# Catalyze Hawai‘i – Ocean Tech Edition

## Capturing the $3 Trillion Blue Economy Opportunity

# HTDC’s Ocean Technology Sector Strategic Plan | FY2027–FY2031

Executive Summary ..... 4
Roadmap Summary ..... 8
Acknowledgements ..... 10
The History of Growing Hawai‘i’s Ocean Tech Economy ..... 12
Our Theory of Change ..... 13
The $3 Trillion Blue Economy Opportunity ..... 14
Hawaii’s Competitive Advantage ..... 17
Our Vision ..... 21
Our Mission ..... 21
Our Values ..... 21
The Strategic Framework ..... 22
Goal 1: HTDC as the Institutional Backbone for Hawai‘i’s Ocean Innovation Cluster ..... 23
Goal 2: Regenerative Blue Economy ..... 25
Goal 3: Statewide Ocean Tech Testbed & Advanced Manufacturing (AM) Network ..... 27
Goal 4: Thriving Ocean Innovation Pipeline ..... 29
Goal 5: Blue Workforce: Nextgen Ocean Talent ..... 31
Hawai‘i’s Focus: Blue Economy Market Segments & Technology Themes ..... 33
Measuring Progress ..... 42
Roadmap (FY2027 – FY2031) ..... 43
Governance and Execution ..... 48
Appendix ..... 50

## Executive Summary

### Defining The Blue Economy

**The Blue Economy —** As defined by the World Bank, the blue economy is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.i It spans activities including marine tourism, fisheries and aquaculture, maritime transportation and logistics, waste management, energy, conservation, research, and education.

**The Blue Tech (Ocean Tech) Sector —** A part of the blue economy focused on exploring, monitoring, protecting, and sustainably managing the world's oceans, seas, and coastal areas. It can encompass marine robotics, ocean data and sensing, maritime cybersecurity, marine decarbonization, and more.

In 2025, HTDC made a strategic decision to focus on **ocean technology and the broader blue economy** as a priority within Hawai'i's technology sector. The decision was grounded in a simple premise: **Hawai'i already has many of the assets needed to become a leader in the blue economy and the rapid growth of the global market provides a huge opportunity for economic development.**

**First, the state brings together a rare combination of assets:** a $10B existing blue economy, world-class ocean research coming out of University of Hawai'i (UH) and Hawai'i Pacific University (HPU), deep federal partnerships with agencies like NOAA, ONR, NSF, year-round access to diverse marine environments, centuries-long cultural relationship with the ocean, and a strategic position between the continental United States and the Indo-Pacific. Hawai'i has consistently ranked in the top 10 nationally for coastal marine jobs and marine GDP, with 23% growth in marine business activity over the past decade.[1]

**At the same time, Hawai'i is at a unique moment in history with the blue economy.** Today, the blue economy supports more than **100 million jobs** worldwide,[2] and is equivalent to the world's seventh-largest economy.[3] The rising geopolitical importance of the ocean as well as demand for ocean technologies and data that address climate change, maritime security, food systems, and clean energy has accelerated growth in the sector. In fact, the global blue economy is currently growing at **2.5 times the rate** of world economy more generally[4] and is projected to reach **$3 trillion** annually by 2030.[5] Additionally, venture capital in ocean tech has grown **five-fold over the last eight years**, reaching more than **$3 billion in 2025**, making it one of the fastest-growing sectors worldwide.[6]

With this information in hand, **HTDC saw an opportunity to capture a share of this big blue opportunity**—growing Hawai'i's homegrown ocean tech companies, helping existing companies scale, and attracting new companies to the state—which would create high-quality jobs and expand economic opportunity for Hawai'i residents.

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[1] *2024 Marine Economy Report: Hawai'i.* NOAA, 2024.
[2] *The Ocean Economy Imperative: Defining Value, Managing Risk and Mobilizing Investment*. World Economic Forum. Jan 2026. https://reports.weforum.org/docs/WEF_Ocean_Economy_Imperative_2026.pdf
[3] *Ocean Finance for Sustainability*. UN Environment Programme.
[4] *The ocean economy is booming. But for how long?* UN Trade & Development. 2025. https://unctad.org/news/ocean-economy-booming-how-long
[5] *UN Ocean Decade: Vision 2030*. https://oceandecade.org/vision-2030
[6] *The Ocean Returns: A Deep Dive*. Katapult Ocean and Builders Vision. 2025. https://oceanreturns.com/a-deep-dive/index.html

HTDC's decision to prioritize ocean technology has already generated significant momentum. Since August 2025, the agency has:

- **Built a statewide network of ocean innovation partners.** The Ocean Innovation Hui (Hui) has grown to more than **90 organizational members in its first year**, bringing together industry, researchers, government, investors, and community partners to identify opportunities, gaps, and barriers across Hawaiʻi's blue economy.
- **Established a statewide policy and governance foundation.** HTDC helped advance **SB2907 / Act 186,** recognizing Hawaiʻi as an Ocean Cluster and establishing a cross-agency governance board to support continued collaboration and coordination.
- **Expanded Hawai'i's Pacific partnerships.** HTDC established its first cross-Pacific partnership with the Port of San Diego, creating new pathways for Hawaiʻi companies, talent, and institutions to connect with a major U.S. ocean innovation ecosystem.

Building on this momentum, HTDC spent the past year (2025-2026) developing its **FY2027 - FY2031 Ocean Technology Sector Strategic Plan** with broad participation from Hawaiʻi's ocean ecosystem. More than **450 stakeholders have participated across 12 sessions between August 2025 and July 2026**, helping to identify the opportunities, barriers, and priorities that should shape Hawaiʻi's ocean tech strategy. HTDC also examined successful ocean cluster models around the world, including those in **San Diego, Los Angeles, Washington, Maine, New Zealand, Iceland, and Singapore.** These examples have provided lessons on how other regions are building their ocean innovation ecosystems, attracting investment, developing talent, supporting commercialization, and connecting research and community partners to industry and vice versa. HTDC has also looked inwards**, examining the state's history**, previous attempted initiatives, lessons learned, and progress to-date. The vision for a stronger blue economy has been pursued by many stakeholders for decades, and HTDC wanted to build a strategy that acknowledged previous successes and learned from the mistakes.

**The result is a strategy that brings together these different perspectives**, grounded in ʻāina and aspirations of Hawaiʻi's ocean-based community, informed by the successes and learnings of ocean cluster models around the world, shaped by the state's history, and mobilized by the progress to-date.

The strategy identifies three priority market segments for Hawaii: **coastal resilience, maritime, and blue foods**; and four cross-cutting technology themes**: ocean AI and data sensing, robotics, ocean energy, and advanced manufacturing**. These areas lean into Hawaiʻi's existing blue economy, infrastructure, and investments.

HTDC has also outlined the following goals to grow the ocean tech sector over the next five years. **Note: we've defined a few terms below – "Clusters," "Innovation Challenges," and "Joint Innovation Projects (JIPs)" in the Key Terms section of this document**:

- **First, HTDC will build the institutional backbone for Hawai'i's Ocean Cluster** by coordinating local stakeholders around a shared agenda, gathering and publishing key ecosystem data, advocating for public policy, and bringing more funding into the ecosystem.
- **Second, HTDC will create safeguards to transition existing traditional economic models to more regenerative ones**, aligning economic growth with ocean stewardship and community well-being.
- **Third, HTDC will develop a statewide ocean tech testbed and manufacturing network,** building on existing assets to establish a network of verified manufacturing, testing and deployment sites for ocean technologies.
- **Fourth, HTDC will create end-to-end support for Hawai'i's ocean innovation pipeline** through accelerators that grow early-stage ideas, Innovation Challenges and Joint Innovation Projects (JIPs) that create local procurement

pathways, financing mechanisms that expand access to capital, and cross-Pacific partnerships that help companies scale.
- **Fifth, HTDC will develop the next generation of ocean talent** by building a place-based ocean technology workforce pipeline that connects Hawai‘i residents to higher quality blue economy careers.

This strategy can be broken into two fundable segments: first is **core foundational work (Goal 1)**, which includes coordination, strategy development, data analysis, and policy advocacy. HTDC envisions this segment of the work to remain relatively stable in size and **cost up to $0.5M annually**. HTDC plans for this work segment to be funded primarily by **real estate revenues** as well as **annual state appropriations.**

The second segment is the **scalable opportunity-driven work (Goals 2-5),** which includes infrastructure development, launching innovation challenges, new workforce development programs, and more. Much of its implementation will grow based on potential impact of a program, demonstrated market demand, as well as the availability of resources to fund it. HTDC estimates that implementing this segment of the plan will **cost $2-$20M annually**. HTDC plans for this segment to be funded by a mix of **federal grants, philanthropic donations, state appropriations as well as private investment.**

This strategy is ambitious but is grounded in a clear set of outcomes. By FY2032, this strategy aims to build:
- **A functioning ocean innovation cluster** with HTDC serving as a backbone government entity, supporting **150+ participating organizations** through sustained governance and coordination.
- **A statewide platform for collaboration and visibility**, including at least one **Blue Economy Summit** that brings together Hawai‘i's ocean technology ecosystem.
- **A Hawai‘i-specific regenerative blue economy framework**, demonstrated through **20+ companies** adopting and advancing regenerative practices.
- **A statewide manufacturing and testbed network** with **4+ operating testbed sites**, a pilot advanced manufacturing location, and a permanent **O‘ahu-based Blue Economy Center**.
- **A stronger ocean innovation pipeline** with an **accelerator supporting 5–8 ocean technology companies annually**, at least **1 annual innovation challenge**(s) hosted by local state or corporate organizations, at least **1 annual JIP, 5+ peer-to-peer partnerships** with other established ocean clusters, and a living **Blue Economy Playbook**.
- **Clear pathways into blue economy careers**, supported by **10+ committed industry partners**, **3+ coordinated workforce programs**, and a dedicated blue jobs platform.

This is our opportunity to turn decades of knowledge, relationships, and innovation into lasting momentum. By capitalizing on the big blue opportunity, HTDC will help Hawai‘i **grow local companies, scale local companies, and attract new companies to the state.** This means we will:
- **Grow and diversify the economy, generating new economic activity** while creating pathways for wealth to circulate more broadly within Hawai‘i.
- **Create high-wage, meaningful careers** for residents aligned with Hawai‘i's values and future.
- **Develop and deploy solutions to pressing ocean and coastal challenges,** helping government agencies, businesses, and communities address resilience, climate, food, energy, and other long-term challenges while reducing potential future costs.
- **Establish Hawai‘i as a recognized Pacific leader** in ocean technology and innovation, strengthening the state's reputation, partnerships, and influence across the region.

