powerful in transforming how analysis and tool providers think through user needs and their own production processes.<sup>24</sup>

Fourth, “innovation” is a perhaps overused term these days, but there is value in looking to innovation practices for ideas on how to get people out of their comfort zones and brainstorming together, especially when dealing with established sets of challenges that seem too fundamental to overcome. More and more organizations are hosting design charrettes and rapid prototyping workshops to get their stakeholders out of their comfort zones and problem-solving in a rapid, “safe to fail” mode. These types of interventions are often painful/awkward and yet incredibly insightful, and it may be worth identify some budget to host such workshops. It is always difficult to mechanically search for innovation, but these kinds of forums are one way to maximize the chance that the organization is building in capacity to do some new thinking. Workshops that focus on fast prototyping, for example, can produce surprising insights by forcing people to create new concepts or models, test them rapidly, discard, and improve. This kind of approach is being used even in risk-adverse government workplaces to get stakeholders with well-established views and expectations to abandon their orthodoxies and look at problems with fresh eyes.

Finally, there is the question of active engagement by conveners, funders, and strategy-setting organizations with community members to maximize impact. Organizations like PICCC have some form of commitment from their membership. That simple act of signing up signals an interest in participating in addressing climate change – whether motivated by an interest in funding, data, collaboration, or the desire to just see what might come out of the organization, which many interviewees suggested was their reason for participating in PICCC. We should not ignore this act of signing up, and in order to capitalize on it PICCC and other similarly situated organizations should overinvest in outreach. A structured program of collaborative strategy setting and follow-on measurement – effectively what a collective impact action approach mandates – would likely ensure the needed frequency of engagement. But even if something as formal as a collective impact collaboration were to never materialize, adaptation-focused leaders like PICCC and others need to ensure their members are regularly engaged and communicated with, even if at times the activity seems a little excessive. Investment in engagement will pay off in myriad ways.<sup>25</sup>

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<sup>24</sup> A useful primer on the human-centered design process is at <http://www.designkit.org/human-centered-design>.

<sup>25</sup> Conversations with PICCC members and comparisons with the experiences of LCCs in Alaska and the Pacific Northwest proved illustrative on this point. While PICCC has an established brand and a reasonable amount of relationship equity with its members, these members fairly consistently described a shallow relationship dynamic with PICCC driven often, they said, by lack of time to engage with PICCC. In contrast, other LCCs report very heavy engagement with their member organizations, including multiple heavily resourced and briefed meetings each year, which has led to a healthy working relationship and a lot of meaningful exchange over issues and strategy.

## Specific responses to barriers

While it may be more helpful to consider the distillation of the challenge and response set into a group of themes or macro-approaches as described above, we thought it would be still useful to try and map specific responses to the barriers that were described by the interviewees and the literature.

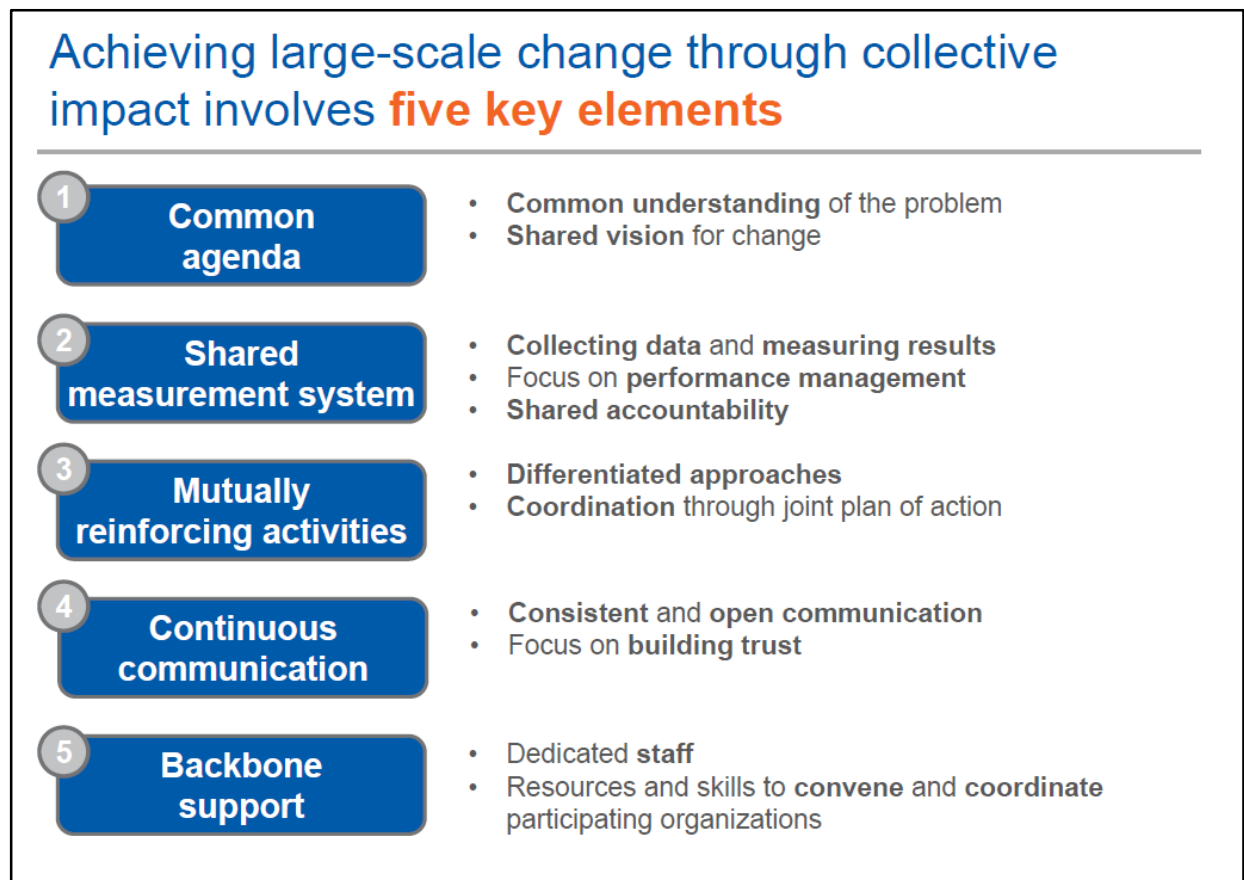
Main barrier	Sub-barrier	Response
<i>Legal/regulatory</i>	Federal	It is challenging for many conservation community members to try to fix federal law challenges, either because they are part of the federal government or depend on it for funding. Some members could (and do) push for federal law changes, although the current executive and legislative environment does not seem conducive to achieving meaningful wins.
	State	Community members could play a role in consistently articulating the need for more Hawai'i statutory requirements and funding. For example, someone could track state adaptation developments in the rest of the U.S. to demonstrate where Hawai'i stands.
	Local	This project did not look at local laws, but to the extent they are relevant community members might try to play a role in updating them. The return on investment here is likely to be low, however.
	Contractual	One piece of feedback from the Hawaiian Islands Climate Synthesis Project suggested greater knowledge about this barrier could be helpful. An organization could commission some sort of study to understand how current easements or other land arrangements are affecting adaptation.
<i>Funding</i>	Federal	Community members presumably could try to participate more actively in federal budgeting processes. This would be difficult to organize through federal entities, but State and NGO actors could try to apply pressure.
	State	Hawai'i state resources for conservation and resource management work are low; community members might

