

Hawai'i Ocean Resources Management Plan Evaluation & Refresh



2025



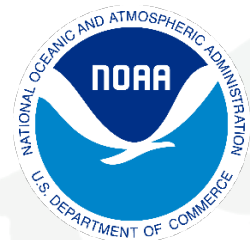
Hawaii CZM Program
Coastal Zone Management

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Executive Summary

Partner agencies of the Hawai'i Ocean Resources Management Plan ("ORMP") Network are at the midpoint of a 10-year Implementation Phase, which began in 2020 and is centered on a mauka to makai approach to building coastal resilience, protecting marine ecosystems, and addressing climate and development pressures. On behalf of the ORMP Network, the Hawai'i Coastal Zone Management ("CZM") Program prepared this '2025 ORMP Evaluation & Refresh' ("ORMP Evaluation & Refresh") to serve as a progress assessment.

The ORMP Evaluation & Refresh:

- **Provides** a comprehensive assessment of implementation actions completed by the ORMP Network since 2020
- **Identifies** emerging issues and strategic priorities for 2025 through 2030
- **Reinforces** the effectiveness and value of the ORMP Network Structure

As the lead agency for the ORMP network, the CZM Program held conversations and conducted a survey with partner agencies to inform this ORMP Evaluation & Refresh. In addition to continued commitments to the 2020 Focus Area Goals, the ORMP network identified key takeaways amongst evolving priorities for sustainable resource management, including:

Focus Area-Related Emerging Issues

Cesspool Conversion
Watershed Coordination
Wetland Management

ORMP Network Coordination Enhancement

Identifying Funding Strategies
Increasing Coordination Mechanisms

While coastal challenges in Hawai'i are complex, these challenges present opportunities for innovation and improved coordination within the ORMP Network. The three 2020 ORMP Focus Areas (Development and Coastal Hazards, Land-Based Pollution, and Marine Ecosystems) recognize the dynamic nature of coastal resource management and the need for adaptive, holistic, and integrated actions. Sustained success for the remainder of the ORMP Implementation Phase through 2030, requires comprehensive integration across focus areas, agencies, and knowledge systems – from Mauka to Makai and from traditional to contemporary practices.

Introduction

The ORMP Evaluation & Refresh provides an overview of progress made since the adoption of the [2020 ORMP](#), while also laying the groundwork for future priorities. This section serves as a bridge between implementation since 2020 and a forward-looking strategy. By first assessing the progress of existing management efforts and then identifying emerging challenges and opportunities, the ORMP Evaluation & Refresh aims to ensure that Hawai'i's ocean and coastal resources are managed with responsiveness in a changing environment.

Progress Assessment of the 2020 Ocean Resources Management Plan

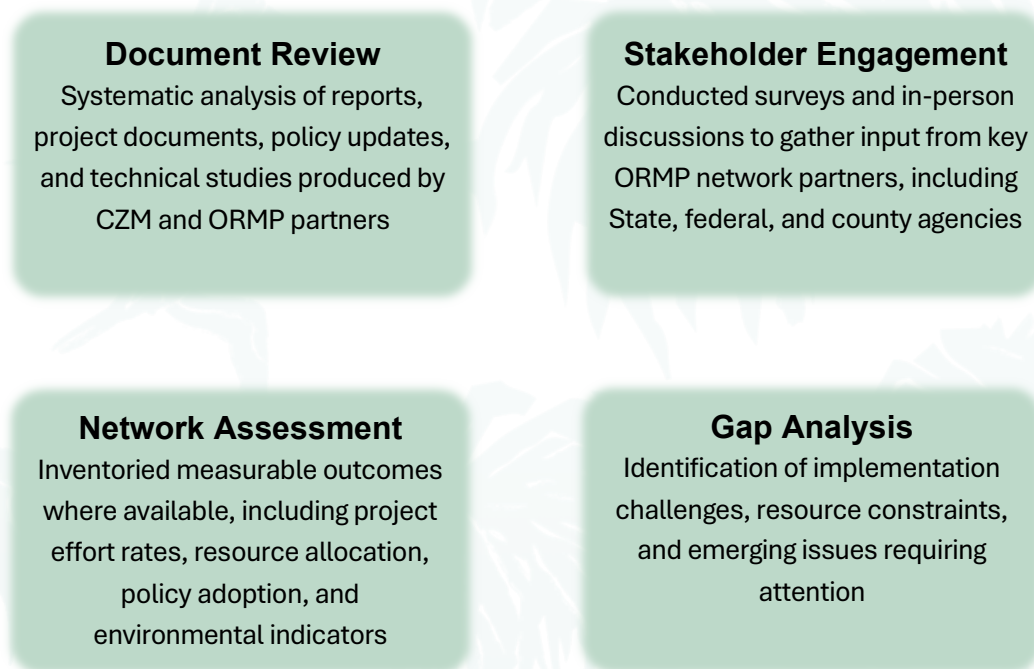
The 2020 ORMP represents a coordinated effort to address the complex challenges facing the State's marine and coastal environments. It outlines clear goals, management priorities, and implementation strategies within a unified framework that guides collaboration across agencies, jurisdictions, and stakeholders. The ORMP is unique in that there is no single entity responsible for its implementation and instead relies on the collaborative efforts of the network to meet ORMP goals.

The 2020 plan is organized around three primary focus areas:

- **Focus Area I - Development and Coastal Hazards:** Focusing on developing a statewide integrated shoreline management strategy to address compounding impacts from coastal development, climate change, sea level rise, erosion, and other chronic coastal hazards.
- **Focus Area II - Land-Based Pollution:** Recognizing the critical connection between land and sea by facilitating the broad adoption of green infrastructure practices to reduce polluted runoff from within watersheds.
- **Focus Area III - Marine Ecosystems:** Promoting sustainable fishing practices that incorporate both traditional ecological knowledge and scientific research, effectively managing coral reef networks, and minimizing the introduction and spread of aquatic alien species.



This progress assessment employed a multi-faceted methodology to evaluate implementation progress:



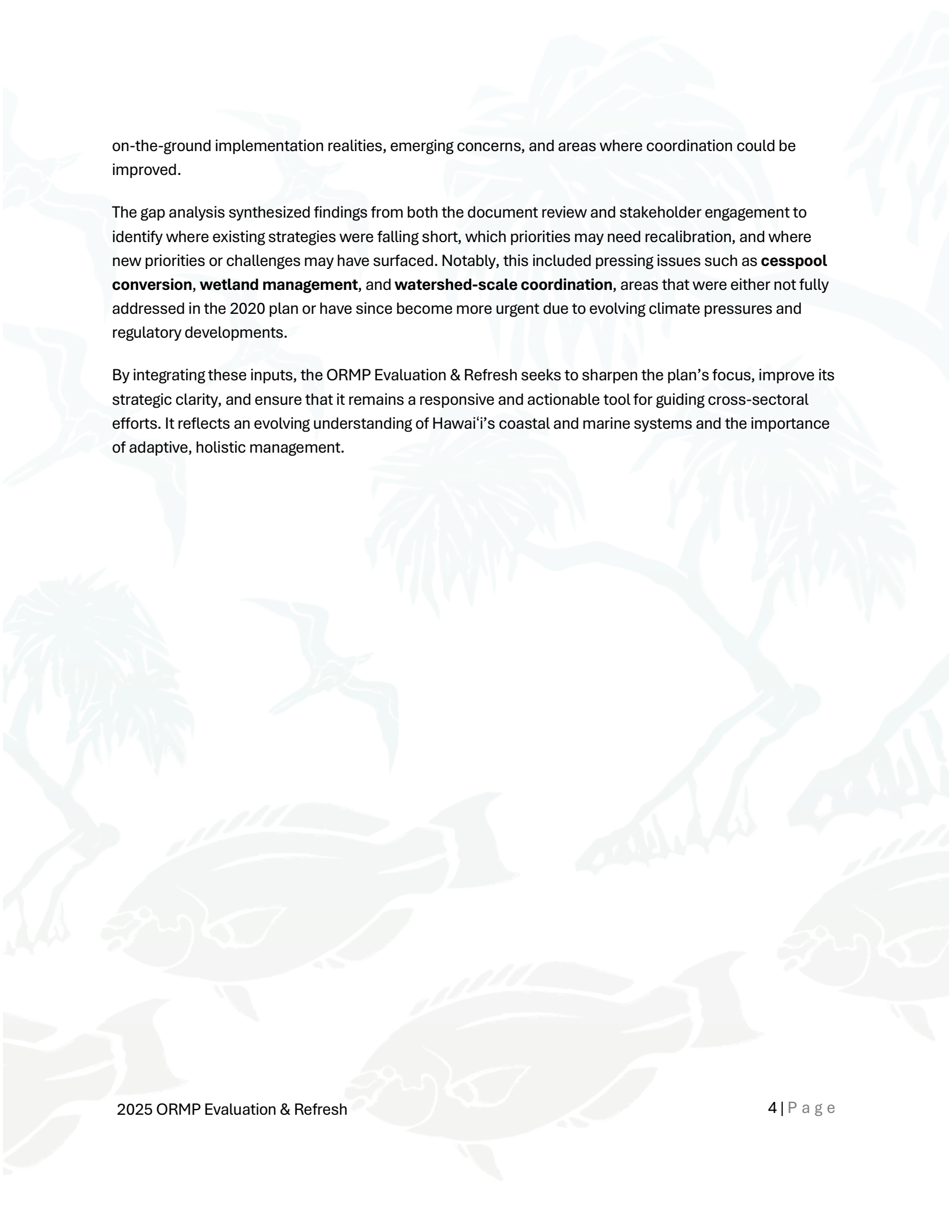
The assessment methodology balances recognition of achievements with an honest evaluation of challenges, providing a realistic picture of ORMP implementation. This approach supports the adaptive management philosophy that highlights opportunities for improvement.

Identifying and Addressing Emerging Issues

The 2025 ORMP Evaluation & Refresh aims to build on the foundation of the 2020 ORMP by incorporating stakeholder input, data-driven insights, and gap analysis findings to refine its direction and maintain its adaptability. This process evaluated which goals and focus area subcomponents from the 2020 plan remain most applicable, while also identifying areas that require adjustment to address emerging coastal and ocean management challenges.