## About HTDC's and Its Tech & Innovation Strategies

Founded in 1983, The Hawai'i Tech Development Corporation (HTDC) is on a mission to make Hawai'i a leading technology innovation hub in the Pacific.

Published in December 2026, ***Catalyze Hawai'i***, HTDC's FY2027–FY2031 Strategic Plan, establishes the overarching direction for HTDC's technology and innovation work, including five goals that apply across its priority sectors of **ocean, space, advanced manufacturing, and AI**. This strategy is the **sector-specific implementation strategy for ocean technology**, translating those goals into the priorities, initiatives, partnerships, and milestones needed to build Hawai'i's ocean innovation cluster. This strategy is intended to be a **living document**, reviewed and updated annually as the sector evolves, new opportunities emerge, and resources become available. Sector-specific strategies for **Space, Advanced Manufacturing, and AI** are currently under development and will follow as those strategies mature.

## Roadmap Summary

| | | 1. Hawai'i as a Cluster | 2. Regenerative Dev. | 3. Testbed + Mfg Network | 4. Innovation Pipeline | 5. Nextgen Talent |
|---|---|---|---|---|---|---|
| Challenge | | Hawai'i has many components of a successful ocean tech ecosystem, but lacks the clarity, alignment, data, and funding needed to push change. | The community is fed up with extractive development. Local ocean tech companies will only succeed if they create broadly shared benefits, steward public resources, and earn the public trust needed to grow. | Hawai'i has globally unique ocean-access for deploying ocean technologies, but lack of clarity on testbed locations, permitting timelines, and minimal local manufacturing capability slows growth significantly. | Despite its research capabilities, Hawai'i fails to meet the critical mass threshold of its commercialized technology pipeline, leading to limited growth in the long-term. | Hawai'i has globally competitive ocean programs at UH and HPU, but lack of clear career pathways causes talent to leave the islands. At the same time, local companies find it difficult to hire the right talent. |
| Strategy | | HTDC will serve as an institutional backbone organization, coordinating stakeholders through the Hui and MAB, developing data-driven strategies and bringing in new funding. | HTDC will identify regenerative frameworks, enhance its current programs to be more regenerative, and create mechanisms for private sector companies to reinvest back into the community. | HTDC will establish an easily accessible statewide network of ocean technology manufacturing and deployment sites, with a central hub on Oahu. | Create an end-to-end support system for local tech; an accelerator to grow ideas, innovation challenges and JIPs as a process for the state to procure, financing mechanisms for access different forms of capital, and cross-Pacific partnerships for offramps. | HTDC will work with core workforce development partners to develop clear career pathways and support for residents. |
| Milestones | FY27 | An ocean tech development plan is publicly launched. The Hui continues to grow, and the MAB and topic-specific working groups are launched to map workforce, infrastructure, and more. | Key partners are identified and a working group is kicked off, initial frameworks and KPIs around regenerative wealth building are created. HTDC incorporates regenerative practices into at least one preexisting program. | Key state agency partners are solidified, a landscape map of current piloting and manufacturing sites is published, 2-3 target sites for quick permit improvements are identified, and a pilot for an O'ahu manufacturing location is launched. | Innovation challenge partners and funding secured with clear problem sets identified, financing landscape and innovation pipeline are mapped with clear gaps identified. MOUs signed with 1-2 cross-Pacific partners to support company offramps. | A mapping of existing workforce gaps are identified, with recommended pathways created. HTDC has identified 2-5 interventions and at least one industry partner to develop workforce development initiatives. |
| | FY29 | Strategic clarity has turned into action: data from initial mapping has produced a strong list of shovel-ready projects. Stakeholders are leveraging Hui and MAB infrastructure to co-apply to numerous grants annually. | Regenerative mechanisms are integrated across all HTDC's core programs, mechanisms are launched for companies outside HTDC to make sure wealth recirculates locally (e.g., community fund), with at least 2-3 companies taking part. | With the operating 2-3 express permitting sites, the times for startups to deploy their tech (for select activities) in the ocean for tests has eased by 10%. 1-2 companies have come to Hawai'i to have actively deployed their technologies at these sites. | An ocean tech accelerator is launched, which serves as a feeder into innovation challenges**,** which are codified to get state and local corporations as a first pilot. Hawaii's first-ever Joint Innovation Project (JIP) is launched as a large-scale procurement opportunity. MOUs are signed with 4-5 ocean cluster partners. | A blue tech workforce development program is co-designed and launched (e.g., internship, fellowship, career awareness programming). HTDC works closely with its partners to apply for grant funding that could support different components of the program. |

| | | 1. Hawai'i as a Cluster | 2. Regenerative Dev. | 3. Testbed + Mfg Network | 4. Innovation Pipeline | 5. Nextgen Talent |
|---|---|---|---|---|---|---|
| | FY31 | Hui and MAB have grown to a 150+ membered cluster with multiple layers of governance working together to pass 1-2 pieces of legislation, launch or scale 1-2 projects, and apply for 2-3 grants on an annual basis. | Hawaii's growing blue economy is recirculating significant wealth back into the community. There is a network of 20+ companies participating in some regenerative practices, and there are easily accessible mechanisms for all companies to reinvest their time, wisdom, and money back into Hawai'i. | Hawai'i is globally recognized for its Ocean Tech Pilot Network, with at least 4 pre-permitted sites, and an O'ahu Ocean Tech Hub as the central node. Permitting for various technologies are eased by up to 30%. Annually, 2-3 companies are coming to Hawai'i to deploy their technologies here. | Accelerator has grown to 5-8 companies annually, multiple innovation challenges and JIPs are run yearly, 1-2 companies are consistently growing their customer base across the Pacific network of 5+ locations, 1-2 companies from out-of-state have also opened offices in Hawai'i due to strong ecosystem. | Hawaii has a cohesive blue economy workforce pipeline that is responsive to market demand. HTDC has built an interconnected network of 10+ industry partners, helping to co-design and deploy 3+ workforce programs |

## Acknowledgements

This Strategic Plan reflects the collective efforts of Hawai‘i’s ocean tech and innovation community. Over FY2026, HTDC has worked to convene entrepreneurs, researchers, educators, industry leaders, investors, government agencies, and community stakeholders through conferences, workshops, stakeholder interviews, strategy discussions, and related ecosystem-building activities. HTDC extends its sincere appreciation to all those who helped inform, support, and guide this work. Participation in this process does not necessarily imply endorsement of findings or recommendations contained within this Strategic Plan.

HTDC would like to recognize the individuals who contributed directly to the development of this plan through research, workshop facilitation, strategic guidance, coordination, analysis, writing, and stakeholder engagement.



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## Community and Ecosystem Participants

HTDC would also like to extend its appreciation to the following organizations and partners for contributing insights, feedback, expertise, and participation:

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Burns and McDonnell
Chamber of Commerce Hawaii
Conservation International - Hawai‘i
Coral Collective
Department of Land and Natural Resources - Division of Aquatic Resources
Department of Agriculture & Biosecurity
Department of Business, Economic Development, and Tourism
Department of Transportation
Elemental Impact
Entrepreneurs Foundation of Hawai‘i
Essential Leap
‘Ewalu Industries
FishyRobots
Germinate by HIPlan
Hatch Blue
Havoc
Hawai‘i State Legislature
Hawai‘i Seaglider Initiative
Hawai‘i Sea Grant
Hawaii Angels
Hawai‘i Aquaculture and Aquaponics Association
Hawai‘i Natural Energy Institute
Hawai‘i Ocean Legislative Taskforce
Hawai‘i Ocean Power Solutions
Hawai‘i Pacific University
Hawai‘i Seaglider Initiative
Hawai‘i State Senator Glenn Wakai’s Office
Hawai‘i State Senator Lynn Decoite’s Office
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Hawai‘i Technology Development Corporation
Hohonu
INDOPACOM
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Makai Ocean Engineering
Marine Technology Society
Nāmaka Algae
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Natural Energy Laboratory of Hawaii Authority
National Oceanic and Atmospheric Administration
Ocean Era
Oceanit
Oceanworks
Office of the Governor
OUTRIGGER Resorts and Hotels
Pacific Economics
Office of Hawaiian Affairs
Pacific Islands Ocean Observing System
Pacific Impact Zone
PacMar Technologies
Papahānaumokuākea Marine Debris Project
Parley for the Oceans
PICHTR
Privateer
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REGENT Craft
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U.S. Senator Brian Schatz’s Office
Voltage Vessels
WAI: Wastewater Alternatives & Innovations
WaiHome

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## The History of Growing Hawai‘i’s Ocean Tech Economy

Hawai‘i’s economy appears stable by many traditional measures: unemployment and GDP growth remain steady. However, these indicators mask a deeper structural challenge. Wages have not kept pace with the state’s exceptionally high cost of living, and the outmigration of young, educated residents continues as they seek greater economic opportunity elsewhere. Many established sectors face structural limits on high-wage job creation at scale. As a result, economic diversification and the development of knowledge-intensive industries have become increasingly important priorities for the state.

Technology and innovation-driven sectors offer a clear pathway toward greater economic resilience and higher-wage careers.[2] When combined with Hawaii's established strengths in ocean and marine sciences, this creates a compelling rationale for focusing on ocean tech and innovation as a strategic priority for the state’s long-term economic development.

### The Coordination Gap: Why Previous Efforts Struggled

**Efforts to grow Hawai‘i’s ocean tech and innovation economy are not new**. Hawai‘i first attempted to grow its local ocean tech economy in the 1970’s. Hawai‘i was, arguably, the U.S.’s first ocean cluster. Over several decades, public agencies, universities, nonprofits, investors, entrepreneurs, and private companies have all contributed to tech and innovation initiatives. Most notably, in the 1970s, the State initiated the coordination of a marine economy by instituting a Marine Affairs Coordinator in the Governor's office. The inaugural Coordinator, John Craven, served in multiple roles, both as the Marine Affairs Coordinator for the State and as the Dean of Marine Programs at the University of Hawai‘i. This led to, what we observe as, a golden era of Hawaii’s ocean tech economy. During this time between the 70’s and 80’s, the UH School of Ocean, Earth Sciences and Technology (SOEST) was created, and the Natural Energy Laboratory of Hawaii Authority (NELHA) was also launched. Other core companies in the ocean tech space that still exist today were founded during this period including Oceanit, Makai Ocean Engineering, and Pacmar Technologies. By the 90’s, momentum slowed, and today Hawai‘i’s ocean ecosystem remains relatively small and fragmented.