		be able to play more of a role in demonstrating the need and utility of additional investment, and this is one area where each incremental dollar would likely have large impact.
	Philanthropic	Some LCCs have started to focus on philanthropic fundraising, and PICCC or its members could organize an intervention here. In general, community members could try to be more strategic and organized in pursuing such funding. To date, the analysis has not identified any organization that seeks to fundraise for a collective climate change adaptation approach.
<i>Personnel</i>		Community members could help with capacity in three ways: 1) more funding for people, 2) connecting good people with positions, 3) providing training opportunities. In the absence of more funding, options 2 and 3 are the lowest cost (although both require management capacity).
<i>Data</i>	Availability	This has traditionally been PICCC's and the PI-CSC's bread and butter approach, and it was a major focus of the interviews as an area where community members think they need more help. At the same time, it is unclear if doubling down here results in substantially more impact.
	Accessibility	Organizations that provide data products could focus a lot more on design – doing user interface testing of products, and hiring design consultants to improve accessibility and user interactions.
<i>Strategy setting challenges</i>	Lack of strategy setting culture	One or more organizations could model good behavior and sponsor regular strategy sessions (such as has been done through the Hawaiian Islands Climate Synthesis Project) to help foster this culture shift. Such culture shifts are generally the result of leadership, consistency, and time.
	Lack of culture of accountability	As part of a shift on the strategy setting culture, one or more organizations can also model accountability norms and create "safe" check-ins where people talk about how they are performing against an agreed strategy map.

	Lack of agreed upon adaptation standards	It is not clear which institution should play a lead role in trying to steer the community towards agreed-upon standards. The adaptation standards should presumably be part of an overall strategic mapping effort.
	Lack of time to do serious planning	While no single organization can create more time, one could take much of the burden off organizations to do strategy setting on their own. A great deal of resistance in finding the time to do strategy setting is in a) seeing the value, and b) setting up the frameworks, getting people in a room, taking notes - the logistics. A designated strategy hub can help with that.
<i>Mission overlap</i>		An explicit strategy map is one tool to allow for an explicit discussion among institutions about how best to divide and conquer on needs and priorities.
<i>Values conflict</i>		It is not clear which institution (if any) should play a lead role in trying to steer the community towards agreed-upon values; PICCC or one of its members could try to assert itself here, or try to help identify the right set of organizations and people.
<i>Public opposition</i>		Hawai'i generally has a high degree of acceptance of the reality of climate change and need for responses. Still, there are good examples of how polling can drive policy outcomes. See, e.g., <a href="https://whatworkscities.bloomberg.org/works-cities-blog-post-citizen-satisfaction-survey-led-800-million-bond-fix-kansas-citys-infrastructure/">https://whatworkscities.bloomberg.org/works-cities-blog-post-citizen-satisfaction-survey-led-800-million-bond-fix-kansas-citys-infrastructure/</a>
<i>Organizational dysfunction</i>		While no federal, state, or NGO can force organizations to engage in a great deal of self-reflection and process improvement, community members can a) try to develop a common strategy map, which will have some impact there, and b) employ other indirect mechanisms to drive behavior change, like innovation workshops.