To inform this effort, a comprehensive document review and evaluation of implementation progress were conducted, including systematic analysis of agency reports, project documentation, policy updates, and technical studies. This review helped to assess the extent to which the original strategies were implemented and where barriers, such as resource limitations, multi-jurisdictional challenges, or shifting environmental conditions, have hindered progress.

Stakeholder engagement was a pivotal aspect of the ORMP Evaluation & Refresh process. Input was gathered from ORMP network partners across State, federal, and county agencies, as well as academic institutions involved in coastal resource management. These consultations provided valuable insights into

The background of the page features a light blue, stylized illustration of a coastal environment. It includes several palm trees of varying heights, a bird in flight, and three large fish swimming in the water. The illustration is composed of simple, clean lines and is positioned behind the text blocks.

on-the-ground implementation realities, emerging concerns, and areas where coordination could be improved.

The gap analysis synthesized findings from both the document review and stakeholder engagement to identify where existing strategies were falling short, which priorities may need recalibration, and where new priorities or challenges may have surfaced. Notably, this included pressing issues such as **cesspool conversion, wetland management, and watershed-scale coordination**, areas that were either not fully addressed in the 2020 plan or have since become more urgent due to evolving climate pressures and regulatory developments.

By integrating these inputs, the ORMP Evaluation & Refresh seeks to sharpen the plan's focus, improve its strategic clarity, and ensure that it remains a responsive and actionable tool for guiding cross-sectoral efforts. It reflects an evolving understanding of Hawai'i's coastal and marine systems and the importance of adaptive, holistic management.

Progress Assessment by Focus Area

Focus Area I: Development and Coastal Hazards

The Development and Coastal Hazards Focus Area represents a critical management priority for Hawai'i, as the islands face increasing pressure from climate change, sea level rise, coastal erosion, and development demands. This focus area aims to establish coordinated and holistic approaches to shoreline management that balance development needs with coastal hazard mitigation, ecosystem protection, and cultural resource preservation.

Overall Goal

Develop a statewide integrated shoreline management strategy to address the compounding impacts to Hawai'i's shorelines of coastal development, climate change and sea level rise, erosion, and other chronic coastal hazards.

Selected Implementation Successes

The ORMP network continues to make advancements in working towards achieving the Development and Coastal Hazards Focus Area goals. The following are a few highlighted successes accomplished by network partners and the CZM Program since 2020.

- **Regional Shoreline Management (RSM) Initiative:** The 2020 ORMP highlighted the need to identify a suitable geographic scale for shoreline adaptation planning based on coastal processes. The CZM Program began a multi-phase approach to address this goal. The Regional Shoreline Scoping Study (2023) and accompanying technical consultation and outreach (2024) has provided a foundational understanding of how regional shoreline management could be used to facilitate more comprehensive adaptation planning. The CZM Program continues to support the RSM initiative through upcoming mapping and pilot projects.
- **Nature-Based Solutions for Coastal Erosion:** Punalu'u Beach Park on O'ahu's windward coast has been experiencing chronic shoreline erosion that threatens both a highway and community beach park. The Hawai'i Climate Change Mitigation and Adaptation Commission, in coordination with the Department of Land and Natural Resources, Office of Conservation and Coastal Lands, the Hawai'i Department of Transportation, and University of Hawai'i's Sea Grant College Program (Sea Grant) [conducted a feasibility assessment](#) of nature-based solutions using Punalu'u Beach Park as a demonstration site for nature-based solutions to protect critical infrastructure and

ecological resources, and restoring the beach park to serve local communities. To date, volunteers from community groups and the local elementary school have planted and maintained native dune plants across 950 square feet of shoreline.

- **Sea Level Rise Exposure Area in Policy:** A significant policy achievement has been the integration of the Sea Level Rise Exposure Area (SLR-XA) into State and County policies and planning documents. This integration represents a crucial step toward climate-adaptive coastal planning and demonstrates growing interagency alignment on climate resilience strategies. Examples include HRS § 508D-15, enacted in 2021, which requires [real estate transactions](#) to disclose whether a property is located within the SLR-XA, and [Kauai County Code § 8-12.5](#), adopted in 2022, which established elevation requirements for habitable structures within the 3.2 ft SLR-XA.



Dune restoration at Punalu'u Beach Park. Photo Credit: Brad Romine/UH Sea Grant

Priorities through 2030

In order to refine implementation efforts for the next five years, the ORMP Network was asked to identify which of the seven Focus Area subgoals identified in the 2020 Plan were the most pressing and should remain priorities for the next five years. Star icons in the graphic below represent the top three priority subgoals as identified by the ORMP Network.

The progress gauges, shown in green, yellow, and red, indicate the proportion of projects addressing each specific subcomponent relative to total number of completed projects reported for the Focus Area. Of the total number of projects reported by the ORMP Network, 37% were categorized under Focus Area I. To see the full list of projects, please see Appendix A.

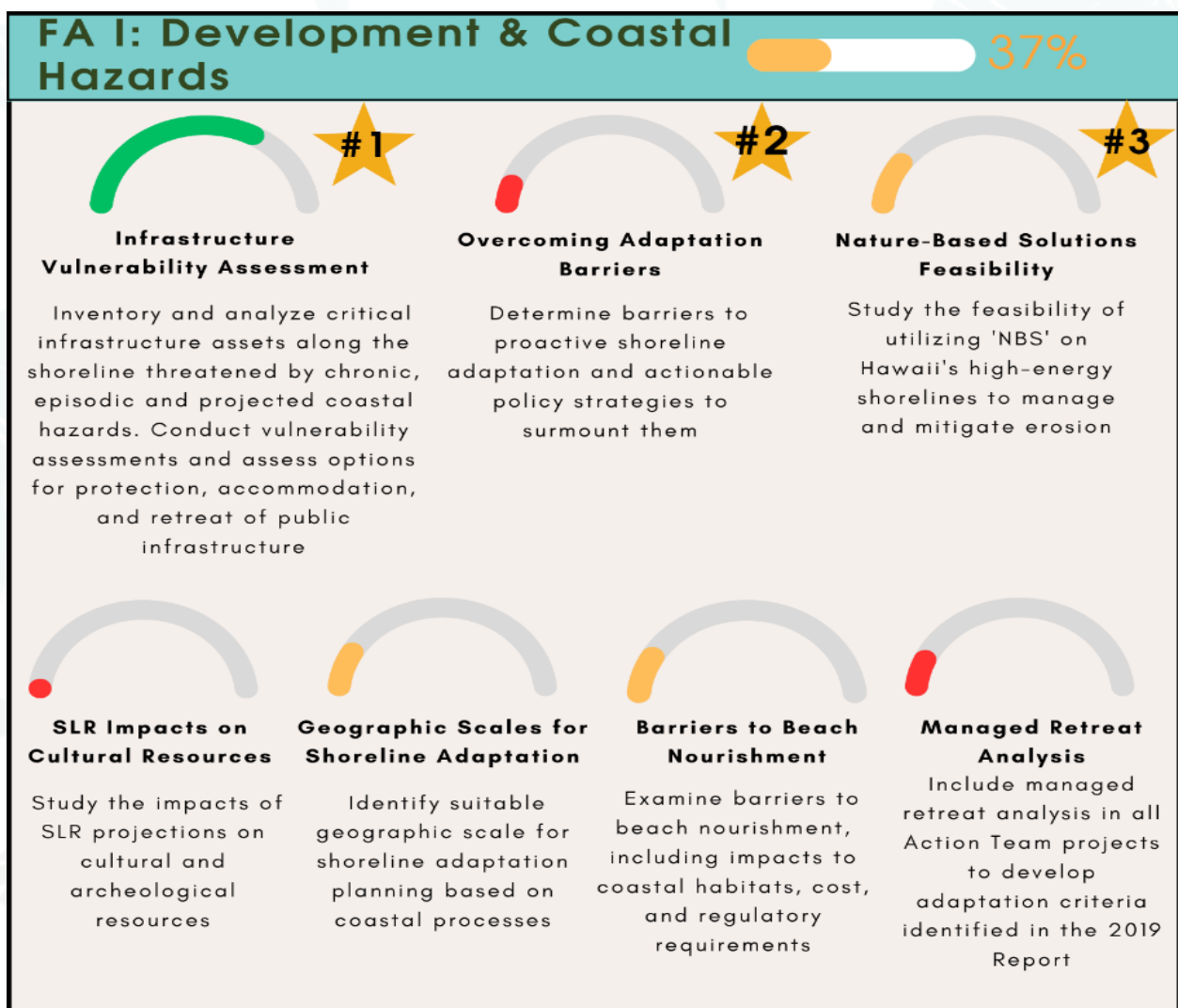


Figure 1: Visualization of levels of effort for Focus Area I: Coastal Hazards subcomponent goals.