**There were a variety of challenges that kept these initial attempts from succeeding.**

**First, the efforts to coordinate the economy were too short-lived due to the Marine Affair’s Coordinator position being housed in the Governor’s office.** Despite only being created in the 1970’s, the MAC position was repealed in 1982 and its functions were transferred to the Department of Planning and Economic Development. Without a dedicated office charged with connecting research to industry and economic development, the State's blue economy efforts naturally settled inside its universities and research programs. That research strength has served Hawai‘i extraordinarily well; however, the State lost the standing, business-facing coordination that the Marine Affairs Coordinator had provided.

**Second, the work to grow Hawaii’s ocean tech economy relied on one-person, when ultimately the problem requires the buy-in of dozens of stakeholders.** The MAC position founded in the 1970’s was influential, but it was structured in a way that made it fragile: accountability for a large body of work on a single person. As early as the 1974 report, the Task Force had cautioned that combining these responsibilities in one role would result in potential failure.

**Finally, there were broader ecosystem gaps as well:** misaligned or missing tax incentives for entrepreneurs and small-to-medium sized businesses; a lack of catalytic, sustained support for companies rather than one-and-done funding; and limited community-driven leadership to deliver on the efforts. Building successful ventures takes an entire ecosystem of support, not a single resource.

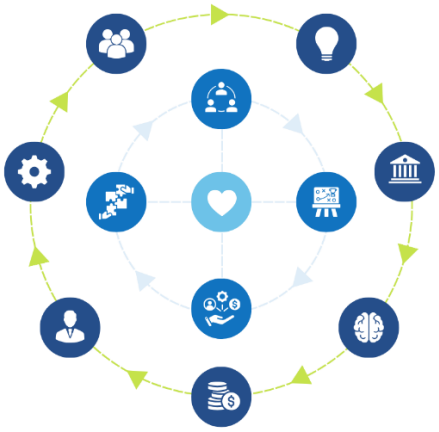
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## Our Theory of Change

**This time is different.** This strategic plan focuses on building on the momentum and progress achieved over the past few decades to grow the blue economy, while learning from the mistakes of our predecessors.

**First, and most important, this strategic plan does not build around a single person to carry the weight of the work.** A backbone organization like the Hawaiʻi Technology Development Corporation (HTDC) provides continuity and support as a field catalyst, while the Hawaiʻi Ocean Innovation Hui convenes stakeholders from across the public and private sectors so that leadership is shared rather than concentrated. Codifying this work matters too: inter-agency legislation such as Act 186 establishes a governing body that lives outside the Governor's office, insulated from the political turnover that ended the Marine Affairs Coordinator.

**Tech ecosystems require interventions across the tech and innovation flywheel to achieve real growth.** Tech and innovation ecosystems grow through reinforcing feedback loops between research institutions, startups, investors, workforce systems, government, and industry. When these components are aligned and working in sync, the local tech and innovation sector builds momentum over time - the flywheel turns, catalyzing actions and outcomes. This strategic plan makes sure to invest in interventions across the flywheel of tech and innovation.

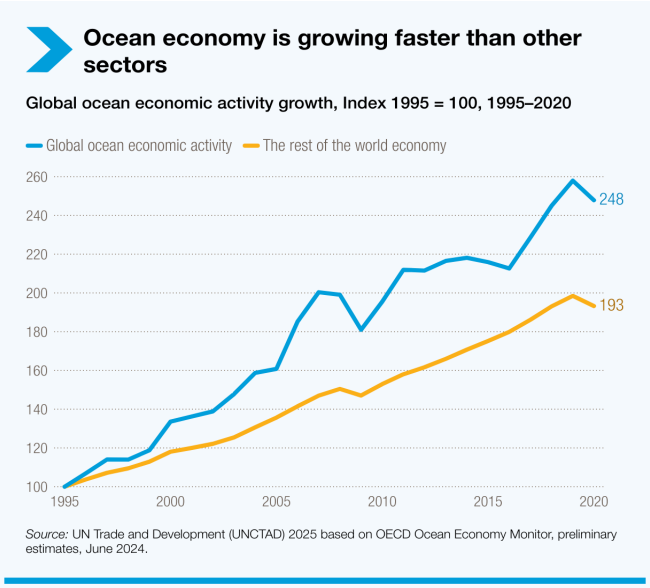


- **Talent and Workforce:** Education, training, and career pathways from K-12 through higher education and beyond.
- **Innovation Pipeline:** Systems that move ideas from concept to commercialization, including R&D, incubators, accelerators, and tech transfer.
- **Access to Capital:** Access to funding at all stages, from grants and angel investment to venture capital, private equity, and loans.
- **Native Hawaiian Knowledge and Leadership:** Technology and innovation development and implementation are guided by Native Hawaiian values, knowledge systems, and leadership.
- **Regenerative Wealth Building:** Approaches create shared economic benefit and broaden wealth creation.
- **Corporates:** Large, stable companies that invest in research, talent, and partnerships.
- **Government:** Public policies, programs, and investments that foster innovation and reduce barriers.
- **Infrastructure:** Physical and digital assets, such as labs, broadband, utilities, and workspaces.
- **Community, Culture, and Visibility:** Relationships, identity, and storytelling that foster belonging and attract talent, collaborators, and investment.

**Finally, effective coordination across stakeholders is essential for this work, and HTDC is ready to serve as a key convening entity.** When coordination is absent, even the strongest individual efforts stall.
As a field catalyst, HTDC aligns stakeholders, coordinates ecosystem development, identifies strategic gaps, and supports the long-term conditions necessary for ocean tech and innovation to grow. HTDC can do things no single agency, university, accelerator, or nonprofit can do alone: align state agencies around a shared ocean tech agenda, shape public procurement to support local innovators, advance legislation, secure federal program designations, serve as a verified funder, and invest in infrastructure the private sector would not build on its own.

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# The $3 Trillion Blue Economy Opportunity



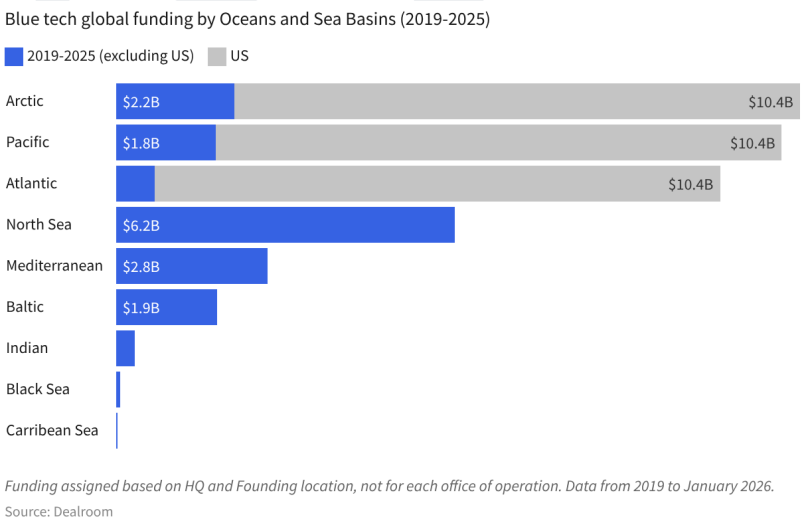

The ocean covers 71% of Earth's surface, comprises over 80% of the biosphere, and produces more than half of the oxygen for our planet. It provides food security for over three billion people worldwide and transports over 80 percent of global goods while carrying 98 percent of global Internet traffic through sea cables. Over 600 million people and 100 million jobs depend on the blue economy.[3]

## The Global Blue Economy

The blue economy is one of the fastest-growing sectors. Globally, the blue economy is growing 2.5 times compared to the global economy[4] and is equivalent to the world's seventh largest economy.[5] The blue economy is projected to reach $3 trillion in annual growth by the end of the UN Ocean Decade in 2030.[6]

Global demand for ocean tech and innovation is expected to grow significantly in the coming decades, driven by climate change, food security, maritime security, energy transition, supply chain resilience, and ocean resource management. Advances in artificial intelligence, robotics, remote sensing, and data infrastructure are also accelerating technology and innovation across the broader blue economy. For every $1 invested in a regenerative blue economy approach, this generates $5 in global benefits by 2050.[7]

In 2023, total funding toward ocean initiatives, excluding private finance and grants from national governments, exceeded $4.3 billion.[8] Venture capital investments in ocean tech and innovation have grown five-fold over the last eight years, reaching more than $3 billion in 2025, making it one of the fastest-growing sectors worldwide.[9]




At the same time, the ocean is increasingly central to geopolitical strategy and economic competitiveness. Nations throughout the Pacific region are investing heavily in maritime capabilities, coastal infrastructure, environmental monitoring, and dual-use technologies connected to national security and supply chain resilience.
When analyzing venture investments by the different oceans and sea basins around the world, the geographic units that shape industry partnerships and intercountry agreements, the Pacific, Arctic, and Atlantic, have attracted the largest share of global funding since 2019.[10] The Pacific region has secured the second largest share of global ocean tech funding since 2019.

These trends are creating growing global markets for ocean- and coastal-related products, services, and technologies. The U.S. leads in the global blue economy venture investments, reflecting the country's growing recognition that ocean industries are central to both economic competitiveness and national security.[11]

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### What is the UN Ocean Decade? How does this relate to Hawai‘i?