## Collective Impact Model

It is worth spending some time thinking through the utility of the collective impact model and how it would apply in this context. Here is the summary of the collective impact model, as first described by Kania and Kramer in the Stanford Social Innovation Review in 2011<sup>26</sup>:



**Figure 1:** This figure was provided by the organization [FSG](#) and it depicts the five elements of achieving large-scale change through a “collective impact model”.<sup>27</sup>

One can see collective impact approaches implemented in a variety of sectors, including education, health, economic development, and the environment. Success depends on some key factors:

- 1) Influential champions, notably government leaders
- 2) Urgency for change in the community, driven by frustration with current approaches in confronting a complex problem

<sup>26</sup> See Kania and Kramer, Collective Impact, *Stanford Social Innovation Review*, Winter 2011. URL: [https://ssir.org/articles/entry/collective\\_impact](https://ssir.org/articles/entry/collective_impact)

<sup>27</sup> The above figure was provided courtesy of a presentation made by FSG, a NGO consultancy that specializes in collective impact work. For more information on their work, see: <https://www.fsg.org/>

- 3) Availability of resources – the collective impact model suggests funding partners who can support the collective impact infrastructure for at least 3-5 years
- 4) Basis for collaboration, including trusted relationships and existing collaborative efforts.

Factors 1, 2, and 4 are present. The conservation community is small and connected; the main players are all represented and work well enough together; and there is generally an agreement that climate change is an issue and the current approaches unlikely to succeed.

Factor 3 is likely a challenge but may be surmountable with enough energy and effort. In any case, the collective impact approach is worth discussing among the resource manager community as a way of working together to share resources, identify new resources, and try to tackle the adaptation planning and execution challenge in a way that leverages each other's skills, people, and ecosystem assets.

One could argue that Hawai'i already has a number of good examples of collective impact approaches in the form of the Watershed Partnerships. These partnerships bring together disparate actors across the public, private, and social sectors to manage a specific landscape on the basis of an agreed-upon strategy and relying on an NGO with state funding to maintain the partnerships' collective action. The Partnerships have the obvious advantages of distinct watersheds, a limited set of possible tools, and clear metrics, all of which allow the partners to work together easily, avoid contentious strategy debates, and have ready accountability with one another. What this suggests is that terrestrial resource managers interested and willing to work in this manner should try to emulate this approach, perhaps through a series of early pilots, by identifying specific geographies and a limited toolkit of interventions, and building up from there.

As another potential model, the [Pacific Birds Habitat Joint Venture](#), a PICCC member, could provide useful lessons or a base of activity around which to create a collective impact structure. Pacific Birds is one instance of the larger complex of USFWS-funded [Migratory Bird Joint Ventures](#). Feedback from Pacific Birds indicated that the umbrella Joint Ventures program served as a model for the formation of the LCCs and that Pacific Birds has served as a statewide organizing platform for addressing bird conservation in Hawai'i (and elsewhere in the Pacific). Pacific Birds is in the process of creating a statewide strategic plan, which will include a spatial analysis to help prioritize conservation actions and drive collaboration between parties. They are also incorporating a NGO vehicle to serve as a fundraising arm for executing this strategic plan. Where the Watershed Partnerships organize around discrete landscapes and a set of narrow intervention options, Pacific Birds provides a model that looks to statewide action organized around a specific set of affected species. Although geography may prove to be a useful first (and perhaps best ultimate) way to organize the set of collective impact activities contemplated in this study, there may be lessons to learn in thinking through how to create collective impact around other axes.

Examples from collective impact approaches outside Hawai'i may also prove useful to review. Perhaps the most well documented environmental model in the collective impact literature is the

[Elizabeth River Project](#), a collective approach from a wide variety of stakeholders in the waters surrounding a heavily polluted tributary to the Chesapeake Bay. The Elizabeth River Project is supported by an NGO of the same name which operates as the backbone organization. Similar to the Watershed Partnerships, the Project has the advantages of a clearly defined geography and metrics, but it also shows that large geographic areas can be managed and restored even when that requires the efforts of a large group of stakeholders.

Meanwhile, here in Hawai'i, PICCC has already begun to lay a strategic foundation for collective impact pilots even if that has not been the named goal. The strategic work PICCC has undertaken through its Hawaiian Islands Terrestrial Adaptation Initiative and through the Hawaiian Islands Climate Synthesis workshops has helped stakeholders come together to examine the science and discuss needs and interventions over the course of the last year. These workshops are beginning to help establish a common agenda and set a precedent for the kinds of conversations that will need to happen to establish a common strategy. This is the beginning but clearly not the end of any collective strategy setting processes. Further exploration of a structure like a collective impact approach should be a major point of discussion among the community members, as the inherent challenges of work on ecosystem adaptation to climate change are too substantial for any single entity to manage or overcome.



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