The following are potential actions, as identified by the ORMP Network, that could support continued progress in the above-mentioned priority topics:

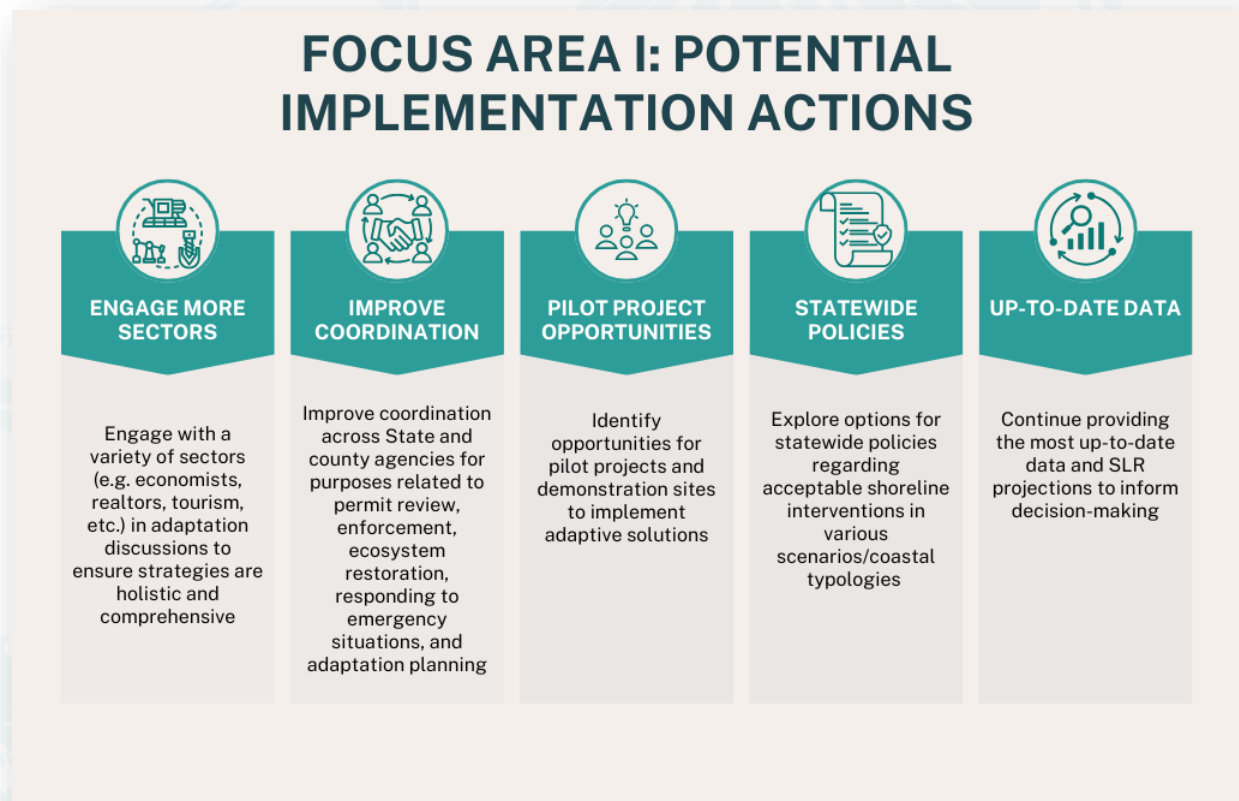


Figure 2: Focus Area I: Coastal Hazards potential implementation actions as identified by the ORMP Network.

Focus Area II: Land-Based Pollution

The Land-Based Pollution Focus Area addresses the critical connection between terrestrial activities and marine ecosystem health. This focus area recognizes that effective marine resource management requires addressing pollution at its source through integrated watershed approaches, innovative stormwater management, and green infrastructure implementation. By focusing on mauka to makai connections, this focus area promotes holistic management strategies that protect both watershed and coastal resources.

Overall Goal

Design management strategies and programs to recognize and incorporate the connection of land and sea, facilitating the broad adoption of green infrastructure practices to reduce polluted runoff within watersheds.

Selected Implementation Successes


The ORMP network continues to make advancements in working towards achieving the Land-Based Pollution Focus Area goals. The following are a few highlighted successes accomplished by network partners and the CZM Program since 2020.

- **Low Impact Development (LID) Guide Update:** The Low Impact Development (LID) Practitioner's Guide for Hawai'i presents an updated approach to managing stormwater by using nature-based, site-specific methods such as rain gardens, green roofs, permeable pavements, and vegetated swales to mimic pre-development hydrology and protect water quality. Intended for use by developers, planners, engineers, government staff, and educators, this guide highlights both the environmental benefits, such as restored natural hydrology and reduced pollution, and economic advantages, including lower infrastructure costs and enhanced property values associated with the increased use of low impact development practices.
- **Expanding Water Quality Improvement Projects at He'eia Fishpond:** The Water Quality Improvement Projects at He'eia Fishpond is a two-year initiative led by Sea Grant, in partnership with Paepae o He'eia, Hui Kū Maoli Ola, and Nā Kilo Honua o He'eia. Funded by the Hawai'i Department of Health, Clean Water Branch, the project works to remove invasive mangroves and supports the installation of two bioretention basins at storm drain outlets to reduce polluted runoff by up to 90 percent. This effort sustains centuries-old aquaculture practices by purifying freshwater essential for traditional fish cultivation and advancing environmental education across the community.



- **Establishment of the Department of Health, Surface Water Protection Branch:** The establishment in 2021 of the Department of Health, Surface Water Protection Branch (SWPB) within the Hawai'i Department of Health formalized the State's commitment to addressing nonpoint source pollution under HRS Chapter 342E. This new branch consolidated the existing Polluted Runoff Control Program and now oversees statewide planning, engineering analyses, water-quality monitoring, compliance assistance, and enforcement of nonpoint source pollution regulations.


LOW IMPACT DEVELOPMENT PRACTITIONER'S GUIDE FOR HAWAII

DECEMBER 2023



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Left: Residential Rain Garden in Kailua, O'ahu; Right: Rain Garden in Waikele Wayside Park, Maui
Photos (Courtesy of Hui o Ko'olaupoko)

BIORETENTION BASIN (RAIN GARDEN)

BMP-4

DESCRIPTION
Rain gardens or bioretention basins are landscaped depressions adapted to provide on-site treatment of stormwater runoff. Rain gardens collect runoff and filter it through a mixture of soil, sand, and/or gravel. The infiltrating stormwater also provides water to the plants in the rain garden. These BMPs function as soil-based and plant-based filtration devices that remove pollutants through physical, biological, and chemical treatment processes.

ADVANTAGES

- Pollutant removal effectiveness is typically high.
- Versatile with broad applicability
- Provides shade and windbreaks.
- Absorbs noise and improves aesthetic vegetated appearance.
- Reduces peak discharge and runoff volume.
- Pretreatment for downstream drainage structures and BMPs.

LIMITATIONS

- In areas with prolonged dry periods, installation of an irrigation system may be required.
- Not recommended for areas with slopes greater than 20% or where tree removal would be required.
- Not suitable at locations where the water table is within 3 feet of the bottom of the bioretention facility.
- Potential to create breeding habitat for mosquitoes.

Minimum BMP Footprint
600 sf
Construction Cost
\$\$
Operations & Maintenance
Frequency: Semi-Annually Cost: \$\$
Design Considerations
<ul style="list-style-type: none"> • Plant selection • Side slope • Soil infiltration rate • Ponding depth • Hydraulic residence time

December 2023 LID PRACTITIONER'S GUIDE/4-23

Updated Low Impact Development Guidance document

Priorities through 2030

In order to refine implementation efforts for the next five years, the ORMP Network was asked to identify which of the six Focus Area subgoals identified in the 2020 Plan were the most pressing and should remain priorities for the next five years. Star icons in the graphic below represent the top three priority subgoals as identified by the ORMP Network.

Overall progress in Focus Area II is 7%, indicating that fewer resources have been invested in this area to date, and there is opportunity for the network to address land-based pollution in the coming years. To see the full list of projects, please see Appendix A.



Figure 3: Visualization of levels of effort for Focus Area II: Land Based Pollution subcomponent goals.

The following are potential actions, as identified by the ORMP Network, that could support progress in the above-mentioned priority topics:

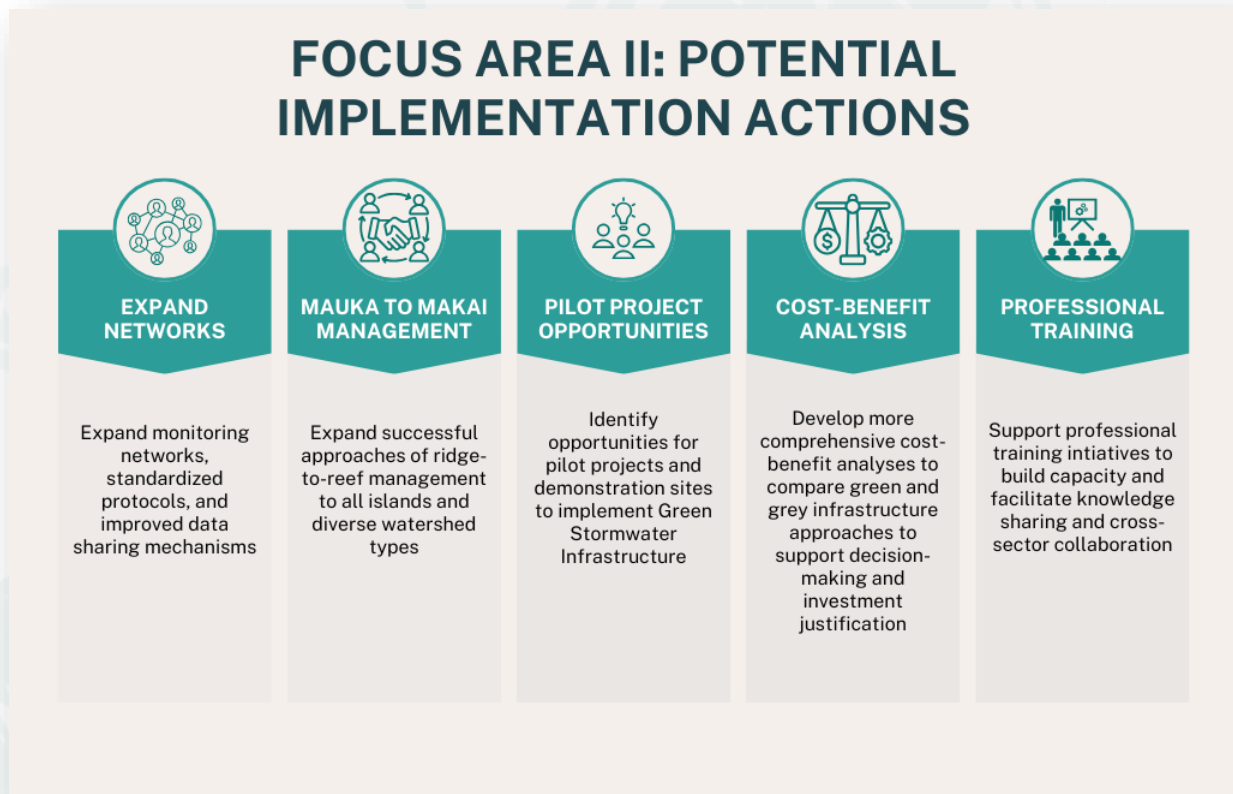


Figure 4: Focus Area II: Land Based Pollution potential implementation actions as identified by the ORMP Network.