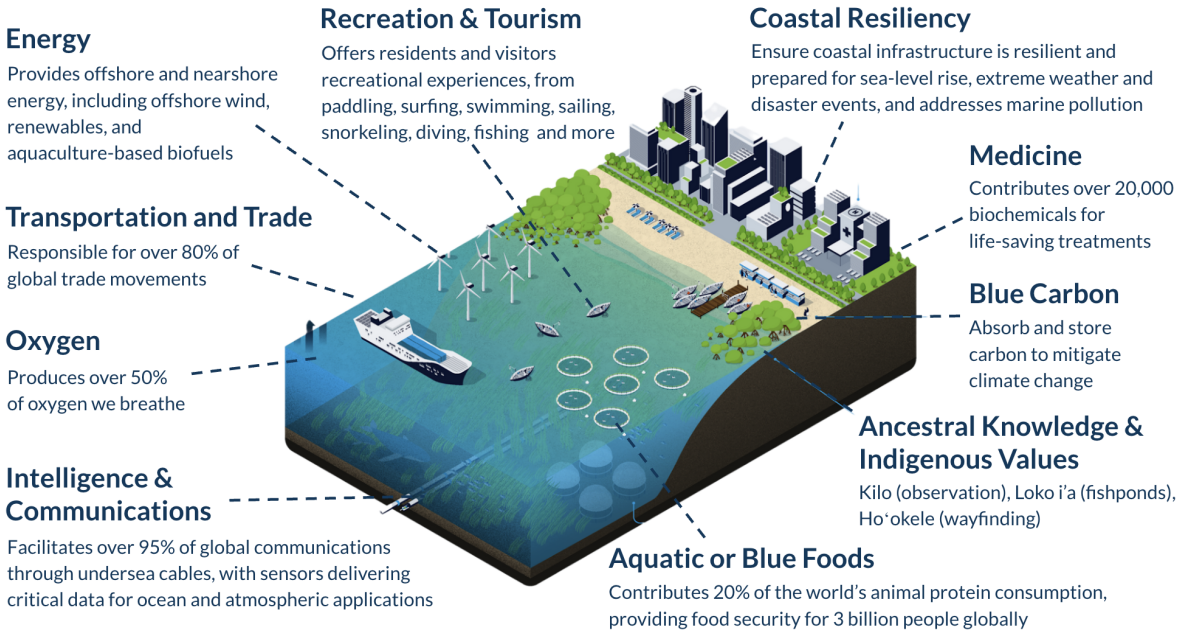
Launched in 2021, the UN Decade of Ocean Science for Sustainable Development (2021-2030) or the **“Ocean Decade”** provides a framework for a wide range of stakeholders to engage and collaborate worldwide. Through the Ocean Decade framework, the community contributes to a more sustainable and regenerative blue economy. There are 10 Ocean Decade Challenges to help stimulate action:

1. Understand and beat marine pollution
2. Protect and restore ecosystems and biodiversity
3. Sustainably nourish the global population
4. Develop a sustainable, resilient and equitable ocean economy
5. Unlock ocean-based solutions to climate change
6. Increase community resilience to ocean and coastal risks
7. Sustainably expand the Global Ocean Observing System
8. Create a digital representation of the ocean
9. Skills, knowledge, technology and participation for all
10. Restore humanity’s relationship with the ocean

With Hawai‘i’s location in the middle of the Pacific Ocean, surrounded by some of the most culturally and ecologically significant and climate-vulnerable marine environments on the planet, these 10 challenges present an opportunity for Hawai‘i to address them through a science-based, technology and innovation lens. The 10 ocean challenges will be mentioned in different sections of this Strategic Plan.

## The U.S. Blue Economy

In the U.S., the “new” blue economy, as defined by National Oceanic and Atmospheric Administration (NOAA) as a sustainable and equitable ocean and coastal economy that optimizes advances in science and technology is a major driver of national prosperity. This marine-driven sector generates roughly $511 billion in economic impact and supports 2.6 million jobs nationwide.[12]




*The “New” Blue Economy Landscape in Perspective, an adapted image from the World Economic Forum’s Friends of Ocean Action.*

Hawai‘i has yet to tap into this fully. Previous coordination efforts have stalled due to a multitude of reasons, but these efforts are important for sustaining the long-term economic resiliency of the state and its neighboring Pacific Islands. By reactivating this work through HTDC and learning from the successes and failures of other cluster models, Hawai‘i can more strategically unlock new investments and resources into building a more economically resilient future for the region. Hawai‘i’s combination of geographic positioning, research strengths, federal partnerships, testing environments, and existing blue economy activity positions the state to participate in and contribute to these emerging opportunities. Rather than attempting to compete broadly across all areas of technology, ocean tech and innovation represents a sector where Hawai‘i possesses a unique combination of natural, institutional, cultural, and strategic advantages that other regions cannot replicate.

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# Hawaii's Competitive Advantage

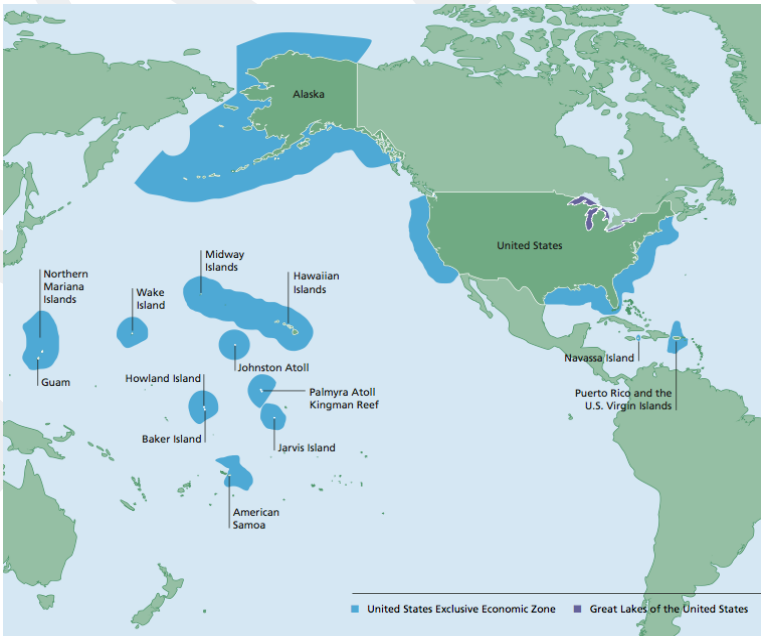
## Acknowledgement of Hawai‘i

HTDC acknowledges Hawai‘i's as an indigenous space. The ‘āina (the land and the seas) has been shaped, named, navigated, and cared for by Native Hawaiians (Kānaka Maoli) for centuries. That inheritance is present in every current, every reef, and every fishpond that exists today.

**Innovating, stewarding, and navigating the ocean are rooted in Hawai‘i's culture.** For centuries, Native Hawaiians cultivated deep and enduring relationships with the ocean through traditions of wayfinding, fishing, voyaging, aquaculture, and environmental stewardship. Long before modern oceanographic tools, Native Hawaiian navigators traversed thousands of miles across the Pacific with knowledge of stars, currents, winds, tides, and marine ecosystems. Traditional loko i‘a fishpond systems, nearshore management practices, and ahupua‘a (watershed) stewardship demonstrated highly adaptive approaches to food systems, sustainability, and environmental balance that remain relevant and instructive today.

These traditions recognize an important point for Hawai‘i's future: technology and innovation on the islands have never been separate from the ‘āina. As global interest grows in sustainable ocean industries, Hawai‘i possesses not only technical and scientific advantages but also a longstanding cultural framework grounded in reciprocity, sustainability, and respect for the ‘āina.

**Hawaii's geography creates unique ocean-related advantages.** Located roughly 2,000 miles from the continental United States, Hawai‘i is the nation's only island state situated in the central Pacific, serving as a critical gateway between the U.S. and the broader Indo-Pacific region. Hawai‘i benefits from a significant concentration of federal research, defense, and maritime activity, with longstanding relationships with agencies such as the NOAA, Navy/Office of Naval Research (ONR), NAVSEA, Defense Advanced Research Projects Agency (DARPA), U.S. Coast Guard (USCG), Army Corps of Engineers (USACE), Department of Energy (DOE), Advanced Research Projects Agency-Energy (ARPA-E), National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Department of Agriculture (USDA), Fish and Wildlife Service (FWS), and several other federal partners involved in ocean observation, climate science, autonomous systems, maritime operations, and national security.




Hawai‘i provides year-round access to nearshore coastal ecosystems, open water conditions, and shallow- and deep-water environments. The state is located within one of the largest U.S. Exclusive Economic Zones in the Pacific, encompassing vast ocean and aquatic resources that support marine transportation, shipbuilding, fisheries, aquaculture, renewable energy, tourism, ocean research, marine conservation, and biotechnology.

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**Hawai‘i already possesses a strong blue economy foundation.** Today, the state's blue economy contributes more than $10 billion annually to Hawai‘i's GDP, supports nearly 100,000 jobs, and has experienced 23% growth in marine business activity over the past decade.[13] Hawaii's blue economy spans a wide range of industries, including marine tourism and recreation, marine transportation, ship and boat repair, marine construction, defense and maritime operations, fisheries, aquaculture, renewable energy, marine conservation, ocean science and research. Ocean related industries are not peripheral to Hawai‘i's economy, but instead represent a major existing economic foundation upon which the state's tech and innovation sectors can build on.

In fact, the value of Hawai‘i's blue economy has increased over 8% in the last decade.[14] Complemented by the state's growing Information sector, which grew 8.2% in 2025, this reflects a growing base of technical, software, and data talent.[15] Hawai‘i is strategically positioned to apply its digital and technological capabilities to the blue economy, accelerating a convergence that few coastal states are equipped to pursue.

**Hawai‘i has world-class ocean research infrastructure.** The state is home to globally recognized research institutions, marine science expertise, unique testing environments, and longstanding federal and academic investment in ocean-related research:

- University of Hawai‘i: Oceanography program consistently ranks in the top 10 in the world: 5th nationally and 7th globally.[16]
- Hawai‘i Pacific University: A strong marine biology and sciences program.

Hawai‘i is home to a broad network of specialized research centers, laboratories, and field programs focused on areas such as ocean observation, climate science, autonomous systems, renewable energy, aquaculture, marine biology, coastal resilience, and maritime operations. They play a critical role in not only producing state-of-the-art research, including generating top talent, intellectual property, technical expertise, public-private partnerships, government relations, and applied science and technologies that can serve as the foundation for Hawai‘i's future commercialization and industry growth.