Focus Area III: Marine Ecosystems

Overall Goal 1

Promote fishing practices that adopt the wisdom of both traditional ecological knowledge and scientific ecological knowledge to improve fish stocks

Overall Goal 2

Effectively manage networks of healthy coral reefs while improving the health of reef ecosystems at priority sites identified by the State of Hawai'i

Overall Goal 3

Minimize the likelihood of aquatic alien species introduction and spread into and within Hawai'i from sources associated with vessels

The Marine Ecosystems focus area addresses the health and sustainable management of Hawai'i's ocean resources through an integrated approach that combines traditional wisdom with scientific knowledge. This focus area recognizes the interconnected nature of fishing practices, coral reef health, and aquatic invasive species management, emphasizing collaborative approaches that engage communities, government agencies, and diverse stakeholders in marine resource stewardship.

Since the adoption of the 2020 ORMP, several significant advances have been made in marine ecosystem management through collaborative approaches that bridge traditional and scientific knowledge systems. The Department of Land and Natural Resources – Division of Aquatic Resources (DAR), the lead State agency responsible for managing, conserving, and restoring Hawai'i's aquatic resources and ecosystems and the lead ORMP network agency for Focus Area III: Marine Ecosystems, has played a central role in these achievements, working in partnership with other agencies, communities, and stakeholders. The ORMP Marine Ecosystems Focus Area is intended to complement DAR's [Holomua Marine Initiative](#).

Selected Implementation Successes

The ORMP network continues to make advancements in working towards achieving the Focus Area III: Marine Ecosystems goals. The following are a few highlighted successes accomplished by network partners and the CZM Program since 2020.

- **Kōkua Community-Based Monitoring Program:** The Kōkua Community-Based Monitoring (CBM) Program was co-developed in 2021 by DAR and the CZM Program. The Kōkua Program aims to support and empower local communities to actively monitor and protect nearshore marine resources through place-based knowledge and data collection. Since its inception, the program has successfully strengthened community stewardship, expanded capacity for community-led monitoring, and fostered partnerships that enhance resource management statewide by providing data and insights to inform decision-making.

- **Holomua Marine Initiative - Maui Pilot:** Launched in 2022, the Holomua Marine Initiative - Maui Pilot is a collaborative, community-centered process led by DAR to develop a locally tailored management plan for Maui's nearshore waters. The initiative began with island-wide Talk Story sessions to gather community values and priorities. The Maui Navigation Team was then formed to shape solutions based on community input and scientific data. Over multiple meetings, the team developed draft management recommendations organized under four core pillars: Pono Practices, Place-Based Planning, Restoration, and Monitoring. In Fall 2024 and Summer of 2025, this proposal was shared at public Information Exchange Sessions across Maui to gather further feedback, ensuring that final strategies reflect both local knowledge and shared stewardship goals.
- **Establishment of the Ocean Stewardship User Fee:** Established by Act 46 in 2021, the Ocean Stewardship User Fee requires permitted commercial ocean operators in Hawai'i to collect a fee of \$1 per guest to support marine conservation and management. Administered by DAR, this fee provides a dedicated, stable funding source for activities such as coral restoration, invasive species control, water quality improvements, and educational outreach. By directly linking ocean recreation to stewardship, the program enhances long-term resource sustainability while encouraging both visitor and operator responsibility.



The Kōkua Community-Based Monitoring supports local communities in monitoring and protecting nearshore resources.

Priorities through 2030

In order to refine implementation efforts for the next five years, the ORMP Network was asked to identify which of the five Focus Area subgoals identified in the 2020 Plan were the most pressing and should remain priorities for the next five years. Star icons in the graphic below represent the top three priority subgoals as identified by the ORMP Network.

The overall progress in Focus Area III is 56%, indicating that a good deal of work is being done in this area. Focus Area III is unique in that it is led by DAR with support from the ORMP Network. It should be noted that DAR reported a much larger number of projects, as compared to other agencies, and it is unclear if this is indicative of more effort or if other agencies did not consider existing projects as falling under ORMP focus areas. However, there has been substantial progress made in protecting and managing marine ecosystems over the last five years. The ORMP network will continue to support DAR in outreach efforts to promote invasive species awareness, build aquatic resources education, and allow communities to adopt TEK practices. To see the full list of projects see Appendix A.

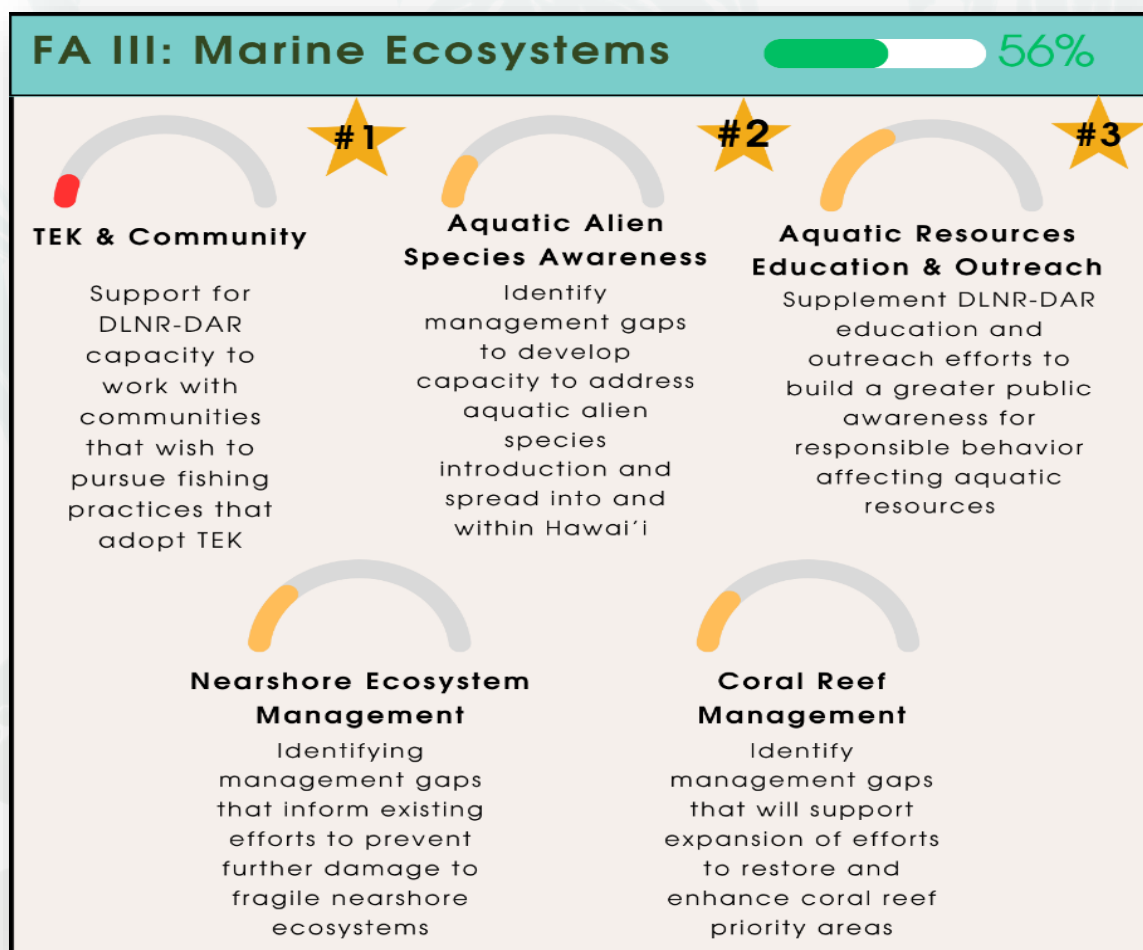


Figure 5: Visualization of levels of effort for Focus Area III: Marine Ecosystems subcomponent goals.

The following are potential actions, as identified by the ORMP Network, that could support progress in the above-mentioned priority topics:

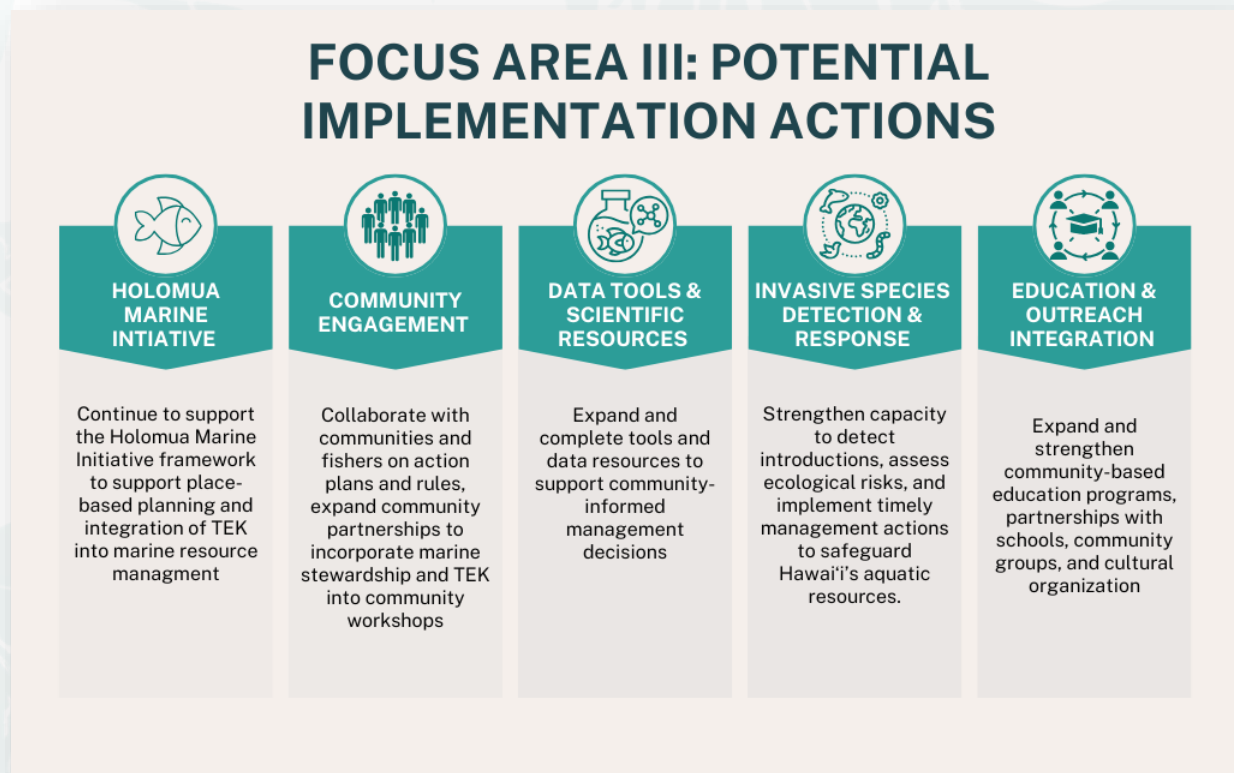


Figure 6: Focus Area III: Marine Ecosystems potential implementation actions as identified by the ORMP Network.