This board network includes but is not limited to:

- Applied Research Laboratory (ARL): a research laboratory that is part of the University of Hawai‘i system and developing pioneering research and technology solutions to address challenges in defense, sustainability, and scientific discovery;
- Center for Marine Debris Research (CMDR): the state's only joint institute between the Hawai‘i Pacific University and the National Institute of Standards and Technology (NIST), collecting and tracking marine debris across the state and Pacific Island region;
- Cooperative Institute for Marine and Atmospheric Research (CIMAR): a NOAA-sponsored cooperative institute that supports NOAA's mission and goal in conducting collaborative research, developing educational programs to train the next generation of scientists, and supporting outreach activities to dissipate scientific information to the public;
- Hawai‘i Institute of Marine Biology (HIMB); an organized research institute established in 1951 by the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawai‘i at Mānoa;
- Hawai‘i Natural Energy Institute (HNEI): the state's energy institute, founded in 1974 at the University of Hawai‘i at Mānoa, to conduct research, develop, test, and evaluate emerging renewable energy technologies that address the State's critical energy needs;
- Hawai‘i Sea Grant College: an innovative program of research, education, and extension services within the University of Hawai‘i system, improving the understanding and stewardship of coastal and marine resources of the state, region, and nation;
- Natural Energy Laboratory of Hawaii Authority (NELHA): a state entity under Department of Business, Economic Development and Tourism (DBEDT) that was established in 1974 in Kailua-Kona on the island of Hawai‘i to support an innovative green-blue economic development park, Hawai‘i Ocean Science and Technology Park (HOST), which has become the world's premier ocean science innovation hub for water, energy, and food; it is

the only place in the U.S. that offers a unique combination of cold deep ocean water, warm surface watts, strong solar radiation, accessibility, and state-owned land;
- Pacific Aquaculture & Coastal Resource Center (PACRC): a center focused on the long-term sustainable use and conservation for coastal areas worldwide through aquaculture and resource management by promoting excellence and innovation in scientific research, public policy, outreach, and education;
- Oceanic Institute: a non-profit R&D organization affiliated with the Hawai'i Pacific University, dedicated to aquaculture, biotechnology, and coastal resource management;
- Pacific Disaster Center (PDC): a leading innovator of global risk reduction science and technology and is part of the University of Hawai'i network of applied science and research center to provide multi-hazard early warning systems, predictive analytics, data science, and machine learning to navigate the complicated risk landscape; and
- Pacific Islands Ocean Observing Service (PacIOOS): a NOAA-operated service system that provides ocean data and information across the U.S. Pacific Islands, including State of Hawai'i, Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and American Samoa; the Freely Associated States of the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), and the Republic of Palau; and the Minor Outlying Islands.
- And much more.

These entities in Hawai'i reflect decades of leadership in ocean and atmospheric sciences. There are also other academic partners that offer their deep marine expertise in the Pacific region, including the Arizona State University (ASU) School of Ocean Futures and the University of California, San Diego's (UCSD) Scripps Institution of Oceanography, who frequently collaborate with local partners in Hawai'i to enhance educational training and resources for the state's future blue economy workforce.

Together, these entities position Hawai'i not only as a center of excellence for ocean science, but as a Pacific hub for ocean tech development, testing, deployment, and commercialization.

**Hawai'i has already been leading in ocean tech and innovation.** For decades, homegrown companies have been doing serious technical work in ocean engineering, advanced ship design, and applied research, competing nationally and building expertise in the Pacific. Between 2015 and 2024, over $125 million of Small Business Innovation Research (SBIR) funding went toward ocean and coastal related initiatives, which is more than half of the state's small business and innovation research awards, ranging in topics from autonomous underwater and surface vehicles to AI-powered ecosystem monitoring and ocean observation systems.

Early ecosystem builders like Oceanit, Makai Ocean Engineering, and PacMar Technologies demonstrated that world-class ocean technical work could be conceived and developed in Hawai'i long before ocean tech became a recognized sector. They've also demonstrated the capture of blue economy opportunities from the more traditional blue economy to the "new" blue economy. In 2016, NOAA defined the "new" blue economy as a way to capture stronger connections between the ocean and the socioeconomic benefits. The "new" blue economy is focused on a knowledge-based economy that is more sustainable and equitable, optimizing "advances in science and technology to create value-added, data-driven economic opportunities and solutions to pressing societal needs."[17]

What emerged around the mid 2010s was not a departure from that legacy but its natural evolution from large engineering and technology providers to a new generation of innovators that are translating Hawai'i's research strengths into market-ready technology ventures. Several have spun directly out of the University of Hawai'i, including a flood monitoring intelligence company, Hohonu, co-founded by Dr. Brian Glazer, a professor at the University of Hawai'i at Mānoa; Hawaii Ocean Power Solutions (HOPS), a wave-powered buoy platform that emerged from the Hawai'i Natural Energy Institute (HNEI); and Reefmasons, an NSF and DARPA-funded innovation that develops patented coral habitat designs to accelerate and strengthen coastal resiliency.

Other innovators are also homegrown from local ecosystem building efforts. Hatch Blue in partnership with Conservation International - Hawaiʻi helped launch the state's first aquaculture accelerator program at NELHA-HOST Park in Kailua-Kona. Their programming helped build ventures like Symbrosia, developing a red seaweed-based feed additive that reduces livestock methane emissions by up to 90 percent; Pacific Hybreed, a genetics company that identifies resilient traits in shellfish to combat climate change and ocean acidification; and NeuralX, a decision intelligence AI-powered platform, improving operational efficiencies in aquaculture.

Through Purple Maiʻa Foundation's culturally grounded programs, companies like Hohonu and Coral Collective, an AI-powered monitoring platform designed to support coral reef conservation and working in partnership with Kuleana Coral, a local nonprofit that fosters kuleana ("responsibility") in coral assessments.

These are early proof points of what a fully connected, coordinated innovation pipeline can produce for the blue economy.

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## Our Vision

By FY2031, Hawaiʻi is a thriving, globally recognized hub for ocean technology (ocean tech) and innovation - a Pacific Island convener where science, government, industry, capital, and Indigenous knowledge converge to build a more sustainable and regenerative blue economy across the islands and the broader Pacific region.

## Our Mission

HTDC builds Hawaiʻi into a globally recognized center of excellence for ocean tech and innovation, demonstrating that the U.S. largest Pacific Island state guided by Indigenous values can pioneer innovative ocean solutions. This creates an economy where technology companies and innovations can thrive and ensure prosperity circulates within our communities and provides pathways for residents in Hawaiʻi.

## Our Values

These values guide how HTDC approaches economic development and collaboration. They are operating commitments for how stakeholders in the ocean tech and innovation ecosystem collaborate together.

| Economic Development | Collaboration |
|---|---|
| **Ea (Self-Sufficiency)**<br>We advance economic self-determination by building local capacity, ownership, and resilience. Prosperity and decision-making must remain rooted in our people and communities. | **Haʻahaʻa (Humility in Leadership)**<br>We lead with kōkua, balancing kuleana (responsibility to Hawaiʻi) with kulana (our role within the collective). We place community success over individual gain. |
| **Aloha ʻĀina (Responsible Growth)**<br>We balance growth with community benefit, cultural integrity, and future generations in mind. Progress must strengthen rather than exploit Hawaiʻi's people and ʻāina. | **Pono (Act Righteously and Build Trust)**<br>We prioritize transparency and honor each other to build trust that sustains true collaboration. We always strive to do what is right. |
| **Lokahi (Equitable Prosperity)**<br>We ensure tech sector growth benefits all communities through diverse participation and wealth-sharing mechanisms that circulate prosperity across our islands. | **Kuleana (Accountability for Results)**<br>We stay focused on outcomes that drive real growth for Hawaiʻi, measuring success by the progress we create for our people and communities. |
| **Mālama i ke Kai (Regenerative Ocean Innovation)**<br>We ensure innovation creates lasting value rather than depletes, approaching every project, partnership, and policy with care for our people, place, and resources so they can sustain future generations. | **Hoʻokuʻu (Embrace Risk-Taking)**<br>We embrace risk, challenge the status quo, and foster creativity, opening the door to transformational solutions that reflect Hawaiʻi's values. |

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## The Strategic Framework

Over the next five years, HTDC has five strategic goals that will position Hawai‘i as a thriving hub for ocean tech and innovation in the Pacific. Each goal defines what success looks like by FY2031, with a mid-cycle milestone for FY2029 aligned with the Hawai‘i Ocean Innovation Hui’s commitments.

**Goal 1: HTDC as the Institutional Backbone for Hawai‘i’s Ocean Innovation Cluster**
Build the institutional backbone for Hawai‘i’s Ocean Innovation Cluster by coordinating local academia, government, industry, and investors around a shared agenda.

**Goal 2: Regenerative Blue Economy**
Create safeguards to transition existing traditional economic models to more regenerative ones, aligning economic growth with ocean stewardship and community well-being.

**Goal 3: Statewide Ocean Tech Testbed & Advanced Manufacturing Network**
Develop a coordinated statewide network of prototype testing, validation, and demonstration sites that accelerate deployment and de-risk ocean technology solutions.

**Goal 4: Thriving Ocean Innovation Pipeline**
Create comprehensive support for Hawai‘i’s ocean innovation pipeline through innovation challenges that create state procurement pathways, accelerators that grow early-stage ideas, financing mechanisms that expand access to capital, and cross-Pacific partnerships that help companies scale.

**Goal 5: Blue Workforce: Nextgen Ocean Talent**
Build a diverse, place-based ocean technology innovation workforce pipeline that connects Hawai‘i residents to high-quality blue economy careers.

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## Goal 1: HTDC as the Institutional Backbone for Hawai‘i’s Ocean Innovation Cluster

Build the institutional backbone for Hawai‘i’s Ocean Innovation Cluster by coordinating local academia, government, industry, and investors around a shared agenda.

**Why This Goal Matters.** HTDC is a quasi-state agency under DBEDT with a unique position in Hawai‘i’s public-private landscape. It has the capability to do what no traditional state agency, academic institution, incubator, accelerator, industry association, or nonprofit could do alone: align state agencies around a shared ocean tech agenda, shape public procurement, advance legislation, secure federal program designations, serve as a verified funder, and invest in infrastructure the private sector alone would not build. This field catalyst role is about HTDC leveraging its institutional position to create the enabling conditions, policy frameworks, and coordinated infrastructure that allow Hawai‘i’s ocean tech and innovation ecosystem to grow faster and further. When HTDC functions as the backbone organization, the tech and innovation flywheel can move.