Emerging Issues in Hawai'i's Coastal Zone

In the context of this assessment, "emerging issues" refers to management challenges that were not explicitly identified in the 2020 ORMP but have gained significance over the past five years. These emerging issues, **cesspool conversion**, **wetland management**, and **watershed coordination**, have evolved to become key areas of concern requiring coordinated management approaches and innovative solutions. Identification of these emerging issues resulted from a systematic process involving:

Stakeholder Engagement

Conducted surveys and in-person discussions to gather input from key ORMP network partners, including State, federal, and county agencies

Network Assessment

Inventoried measurable outcomes where available, including project effort rates, resource allocation, policy adoption, and environmental indicators

Gap Analysis

Identification of implementation challenges, resource constraints, and emerging issues requiring attention

While not originally highlighted in the 2020 ORMP, these emerging issues align with the ORMP's foundational goals and satisfy the Focus Area selection criteria in several ways:

- **Management Gap:** Each issue represents an area where current management approaches require enhancement, standardization, or improved coordination.
- **Statewide Relevance:** These challenges affect multiple islands and diverse ecosystems throughout the Hawaiian archipelago.
- **Multi-Agency Concern:** All three issues transcend single-agency jurisdiction and require collaboration across federal, State, county, and community entities.
- **Integration with Existing Focus Areas:** These emerging issues connect directly to the established Focus Areas of Development and Coastal Hazards, Land-Based Pollution, and Marine Ecosystems.

The following sections examine why these emerging issues have evolved in importance and provide a brief status of management efforts and challenges around each emerging issue.

Cesspool Conversion

Cesspool conversion is a critical environmental and public health priority in Hawai'i, where over 83,000 cesspools release an estimated 53 million gallons of untreated sewage into the ground each day. Many of these cesspools are located in sensitive coastal areas, threatening coral reefs, nearshore water quality, and drinking water resources. Act 125, SLH 2017, mandates the conversion of all cesspools by 2050, creating urgency for strategic implementation approaches. The financial burden to homeowners (\$20,000-\$60,000 per conversion (Babcock, Barnes, Fung, Goodell, & Oleson, 2019)) presents a significant challenge in meeting this deadline. Recent efforts have focused on prioritization, financing mechanisms, and technical assistance programs.

Current Status

While the 2020 ORMP did not explicitly identify cesspool conversion as an issue, the ORMP network has since recognized the need to focus on conversion of high-priority coastal cesspools as identified in the [Hawai'i Cesspool Prioritization Tool](#) (HCPT), a joint effort between DOH and UH Sea Grant that was developed based on the findings of the DOH's [Cesspool Conversion Working Group](#), and released in 2022. These cesspools are prioritized based on a number of [risk factors](#), including proximity to vulnerable coastal ecosystems as well as groundwater and coastal resources. In response, the CZM Program initiated early steps to support this effort. This includes expanding the Hawai'i Cesspool Prioritization Tool to include Moloka'i, a significant step toward more equitable and targeted planning. In addition, Act 217, Session Laws of Hawai'i 2024, requires UH Sea Grant, in coordination with the counties, to develop an overlay for the HCPT to identify specific priority areas in which county sewer systems or other centralized treatment systems can be added. These efforts signal growing momentum within the ORMP network and the State to integrate cesspool conversion into broader coastal and watershed management strategies.

Nexus to 2020 ORMP Focus Areas

Cesspool conversion directly supports all three of the 2020 ORMP focus areas by addressing a source of pollution to both groundwater and nearshore waters. By converting coastal cesspools, a significant source of groundwater and nearshore water contamination will be addressed.

FA I: Coastal Hazards

Increased exposure to coastal hazards compromises the structural integrity cesspools and increases the likelihood of failure.

FA II: Land-Based Pollution

Cesspools represent a significant source of groundwater and nearshore water contamination.

FA III : Marine Ecosystems

Untreated wastewater impacts coral reef health and marine ecosystem function.

Identified Gaps & Potential Actions for ORMP Network

Despite recent initiatives to support cesspool conversion efforts, the State is not currently on track to reach its goal of converting all cesspools by 2050. The table below outlines key challenges and potential network actions identified to support cesspool conversion efforts.

Table 1: Cesspool Conversion Gaps & Actions

Identified Gap	Potential Network Action
Lack of integration between cesspool conversion priorities and coastal development policies	<ul style="list-style-type: none">• Strengthen communications between DOH and counties to improve coordination and permitting to accelerate conversion in coastal areas• Strengthen coordination between DOH, CZM, and county planning departments to clarify how cesspool conversion connects to Special Management Area (SMA) review and shoreline permit conditions• Support policy changes that facilitate the approval and integration of a broader range of cesspool alternatives, other than septic and sewer• Encourage the State and counties to establish dedicated fundings and financing programs that support cesspool conversions• Integrate sea level rise considerations into coastal cesspool conversion prioritization and planning, emphasizing that shoreline cesspools will fail faster as the water table rises
Insufficient coordination between water quality monitoring and cesspool conversion efforts	<ul style="list-style-type: none">• Develop and implement monitoring protocols to track effectiveness of conversion efforts and environmental outcomes, focusing on areas where

Identified Gap	Potential Network Action
	pollution from cesspools is known and replacement projects are underway
Lack of targeted outreach to coastal homeowners to support cesspool conversion in shoreline areas	<ul style="list-style-type: none">• Develop a comprehensive education program on the impacts of cesspools and the urgency of acting before the 2050 deadline• Identify financing mechanisms for coastal homeowners with cesspools• Implement demonstration projects of cesspool alternatives in coastal HCPT Priority 1 areas where septic and sewer are not feasible

Wetland Management

Hawai'i's wetlands serve critical ecological functions but face mounting pressures from development and sea level rise. The Department of Land and Natural Resources reports that wetland ecosystems provide essential services including flood mitigation, water quality improvement, and habitat for endangered species (Department of Land and Natural Resources, 2025). However, comprehensive wetland management faces several challenges.

Many wetland areas lack comprehensive baseline data needed for effective management and adaptation planning. The CZM Program has identified the need for updated wetlands maps for the State and incorporated this project into its' 2026-2030 309 Assessment & Strategy.

The current wetland regulatory framework involves multiple layers of government, including Federal, State and county, each with specific roles and responsibilities. This can create coordination challenges in management and protection efforts. The CZM Program has identified this jurisdictional complexity as a key barrier to effective wetland conservation and restoration. This challenge has been further exacerbated by the U.S. Supreme Court's 2023 *Sackett v. EPA* decision, which significantly narrowed the federal definition of "waters of the United States" under the Clean Water Act. As a result, many wetlands previously protected at the federal level no longer fall under federal jurisdiction, increasing reliance on State and county agencies for oversight and heightening the need for interagency coordination and adequate resource allocation to ensure continued wetland protection.

Current Status

The CZM Program is addressing gaps in wetland management through the development of geospatial tools. The creation of the Hawaiian Estuaries Viewer (to be completed by December 2025) will advance understanding of critical transition zones between freshwater and marine ecosystems, highlighting the ecological importance of estuaries. This tool reflects a shift toward more integrated, place-based management approaches that acknowledge and respond to the interconnectedness of upland activities, wetlands, and ocean health. Complementing this effort, the Maui County Wetland Mapping Project is enhancing spatial data on wetland extent and condition, providing a more accurate baseline for conservation and restoration planning. By improving the precision and accessibility of wetland data, this project supports more informed decision-making at both county and State levels.

Nexus to 2020 ORMP Focus Areas

Wetland management directly supports the three 2020 ORMP focus areas, particularly by providing protection to infrastructure by mitigating flood impacts, serving as a filter for pollutants, and providing critical habitat for native and nearshore species.

FA I: Development & Coastal Hazards

Wetlands provide natural infrastructure for flood mitigation and coastal protection.

FA II: Land-Based Pollution

Wetlands serve as natural filters for pollutants, improving adjacent nearshore water quality.

FA III: Marine Ecosystems

Coastal wetlands provide critical habitat for birds and juvenile fish and support nearshore ecosystem functions.

Identified Gaps & Potential Actions for ORMP Network

While recent initiatives have improved wetland management, gaps remain. The table below outlines key challenges and potential network actions identified to enhance coordination, build capacity, and support long-term stewardship of Hawai'i's wetlands.