**Charting Our Path to FY2031**

- HTDC’s government authority helps align Governor’s Office, DBEDT, NELHA, Agribusiness Development Corporation (ADC), Office of Planning and Sustainable Development (OPSD), Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR), Department of Agriculture and Biosecurity (DAB), Hawai‘i Department of Transportation (HDOT), Hawai‘i State Department of Energy (HSEO), Office of Hawaiian Affairs (OHA), University of Hawai‘i (UH), and other state and federal agencies around a shared blue economy and ocean innovation agenda
- 1-2 pieces of legislation are advocated and advanced through the Hawai‘i State Legislature each year, with support from the Marine Affairs governing body and the Hawai‘i Ocean Innovation Hui
- At least one major Federal funding opportunity is secured, improving the positioning of Hawai‘i for NOAA, NSF, DOE, defense, federal, and global funding streams that require a state-level, regionwide institutional support
- Hawai‘i Ocean Innovation Hui regularly convenes 150+ organizations, with initial backbone support from HTDC followed by official formation of a strategic alliance to grow and sustain this network of partners
- Annual ecosystem impact reports are published with a live dashboard that empowers state leaders, legislators, federal and global partners to make better informed decisions and investments for the state of Hawai‘i in ocean challenges and opportunities

**Key Performance Indicators by FY2031**

- Number of government agencies involved in statewide collaborative agreements
- Number of Hawai‘i Ocean Innovation Hui members involved in statewide collaborative agreements
- A strategic alliance of industry partners is formed and fully operational as an entity by FY2028
- Annual federal funding is secured through cross-state agency collaboration
- 1-2 legislation are annually advocated and advanced at each Hawai‘i State Legislature session
- Annual ecosystem impact report is published

**Examples of Key Partners.** Governor’s Office & State Legislature, DBEDT, NELHA, ADC, OPSD, DLNR-DAR, HDOA, HDOT, HSEO, OHA, University of Hawai‘i System, NOAA, ONR, NAVSEA, USCG, DARPA, USACE, NSF, DOE, ONR, Hawai‘i Ocean Innovation Hui

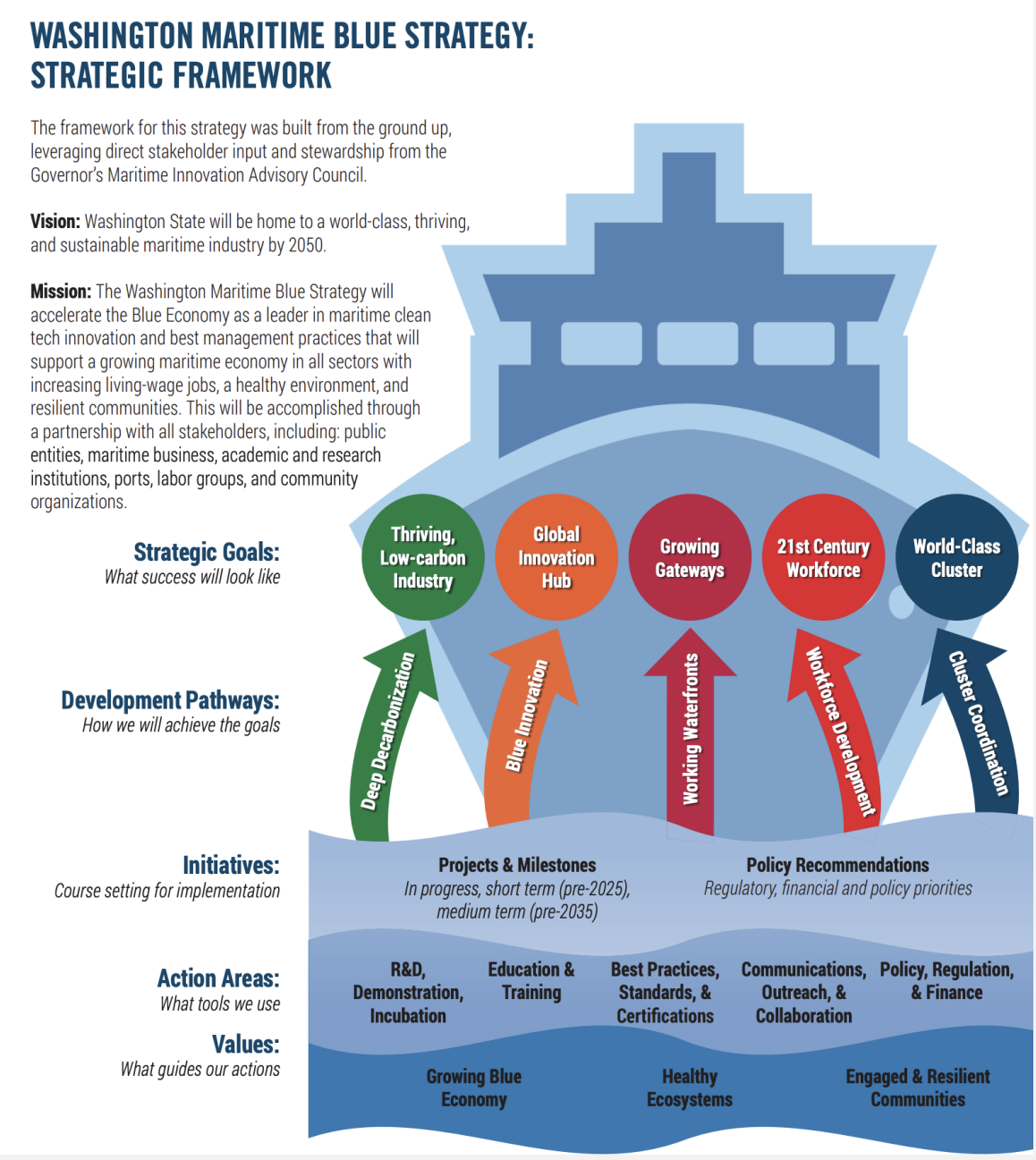
**Insights for Hawai‘i.** The goal is not to act like a startup or a nonprofit; HTDC may leverage its government authority deliberately and strategically to create the conditions that no other type of organization can help create a shared agenda in the state.

**UN Ocean Decade Alignment.** Challenges 4 and 9 - Building a sustainable and equitable ocean economy, and ensuring skills, knowledge, and participation for across Hawai‘i's ocean tech and innovation ecosystem.

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## CASE STUDY. Washington State Department of Commerce: Government as an Ecosystem Backbone and Economic Development Enabler

Washington's maritime sector transformation began with Governor Inslee appointing a Maritime Sector Lead to guide their ocean initiatives inside the State of Washington's Department of Commerce in 2013. This government position was the anchor that helped make everything else possible, from coordinating state agencies, engaging the Legislature, managing federal and global relationships; and in 2015, it provided the institutional continuity that enabled its local ocean innovation cluster, Maritime Blue, to grow from a state strategy into a more well-functioning ocean innovation cluster for the next decade.[18]



## Goal 2: Regenerative Blue Economy

Create safeguards to transition existing traditional economic models to more regenerative ones, aligning economic growth with ocean stewardship and community well-being.

**Why This Goal Matters.** A regenerative blue economy means more than nature-positive outcomes. It means building an economy where the act of creating value also restores the systems that make value possible - the reefs, the Hawaiian fishponds, the watersheds, the communities. Hawaiʻi has been practicing this for centuries. Loko iʻa fishponds feed entire communities by observing ocean cycles. The ahupuaʻa system managed resources from mountain to sea as one integrated whole. They show how functional frameworks for a place-based economy can grow without depleting what it depends on.

This goal ensures that the growth generated by the ocean tech and innovation ecosystem produces socioeconomic benefits for Hawaiʻi's broader communities. By embedding regenerative practices into how HTDC works with partners, how companies are supported, and how different stakeholders are engaged in the process, Hawaiʻi's ocean cluster aims to develop a clear framework for engaging local partners, integrating place-based knowledge and values into the systems it builds, and creating pathways for economic growth that strengthen communities and marine ecosystems.

**Charting Our Path to FY2031**

- Regenerative blue economy principles co-developed with Indigenous leaders and formally adopted
- A regenerative blue economy working group convenes quarterly
- Regenerative financing mechanisms are developed and launched for companies to participate in
- HTDC improves pre-existing programs to incorporate regenerative practices
- Regenerative blue economy indicators published alongside traditional economic data

**Key Performance Indicators by FY2031**

- At least one implementable framework developed to guide local ocean tech companies
- At least 1-2 scalable mechanisms are developed for companies to donate their time, money, or wisdom back into the community
- At least 20+ companies are participating in regenerative wealth building practices
- New economic metrics developed that reflect collective community benefits alongside traditional economic measures
- 100% of HTDC's programming incorporates regenerative practices

**Examples of Key Partners (Non-Exhaustive).** NOAA, FWS, State of Hawaiʻi, Office of Hawaiian Affairs (OHA), Kamehameha Schools, Purple Maiʻa Foundation, KUA, Hui Mālama Loko Iʻa, Papahānaumokuākea Coalition, Hawaiʻi Sea Grant

**Insights for Hawaiʻi.** Hawaiʻi's stewardship traditions, rooted in the ahupuaʻa system and centuries of place-based practices, predate any modern regenerative framework. This honors the foundation while fostering a blue economy that generates lasting economic sovereignty for communities.

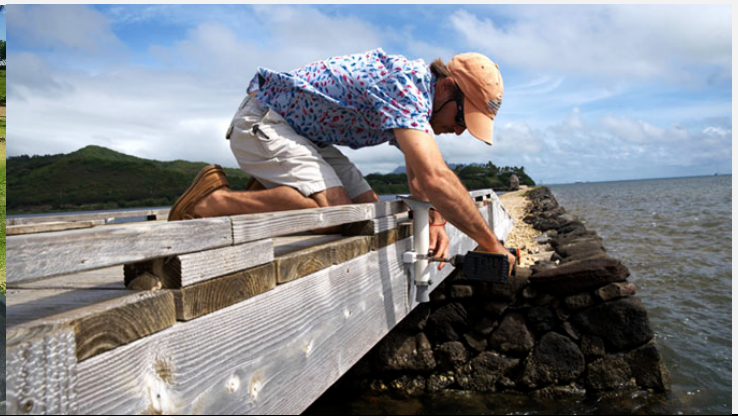
**UN Ocean Decade Alignment.** Challenges 2, 3, 4, and 10 - Protecting and restoring ecosystems, sustainably nourishing the global population, developing a sustainable and equitable ocean economy, and restoring humanity's relationship with the ocean.

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## CASE STUDY. Hohonu, UH, Purple Maiʻa Foundation, KUA and Heʻeia Fishpond

Kiaʻi loko (Hawaiian fishpond operators) at Heʻeia fishpond needed affordable, modular equipment to monitor water conditions. Dr. Brian Glazer's lab at UH Mānoa developed low-cost wireless sensors to meet that need. In 2017, Dr. Brian Glazer and KUA brought together more than 30 ki aʻi loko from 18 loko iʻa for a workshop on place-based kilo (observations) - how sensor technology could sharpen what practitioners already knew, not substitute for it. Through the Loko Iʻa and Coastal Monitoring Project, it integrated emerging sensor and data science technologies into approximately 30 fishpond restoration projects across Oʻahu and Maui Counties. From 2019 to 2021, Glazer and the Purple Maiʻa Foundation co-founded Hohonu. A consortium of Hawaiian fishponds now holds an ownership stake in the company. Hohonu serves DLNR-DAR, NOAA, USACE, the City of Boston, and others, deploying in 220 sites across 18 U.S. states.[19]





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## Goal 3: Statewide Ocean Tech Testbed & Advanced Manufacturing (AM) Network

Develop a coordinated statewide network of prototype testing, validation, and demonstration sites that accelerate deployment and de-risk ocean technology solutions.

**Why This Goal Matters.** There is a significant barrier between a promising ocean technology and a commercial product and many times it the cost and complexity of real-world ocean testing. Lab prototypes are not enough. Many investors want performance data from actual conditions before they commit capital to companies. Regulators want demonstrated environmental safety before they issue permits. Customers want proof of reliability before they buy.

Hawai‘i's marine geography is one of the state's most distinctive competitive advantages. With access to shallow coastal, open ocean, and deep-water environments all within close reach, and with NELHA-HOST Park as the only location in the U.S. that simultaneously offers access to both surface water and deep sea water, the state is well-positioned to serve as the Pacific's premier ocean tech testbed and deployment platform. Our aim is to create a coordinated statewide network would provide clear pathways from prototype to product deployment, which will attract companies to test and operate in the Pacific. Coupled with a series of advanced manufacturing spaces, will offer companies testing their tech in Hawai‘i to make in real time iterations to their tech when needed. To this we are actively improving the permitting and regulatory conditions so that we can grow this network as well as prototyping HTDC’s first collaborative advanced manufacturing space. We believe that with every company that deploys a pilot test in Hawai‘i improves conditions for the next one.

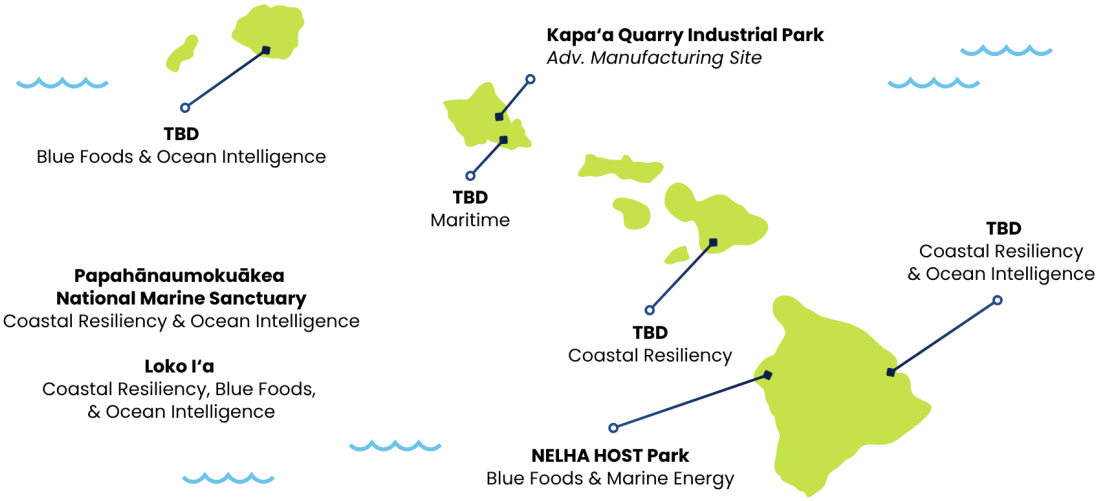
Charting Our Path to FY2031

- At least one advanced manufacturing location is operational to help provide a foundational infrastructure for supply chain, and a means for companies testing their tech in Hawai‘i to iterate with AM tools and machinery
- A mapped statewide network of technology testbed sites that are permitted, accessible to commercial use, and operating across the Hawaiian Islands
- Clearer pathways for permitting and coordination protocols are established
- A Center for the Blue Economy and Ocean Innovation is under construction and operational by FY2031
- Hawai‘i is recognized as launch pad for companies operating in other Pacific Islands

Key Performance Indicators by FY2031

- An active network of at least 4 pilot demonstration sites
- Percentage facility utilization at Hawai‘i’s ocean tech pilot sites
- Number of new ocean tech companies at Hawai‘i’s ocean tech pilot sites
- Reduction in time-to-permit for ocean tech deployments
- Number of new or existing blue economy initiatives and financing mechanisms that emerge to support ocean tech piloting
- Number of ocean tech companies piloting in Hawai‘i for operations in other Pacific Islands
- Number of total ocean tech companies supported in Hawai‘i

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An illustrative example of the statewide Ocean Tech Testbed Network. Some locations are already identified, and others will be identified and confirmed by HTDC, the Marine Affairs governing body, and members of the Hawai'i Ocean Innovation Hui over time.

**Examples of Key Partners (Non-Exhaustive).** HTDC, NELHA, DLNR-DAR, HDOT, ONR, NAVSEA, DARPA, NOAA, UH Applied Research Laboratory, Kauaian Ulu ʻAuamo (KUA), Hui Mālama Loko Iʻa, Papahānaumokuākea National Marine Sanctuary

**Insights for Hawai'i.** Hawaiʻi doesn't need to invent a new ocean tech pilot network model. This is about learning from what works, what doesn't, and designing it to be different and coordinated across the state and Pacific Island region.

**UN Ocean Decade Alignment.** Challenges 5, 6, 7, and 8 - Unlocking ocean-based climate solutions, building community resilience, expanding ocean observing systems, and creating a digital representation of the ocean.

### CASE STUDY. NELHA-HOST Park - The Global Benchmark for Ocean Tech Demonstration Site

Since 1974, NELHA has operated the world's only facility combining cold deep ocean water, warm surface water, strong solar radiation, and state-owned land in one place. Over the past four decades, NELHA has shown the potential for piloting and testing ocean tech solutions. Makai Ocean Engineering first validated its Ocean Thermal Energy Conversion (OTEC) at NELHA. Aquaculture ventures like Blue Ocean Mariculture, Germinate, Nāmaka Algae, Ocean Era, Pacific Hybreed, and Symbrosia have operated at NELHA HOST Park. Other ventures like Blue Robotics, Captura, and HOPS are operating out of NELHA. The HOST Park has hosted dozens of companies that could not have done their work anywhere else in the world. It is a proof-of-concept for what's possible in the Pacific Ocean.



## Goal 4: Thriving Ocean Innovation Pipeline

Create comprehensive support for Hawai‘i’s ocean innovation pipeline through innovation challenges that create state procurement pathways, accelerators that grow early-stage ideas, financing mechanisms that expand access to capital, and cross-Pacific partnerships that help companies scale.

**Why This Goal Matters.** Hawai‘i has already demonstrated that it can produce world-class ocean tech ventures and pilot ocean tech and innovation with its existing infrastructure like NELHA-HOST and HIMB. The gap is not talent or ideas; it is providing the connective tissue that provides the programmatic support for innovators to take their prototypes to become market-ready products and services, state government coordination that guides permitting and provides incentives to stay in Hawai‘i, a connected network of infrastructure for testing and deployment, capital that bridges the valley of death, government and corporate partners who are first customers, and professionals who have experience with building companies in Hawai‘i.

**Charting Our Path to FY2031**

- A comprehensive mapping of Hawai‘i’s ocean tech and innovation ecosystem is annually published and maintained
- An ocean tech accelerator program is launched to provide new and existing innovators with mentorship, shared infrastructure, prototyping support, and access to capital
- The Blue Economy Playbook is published with a practical guide covering permitting, pilot test sites, funding sources, and corporate partnership pathways
- Joint Innovation Projects (JIPs) that are deployed with measurable outcomes; they are specific, funded, multi-partner collaborations that are aligned with Green Fee priorities and designed to address a local challenge (e.g., sea level rise, extreme weather and disaster responses, cesspool management, food security, national security)
- A cross-regional mentorship network connects Hawai‘i’s innovators with other peer ocean clusters in the Pacific: San Diego, Washington, Alaska, Oregon, Australia, New Zealand, Japan, Korea, Singapore
- New blue financing mechanisms are deployed, including blue bonds, debt financing, and other forms of capital, to help address Hawai‘i ocean and coastal challenges
- At least 2 industry partners join in FY2027 to run open ocean innovation challenges with local companies and universities

**Key Performance Indicators by FY2031**

- GDP contribution and percentage GDP growth in ocean tech and innovation ecosystem
- A cohort of 5-8 startups are annually supported in an accelerator
- Percentage of accelerated companies that remain in Hawai‘i for at least 2 years
- Total investment in Hawai‘i ocean tech companies
- Number of companies that raise Series A or equivalent and beyond
- At least 5 active industry partner commitments (e.g., engaged in ocean innovation challenges or in supporting the accelerator program)
- A Blue Economy playbook is annually published starting FY2028 and beyond
- At least 3 JIPs launched and funded with measurable outcomes

**Examples of Key Partners (Non-Exhaustive).** AI.Fish, Backyard Buoys (powered by Sofar Ocean), Blue Ocean Barns, Blue Robotics, Captura, Coral Collective, Cruz Foam, Dakine Robotics, Hawai’i Ocean Power Solutions (HOPS), Havoc, Hohonu, Kai Pono Solutions, LOLIWARE, Nāmaka Algae, Neural AI, Nalu Scientific, Okonokai, Oceanworks, Pacific Hybreed, Privateer, Ramp Robotics, Reefmasons, Hawai‘i Seaglider Initiative/REGENT Craft, SeaTrec, Sea Dragon, Settide, SubSeaSail, Surf Block Maui, Symbrosia, Voltage Vessels, WaiHome, 3rWater

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***This is a preliminary, non-exhaustive mapping of Hawai'i's ocean tech companies and some of the ecosystem builders as of end of May 2026.*

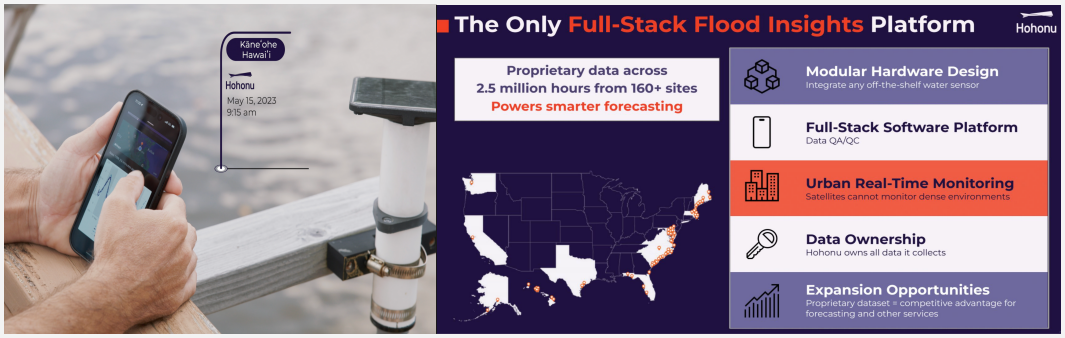
This is a preliminary mapping of Hawai'i's ocean tech companies and the ecosystem builders that support them. Not all ocean tech companies are headquartered in Hawai'i; several have customers or technology pilot projects on the Pacific Islands, demonstrating the opportunity for Hawai'i to commercialize ocean tech solutions.