Table 21: Wetland Management Gaps & Actions

Identified Gap	Potential Network Action
Lack of comprehensive statewide wetland inventory and updated wetland maps	<ul style="list-style-type: none">• Complete comprehensive wetland inventory and update available wetland maps• Inventory and identify wetlands that may not be under federal jurisdiction• Conduct hydrology studies to understand how to restore impacted wetlands• Inventory and identify wetlands within shoreline setback and SMA areas
Limited coordination mechanisms that align federal, State, and county wetland regulations	<ul style="list-style-type: none">• Identify priority areas for preservation and restoration• Create streamlined permitting for restoration activities

	<ul style="list-style-type: none"> • Establish a Wetland Management Coordination Team within the ORMP structure • Strengthen coordination between CZM, DOH, and county permitting processes where wetlands intersect SMA and shoreline jurisdiction
Inadequate communication of the value of wetland ecosystem services in coastal hazard mitigation	<ul style="list-style-type: none"> • Integrate wetland management into watershed planning by developing an ecosystem services assessment framework or other cost-benefit analysis methods • Develop guidance on incorporating wetlands into coastal hazard planning
Limited understanding of where future wetlands will emerge and where existing wetlands will be lost due to SLR	<ul style="list-style-type: none"> • Identify areas of projected wetland loss and corridors for migration (areas likely to develop into emergent wetlands)
Lack of integration of cultural values and traditional practices in wetland management	<ul style="list-style-type: none"> • Identify priority areas for preservation and restoration • Incorporate TEK in planning for natural resource management • Identify and elevate connections between wetlands and traditional practices such as loko i'a and lo'i kalo, emphasizing both cultural and ecological functions

Inadequate State and county protection mechanisms for wetlands outside of federal jurisdiction	<ul style="list-style-type: none">• Incorporate wetlands maps into county shoreline permitting processes• Create comprehensive management plans with monitoring protocols for significant wetlands• Identify gaps in current regulations and explore ways to integrate wetlands oversight into ongoing permitting workflows• Explore examples of successful wetland protection policies and enforcement mechanisms from other jurisdictions and identify which would be appropriate for Hawai'i
Lack of dedicated funding sources for wetland conservation and restoration	<ul style="list-style-type: none">• Establish coordinated multi-agency funding sources• Coordinate funding applications for priority wetland restoration projects• Explore the use of mitigation or restoration fees tied to shoreline or SMA permits to fund wetland restoration and protection

Watershed Coordination

Across the State, there is a growing effort among agencies and partners within the ORMP network to support and implement comprehensive approaches to resource planning and management at both the moku-level and watershed-scale. *Moku* are traditional sub-island land divisions in Hawai'i that typically span from upland areas to the coast, serving as natural units for biocultural stewardship. This integrated mauka-to-makai, or ridge-to-reef perspective underscores the importance of collaborative management and coordination across the network to address the connections between upland activities and the health of coastal and ocean resources.

Current Status

The CZM Program and the Department of Health (DOH) have partnered to facilitate and expand watershed-based resource management planning and restoration activities. These efforts include developing a multi-agency watershed prioritization viewer to identify priority areas, supporting the creation of DOH Section 319 watershed management plans, and guiding funding towards watershed protection and restoration projects.

Watershed Partnerships are voluntary alliances of public and private landowners committed to the common value of protecting forested watersheds through collaborative management. There are ten Watershed Partnerships across Hawai'i. There are over 70 public and private landowners and partners involved with over 2 million acres included in Watershed Partnerships. These partnerships provide the landscape-level planning and project implementation to reduce land-based pollution on a meaningful scale. These partnerships pool resources, create and implement DOH 319 watershed management plans and have field crews and community volunteers that remove invasive species, replant natives, prevent wildfires, and conduct other prioritized actions. These community-based partnerships are poised to expand into additional areas that are needed for restoration, as well as engage and involve additional entities that seek to steward watersheds mauka to makai.

Nexus to 2020 ORMP Focus Areas:

Watershed coordination directly supports the three 2020 ORMP focus areas, particularly by advancing integrated, mauka-to-makai management, improving ecosystem health, and supporting community stewardship. By addressing impacts to watershed health and fostering cross-sector collaboration, these efforts help protect coastal and marine resources statewide.

FA I: Development & Coastal Hazards

Watershed condition directly impacts flooding and erosion hazards.

FA II: Land-Based Pollution

Watershed management is essential for controlling nonpoint source pollution.

FA III: Marine Ecosystems

Healthy watersheds support nearshore ecosystem health.

Identified Gaps & Potential Actions for ORMP Network

While recent initiatives have strengthened watershed-scale planning and partnerships, gaps remain that limit the effectiveness and reach of these efforts. The table below outlines key challenges and potential network actions identified to enhance coordination, build capacity, and support long-term, place-based stewardship across Hawai'i's watersheds.

Table 3 2: Watershed Coordination Gaps & Actions

Identified Gap	Potential Network Action
Lack of a centralized coordination mechanism to connect watershed management entities	<ul style="list-style-type: none">• Compare various agencies' watershed prioritization criteria and identify opportunities to align prioritization• Collaboratively assess data and management gaps across watersheds.• Create statewide map database that identifies where restoration activities are occurring

<p>Limited implementation of comprehensive watershed-scale, Mauka to Makai, management in planning and monitoring</p>	<ul style="list-style-type: none"> • Expand the West Maui Ridge to Reef framework statewide to support integrated ridge-to-reef planning and monitoring efforts. • Facilitate and support the development of DOH Approved 319 Watershed based plans • Support efforts by DOH and DAR to align water quality goals for nearshore resources and management
<p>Insufficient mechanisms to share and align data collected by different agencies for cross-agency watershed analysis</p>	<ul style="list-style-type: none"> • Develop data-sharing platforms to improve coordination, enhance visibility, and support collaborative watershed analysis and restoration efforts.
<p>Limited long-term community capacity, sustained engagement, and funding to support and implement effective watershed stewardship and management solutions</p>	<ul style="list-style-type: none"> • Establish funding strategies to support multi-year watershed management initiatives and build organizational capacity. • Establish and support mechanisms to build long-term community stewardship and secure local capacity • Provide additional funding for existing watershed partnerships to expand on-the-ground implementation into new priority areas and create sustained watershed coordinator positions to strengthen community stewardship and long-term implementation efforts

ORMP Network Coordination Enhancement

Improving ORMP Network coordination is essential to strengthening collaborative efforts among government agencies, organizations, and communities involved in coastal and ocean resource management. While the ORMP has laid a strong foundation for integrated, place-based planning, current coordination mechanisms can be inconsistent, limiting the network's ability to effectively address complex, cross-jurisdictional issues. Enhancing coordination will foster more integrated communication, data sharing, and strategic alignment.

ORMP Network Recommendations

Figure 4, below, illustrates the potential actions that the ORMP Network could undertake to enhance overall coordination and function. These actions seek to improve interagency collaboration, identify shared priorities, foster transparency, and streamline collective decision-making.

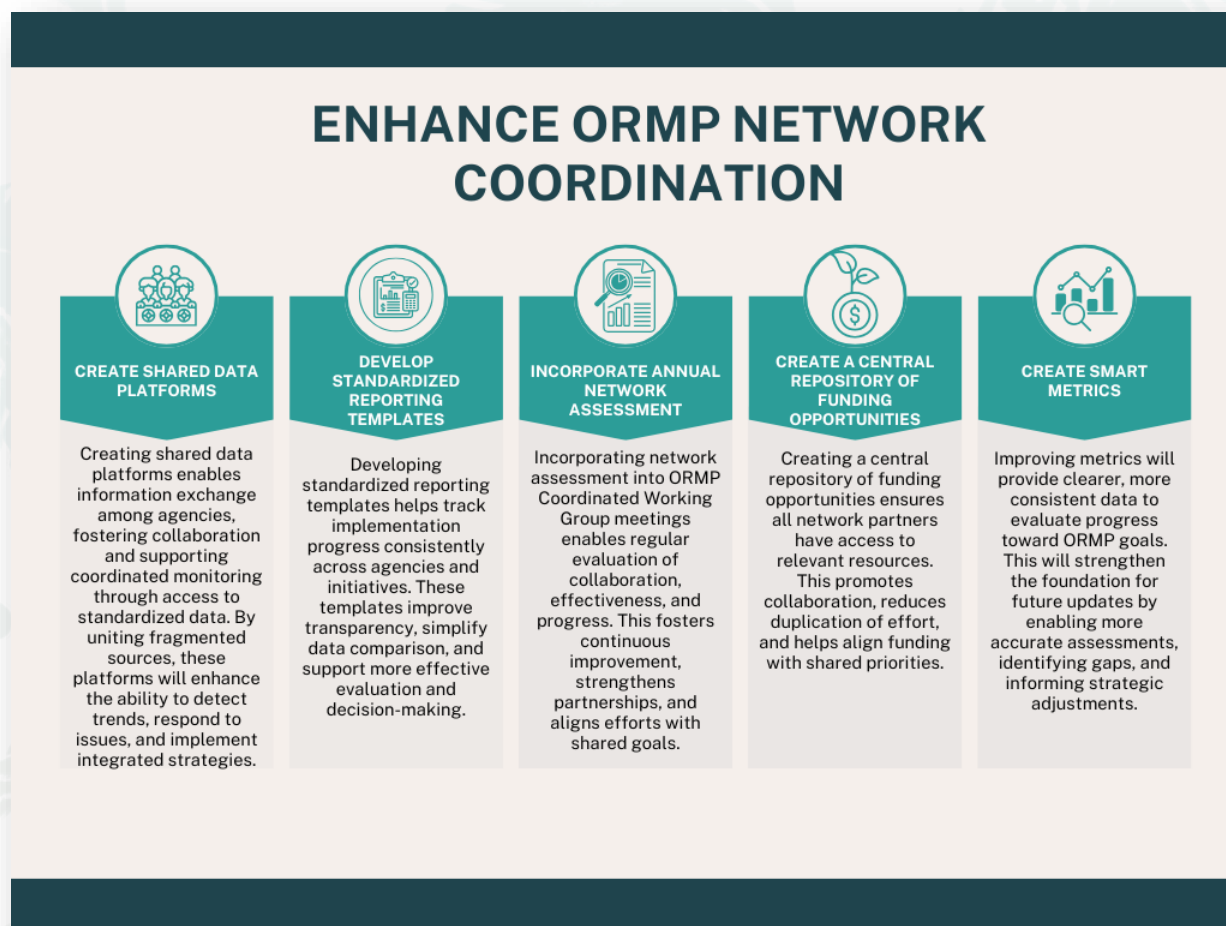


Figure 7: Recommended actions to improve ORMP Network functioning

To enhance ORMP Network coordination, it is recommended that these actions be incorporated into the existing ORMP Coordinated Working Group framework, which has delivered meaningful benefits such as improved communication, increased alignment of management priorities, and more efficient use of resources. Building on these successes, the actions listed above will support greater collaboration across the network and help establish a foundation for future ORMP updates.

Conclusion

The ORMP Evaluation & Refresh was conducted to assess implementation progress since the adoption of the 2020 ORMP, evaluate the effectiveness of the ORMP network, and identify strategic priorities for the remainder of the implementation phase (2025-2030). This effort included a comprehensive network assessment, engagement with partners across State, county, and federal agencies, and a gap analysis.

Findings from the assessment indicate that while meaningful progress has been made across all three ORMP Focus Areas, Development and Coastal Hazards, Land-Based Pollution, and Marine Ecosystems, greater integration and coordination across agencies are needed to address the increasing complexity of coastal management challenges. Recommendations to strengthen the ORMP Network include enhancing coordination mechanisms, identifying collaborative funding strategies, and strengthening interagency partnerships.

In addition to evaluating implementation progress, the ORMP Evaluation & Refresh engaged partners to identify emerging issues such as cesspool conversion, wetland management, and watershed coordination. These issues will shape the strategic direction of the remainder of the implementation phase of the ORMP through 2030 and emphasize the need for adaptive and holistic approaches.

As the CZM Program moves forward, the ORMP will continue to serve as the guiding framework for holistic and integrated coastal resource management. Continued success will depend on strong network connections, stable funding, and inclusive collaboration from Mauka to Makai. Following the 2020–2030 implementation phase, the ORMP will transition into a more targeted implementation and mainstreaming phase with refined strategies and updated performance metrics. This adaptive, forward-focused approach will keep the plan dynamic and resilient, ensuring Hawai‘i’s coastal resources are protected and thriving for generations under changing conditions.

References

Babcock, R., Barnes, M., Fung, A., Goodell, W., & Oleson, K. (2019). *Investigation of Cesspool Upgrade Alternatives in Upcountry Maui*.

Department of Land and Natural Resources. (2025). *Wetlands of Hawai'i*. From Department of Land and Natural Resources, Division of Forestry and Wildlife: <https://dlnr.hawaii.gov/wildlife/projects/state-wetland-wildlife-sanctuaries/#:~:text=Though%20wetlands%20constitute%20less%20than%203%25%20of%20the,filtration%2C%20wildlife%20habitat%2C%20and%20recreation%20and%20education%20opportunities>.

Appendix A

The following are lists of ORMP projects since 2020, as reported by ORMP Network Partners.

Focus Area I: Development & Coastal Hazards

#	Project Name	Lead Agency	Year Completed	ORMP Subcomponent	Project Type	Link to deliverable (if available)
1	Hawaii SLR Report Update	CCMAC	2022	1.1	In-ground Project	
2	Nature-Based Resilience & Adaptation to Climate Change in HI	CCMAC	2021	1.1, 1.5	Study	<u>An-Overview-of-Various-Social-Vulnerability-Tools-for-a-Climate-Ready-Hawai'i_Final.pdf</u>
3	An Overview of Various Social Vulnerability Tools for a Climate Ready HI	CCMAC	2021	1.1, 1.6	Study	
4	Punalu'u Beach Park NBS Feasibility Study	DLNR-OCCL	2024	1.5	Study	<u>Punalu'u Beach Park Restoration</u>
5	Ka'anapali Beach Restoration Project	DLNR-OCCL		1.4	In-ground Project	<u>Kā'anapali Beach Restoration</u>
6	Waikiki Beach Improvement and Maintenance Program	DLNR-OCCL		1.1, 1.4, 1.5, 1.6	In-ground Project	<u>Office of Conservation and Coastal Lands Waikiki</u>
7	Small Scale Beach Nourishment Project: Kauai Kailani Condominiums, Kaua'i	DLNR-OCCL		1.4, 1.5	In-ground Project	
8	Small Scale Beach Nourishment Project: Kona Village Resort, Kailua-Kona, Hawai'i	DLNR-OCCL		1.4, 1.5	In-ground Project	
9	Digital Twin Models for Ports Statewide	HDOT-Harbors	ongoing	1.1	Tool	
10	Kapālama Container Terminal (raising pier heights to +3 ft)	HDOT-Harbors	2025	1.1	In-ground Project	

11	Kalaeloa Barbers Point Harbor Pier 3 Erosion Mitigation	HDOT-Harbors	TBD	1.1	In-ground Project	
12	Nāwiliwili Harbor Seawall Mitigation and Erosion Prevention	HDOT-Harbors	TBD	1.1	In-ground Project	
13	South Shore Promenade: Proof of Concept Study	OPSD-CZM	2020	1.1, 1.2, 1.7	Study	
14	Probabilistic Tsunami Design Zone Mapping Phase I: Oahu and Maui	OPSD-CZM	2021	1.1	Tool	
15	Probabilistic Tsunami Design Zone Mapping Phase II : Maui, Phase II & Kauai	OPSD-CZM	2023	1.1	Tool	
16	Regional Shoreline Management Scoping Study	OPSD-CZM	2023	1.2, 1.3	Study	RSM SS Report_Main Body_FINAL.pdf
17	Menu of Coastal Hazard Adaptation Strategies	OPSD-CZM	2023	1.2, 1.4, 1.7	Tool	Hawai'i Coastal Adaptation Strategies
18	Coastal Hazards and Social Vulnerability inventory	OPSD-CZM	2024	1.1, 1.7	Tool	Social Vulnerability & Coastal Hazards
19	Silver Jackets: Improving State/County coordination in shoreline permitting	OPSD-CZM	2024	1.3	Coordination	
20	Waikiki SLR Resilience and Adaptation Plan	OPSD-CZM	2024	1.1, 1.2, 1.5, 1.7	Plan	
21	Managed Retreat Analysis: Policy & Funding	OPSD-CZM	2024	1.7	Study	
22	Regional Shoreline Management Strategy Phase II (Agency Consultations)	OPSD-CZM	2024	1.2, 1.3	Coordination	
23	DHHL Shoreline Rules	OPSD-CZM/DHHL	2025	1.2, 1.3	Study	
24	Sea Level Rise Viewer	PacIOOS	2017	1.1	Tool	
25	West Maui Wave-Driven Flooding with SLR	PacIOOS	2022	1.1	Tool	West Maui Wave-Driven Flooding With Sea Level Rise PacIOOS
26	Hawaii Shoreline Study web map	UH SOEST-CRC	2021	1.1	Tool	Hawai'i Shoreline Study web map - Climate Resilience Collaborative

27	Probability-based SLR Flood Projection	UH SOEST-CRC	ongoing	1.1	Tool	
28	Envisioning SLR Adaptation in Waikiki	UH SOEST-CRC	2023	1.2, 1.4, 1.5	Tool	https://seagrant.soest.hawaii.edu/meguro-adapting-waikiki
29	Monitoring and modeling shoreline change	UH SOEST-CRC	ongoing	1.1	Monitoring	
30	Wave Run up	UH SOEST-CRC	ongoing	1.1	Monitoring	
31	Extreme Tides	UH SOEST-CRC	ongoing	1.1	Monitoring	
32	Identifying Costs and Tradeoffs in Sea Level Rise Response Strategies	UH SOEST-CRC	ongoing	1.1, 1.3, 1.4, 1.5, 1.7	Study	
33	Data Visualization (SOEST Climate Viewer)	UH SOEST-CRC	2023 (ongoing updates)	1.1	Tool	
34	Historical Mosaics	UH SOEST-CRC	2022	1.1	Tool	https://www.soest.hawaii.edu/crc/slr-viewer/
35	SLR Induced Compound Flooding	UH SOEST-CRC	ongoing	1.1	Monitoring	https://www.soest.hawaii.edu/crc/index.php/resources-2/historical-mosaics/

Focus Area II: Land-Based Pollution

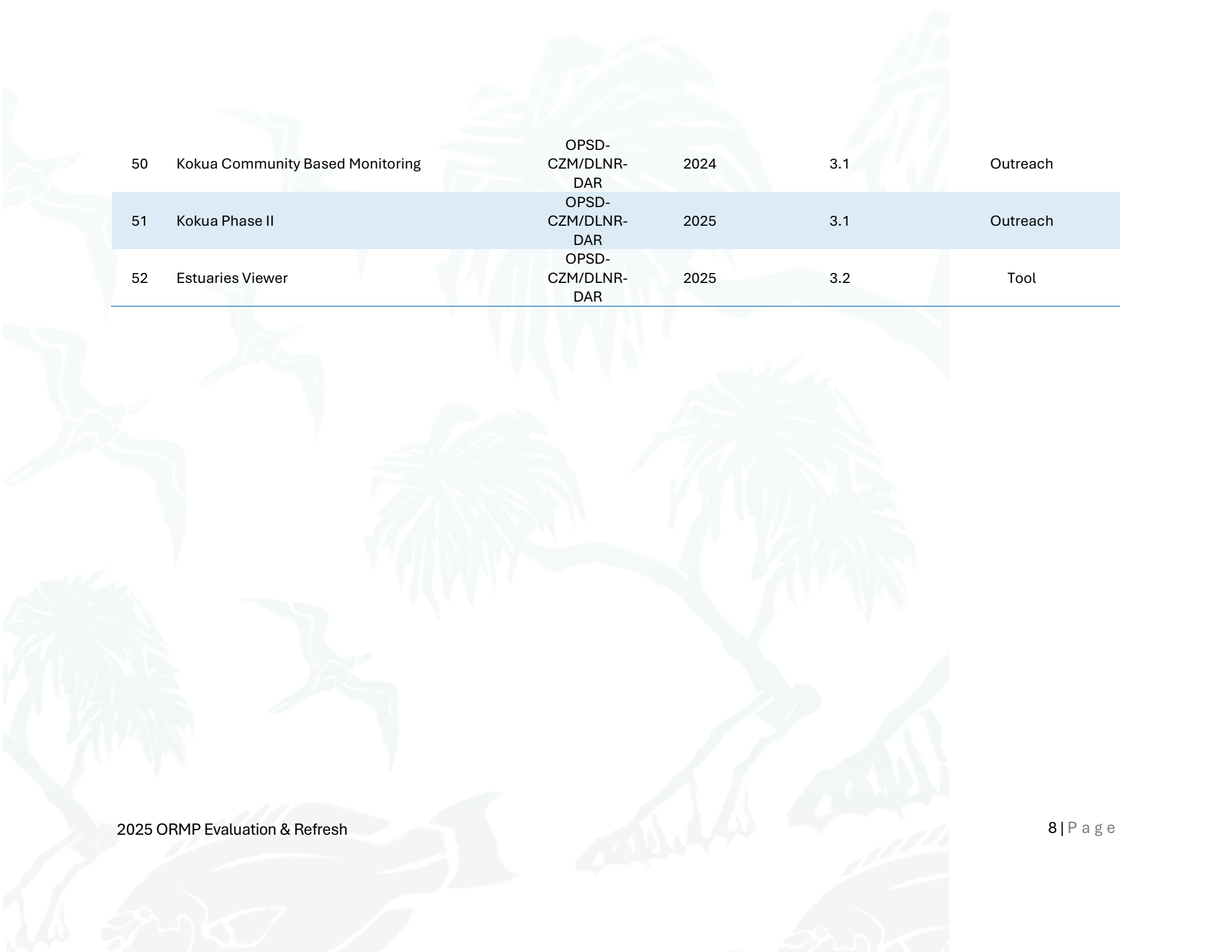
#	Project Name	Lead Agency	Year Completed	ORMP Subcomponent	Project Type	Link to Deliverable (if available)
1	Watershed Implementation Project for the Ahupua'a of Waipa - Phase 2	DOH	2023	2.3	In-ground Project	
2	Expanding Water Quality Improvement Projects at He'eia Fishpond	DOH	2023	2.1, 2.5	In-ground Project	
3	Ola Waikiki - Green Stormwater Infrastructure	UH Sea Grant	In progress	2.1, 2.3, 2.4, 2.6	In-ground Project	Ola Waikiki Green Stormwater Infrastructure 2025 – Hawaii Sea Grant
4	Frameworks for Nonpoint Source Pollution Management in Hawaii	OPSD-CZM	2021	2.3, 2.4, 2.6	Guidance	Final-Identifying Frameworks for Land-Based Pollution Management in HI.pdf
5	Low Impact Development Users Guide	OPSD-CZM	2023	2.1, 2.3, 2.4	Guidance	Preliminary Engineering Report
6	Adding Moloka'i to the Hawai'i Cesspool Prioritization Tool	OPSD-CZM	2025	2.3, 2.4	Tool	Hawai'i Cesspool Hazard Assessment & Prioritization Tool – Hawaii Sea Grant
7	Coastal Nonpoint Pollution Control Program	OPSD-CZM/DOH	2024	2.5	Guidance	

Focus Area III: Marine Ecosystems

#	Project Name	Lead Agency	Year Completed	ORMP Subcomponent	Project Bucket
1	What's the use of emergency coral reef restoration: Honolulu Harbor, HI Case Study	DLNR-DAR	2023	3.3	Study
2	Statewide Coordination using the Hawai'i Coral Reef Strategy Makai Restoration Action Plans	DLNR-DAR		3.2, 3.3	Coordination
3	Marine Wildlife Zoonoses: Improving Biosafety and Increasing Diagnostic Capacity in the State of Hawai'i and the Pacific Island Territories	DLNR-DAR	2023	3.5	Coordination
4	2023 HISC & REPI Awards for AIS Projects	DLNR-DAR	2023	3.5	In-ground project
5	Implemented a risk screening tool to assess six species that were newly introduced to Hawai'i.	DLNR-DAR	2023	3.5	Monitoring
6	Developed new aquatic invasive species outreach materials for implementing new outreach at recreational harbors.	DLNR-DAR	2023	3.4, 3.5	Outreach
7	O'ahu Recreational Vessel Biofouling Surveys	DLNR-DAR	2023	3.5	Monitoring
8	DAR participated in a three-day "Kilo Kanda" workshop in Hilo, hosted by Kua'āina Ulu 'Auamo	DLNR-DAR	2023	3.1	Outreach
9	Hosted the first annual "Ta'ape Throwdown" tournament on Kaua'i.	DLNR-DAR	2023	3.1	Outreach
10	Participated on a research cruise into PMNM to study a nuisance alga, <i>Chondria tumulosa</i>	DLNR-DAR	2023	3.5	Monitoring
11	Collected and analyzed ballast water data from 961 vessel arrivals in 2022 and presented at the 2023 Pacific Ballast Water Group Meeting	DLNR-DAR	2023	3.5	Monitoring
12	Expansion of Honouliuli and He'eia Estuary community restoration projects through a Coastal Wetland Grant	DLNR-DAR	2021	3.1, 3.2, 3.4	In-ground project
13	Expansion of coral-nursery grow-out capacity and maintenance of the rare coral ark, which maintains over 60 species of Hawaiian corals	DLNR-DAR	2021	3.3	In-ground project
14	Launched a West Hawai'i coral restoration program	DLNR-DAR	2023	3.3	In-ground project

15	Published the Makai Restoration Action Plan for Goal 1	DLNR-DAR	2023	3.3	Plan/Coordination
16	Co-hosted the 2023 Hawai'i Coral Restoration Symposium	DLNR-DAR	2023	3.3	Coordination/outreach
17	Co-developed a coral reef restoration plan	DLNR-DAR	2021	3.3	Plan
18	Outplanted 55 nursery grown coral modules	DLNR-DAR	2023	3.3	In-ground project
19	Native sea urchin treatment of invasive algae in Kaneohe Bay	DLNR-DAR		3.5	In-ground project
20	Alien Nuisance Species Plan Support Award	DLNR-DAR		3.5	Plan
21	Published Herbivore Coloring book to raise awareness of the importance of herbivores to healthy coral reefs	DLNR-DAR	2022	3.4	Outreach
22	Re-published Herbivore Coloring book in 'olelo Hawai'i	DLNR-DAR	2024	3.4	Outreach
23	Conducted a report out of Ha'ena Community Based Subsistence Fishing Area (CBSFA) 5-year evaluation	DLNR-DAR	2023	3.4	Outreach
24	Wahiawa Public Fishing Area Project	DLNR-DAR		3.1	In-ground project
25	5 year evaluation of Haena Community CBSFA	DLNR-DAR		3.2	Study
26	Holomua Marine Initiative website updated to include more information herbivores and reefs	DLNR-DAR	2021-2022	3.4	Outreach
27	Holomua Marine Initiative Maui Pilot process	DLNR-DAR	Ongoing, planned completion Dec 2025	3.4	Outreach
28	Completed draft of DAR 2025-2030 Strategic Plan	DLNR-DAR		3.2, 3.3	Plan
29	Water Quality Action Plan	DLNR-DAR	Ongoing, planned completion Dec 2025	3.2	Plan
30	He'eia Community Coastal Restoration Program	DLNR-DAR	2024	3.2	In-ground project
31	removed and restored 4 acres of invasive mangroves along shoreline of Pearl Harbor National Wildlife Refuge	DLNR-DAR		3.5	In-ground project

32	West Loch Pearl Harbor USFWS Coastal Wetland Grant Project	DLNR-DAR		3.5	In-ground project
33	Collaborated with partners to develop a storm response plan for reef restoration	DLNR-DAR		3.3	Coordination
34	Established coral restoration projects in 7 different reef sites in West Hawai'i	DLNR-DAR		3.3	In-ground project
35	Outplanted 126 corals across five restoration sites in O'ahu	DLNR-DAR	2024	3.3	In-ground project
36	Conducted fisheries, reef, and socio-cultural monitoring	DLNR-DAR	Ongoing	3.2, 3.3	Monitoring
37	Coastal Water Quality Monitoring in West Maui and Southwest Maui Watersheds	DOH	2023	3.2	Monitoring
38	Improve Coastal WQ & Coral Reef Health by Expanding Stream Gulch Restoration A in Wahikuli, W Maui	DOH	2023	3.4	In-ground project
39	Expanding Water Quality Improvement Projects at He'eia Fishpond	DOH	2023	3.4	In-ground project
40	He'eia Fishpond Mangrove Island Removal Project	DOH	2020	3.4	In-ground project
41	West Maui Ridge to Reef Priority Watershed Coordinator	DOH	2020	3.2, 3.4	Coordination
42	West Maui Watershed Coordinator	DOH	2023	3.2, 3.4	Coordination
43	Treatment Train: An Ahupua'a Approach to Watershed Best Management Practices in West Maui	DOH	2024	3.4	Coordination
44	Utilization of R-1 Wastewater to Mitigate Axis Deer Damage	DOH	2025	3.2, 3.4	In-ground project
45	He'eia Watershed Ungulate-Exclusion Fencing and Erosion Control	DOH	2024	3.4	In-ground project
46	Watershed Implementation Project for the Ahupua'a of Waipa-Phase 2	DOH	2023	3.2, 3.4	In-ground project
47	Keokea Gulch Riparian Corridor Rehabilitation Phase II	DOH	2023	3.2, 3.4	In-ground project
48	Keokea Riparian Rehabilitation	DOH	2022	3.2, 3.4	In-ground project
49	DLNR, Div. of Forestry and Wildlife: Polluted Runoff Control Project for West Maui	DOH	2023	3.4	In-ground project



50	Kokua Community Based Monitoring	OPSD- CZM/DLNR- DAR	2024	3.1	Outreach
51	Kokua Phase II	OPSD- CZM/DLNR- DAR	2025	3.1	Outreach
52	Estuaries Viewer	OPSD- CZM/DLNR- DAR	2025	3.2	Tool