**Insights for Hawai'i.** Every element of the pipeline: tech transfer, ecosystem convening, government relationships, early customer validation; this all needs to exist for the next 20 companies by FY2031.

**UN Ocean Decade Alignment.** Challenges 4, 7, 8, and 9 - Building a sustainable ocean economy, expanding ocean observing systems, creating a digital ocean, and enabling skills and participation for all through a thriving local innovation pipeline.

## CASE STUDY. What It Takes in the Ecosystem to Build the Next Hohonu

Dr. Brian Glazer, a UH oceanography professor, started developing flood monitoring technology in his UH lab. Through UH's tech transfer infrastructure, the local tech and innovation ecosystem network (UH, Purple Mai'a Foundation, Blue Startups, Sustainable Ocean Alliance, and Elemental Impact), and early validation through NOAA and NSF, Hohonu grew from a research project into a nationally deployed flood intelligence company with over 200 sites across 18 U.S. states. Every component of the tech and innovation flywheel was critical in helping make Hohonu possible. This needs to exist for the next 20 companies to build a thriving ocean tech and innovation pipeline in Hawai'i.



## Goal 5: Blue Workforce: Nextgen Ocean Talent

Build a diverse, place-based ocean technology innovation workforce pipeline that connects Hawai‘i residents to high-quality blue economy careers.

**Why This Goal Matters.** Hawai‘i's most persistent economic challenge is not a shortage of talent. It is a shortage of pathways. Young, educated residents who want to stay leave anyway because the career opportunities are not visible, connected, or accessible enough to keep them. The blue economy and ocean innovation provide opportunities to change that. Ocean tech companies in Hawai‘i need engineers, data scientists, marine biologists, ROV operators, project managers, policy experts, and community liaisons, and that demand will grow as Hawai‘i’s ocean innovation cluster matures.

The workforce pipeline that connects Hawai‘i residents to those careers exists in pieces. K-12 programs, community colleges, university degrees, internships, and industry entry points are all present in some form, but they are fragmented and not well-coordinated around the needs of the ocean tech sector. HTDC and its organizational partners can help connect the pieces into more clear, coherent pathways from early exposure through hands-on experience into well-paying careers that retain talent in Hawai‘i. There also needs to be a stronger match between workforce preparation and industry needs, providing benefits for both sides: companies fill critical roles with local talent; and local professionals are supported to build their careers without leaving home to find them.

**Charting Our Path to FY2031**

- A mapping of ocean tech workforce pathways and gaps across K-12, community colleges, universities, and vocational systems
- A co-designed ocean tech career pathway in collaboration with K-12, UH, HPU, community colleges, and other participating schools to help introduce students to ocean tech and innovation careers from high school all the way to full-time employment at Hawai‘i’s ocean tech companies
- A coordinated ocean tech workforce pipeline initiative is launched by FY2029
- Certificate, cross-degree, and technical degree programs are offered, focusing on cross-sector experiences in technology and science, entrepreneurship, business management, and policy
- Embedded culturally grounding in workforce development, including Native Hawaiian knowledge and values and ocean stewardship

**Key Performance Indicators by FY2031**

- Number and percentage growth in ocean tech jobs
- Average starting salary for ocean tech jobs vs. Hawai‘i state median salary
- At least 10 industry partners involved in workforce commitments
- At least 3 coordinated workforce programs, which may include certificates, cross-degree, or technical degree programs
- Annual internship and fellowship programs since FY2027
- Number and percentage of graduates that remain and work in Hawai‘i at least 2 years
- Number of citizen science programs offered
- Annual participation rate in citizen science programs

**Examples of Key Partners (Non-Exhaustive).** NOAA, NSF, Hawai‘i Department of Labor, Department of Education, Chamber of Commerce - Hawai‘i, Castle Foundation, Schmidt Marine Technology Partners, K-12 schools, UH, Hawai‘i Sea Grant, HPU, local community colleges, ASU, UCSD, ‘Ewalu Industries

**Insights for Hawai‘i.** Hawai‘i has the talent. The question has never been whether our students and kama'āina can compete in ocean tech careers - they already are. Hawai‘i needs to help build the pathways that allow them to do it here.

**UN Ocean Decade Alignment.** Challenges 9 and 10 - Ensuring skills, knowledge, technology and participation for all, and restoring humanity's relationship with the ocean through a workforce rooted in place and culture.

### CASE STUDY. ʻEwalu Industries, ʻĀkoʻakoʻa, Symbrosia, and The Kohala Center - Building a Blue Economy Workforce Pipeline from Keiki to Career

ʻEwalu Industries, based on the island of Hawaiʻi, is developing one of the state's promising place-based blue economy workforce models. Working in partnership with ʻĀkoʻakoʻa, Symbrosia, and The Kohala Center, ʻEwalu is connecting West Hawaiʻi students to the blue economy and ocean tech career exploration, which include hands-on training, apprenticeships, and community advocacy programs that span from middle school through early career entry. At the center of this work is their Keiki-to-Career framework, which is being piloted in West Hawaiʻi, aiming to establish a structured pipeline from sixth grade through high school graduation with direct pathways into blue economy careers. Early conversations with state curriculum specialists suggest a strong appetite for expanding this model statewide, with West Hawaiʻi serving as one of the proof-of-concepts for connecting students in K-12 programs to relevant industry opportunities.

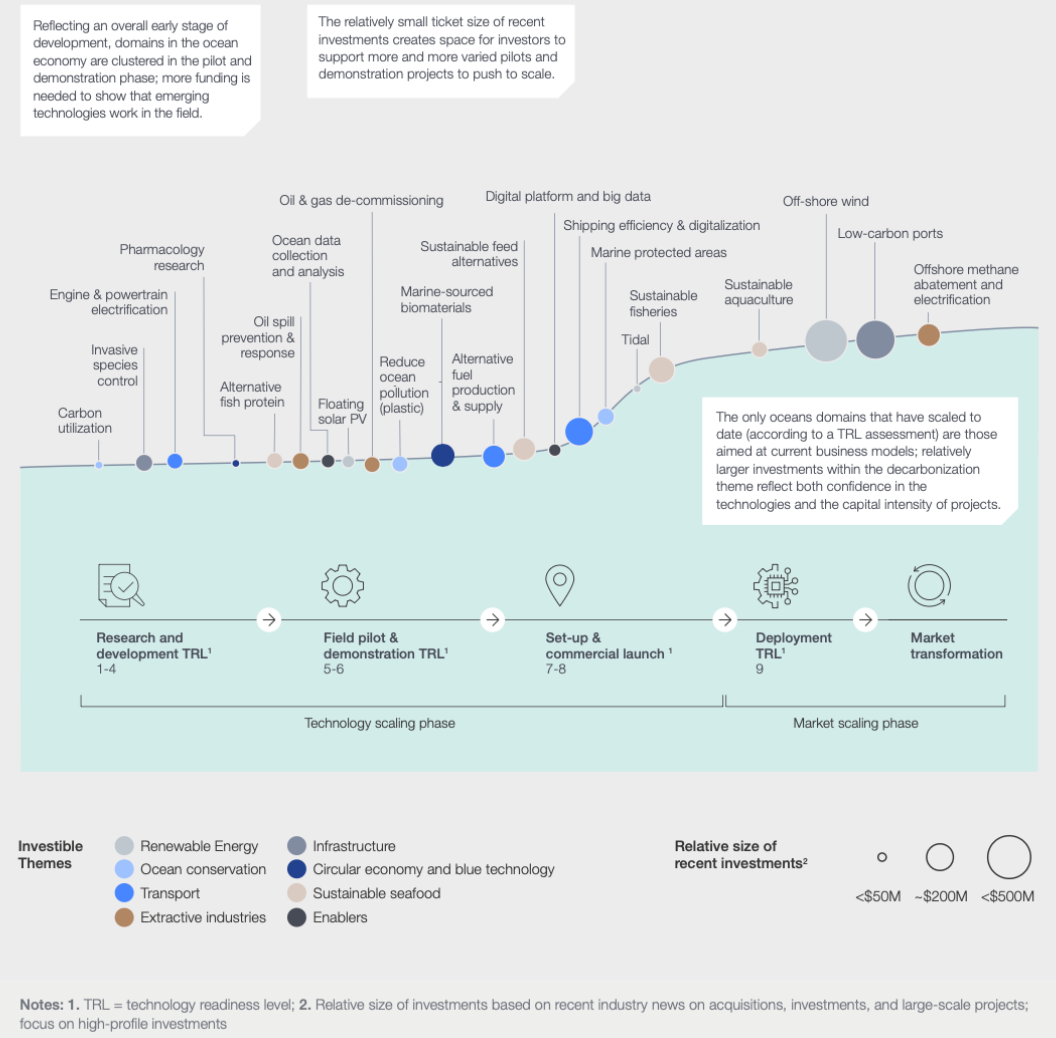





# Hawai‘i’s Focus: Blue Economy Market Segments & Technology Themes

## Overview

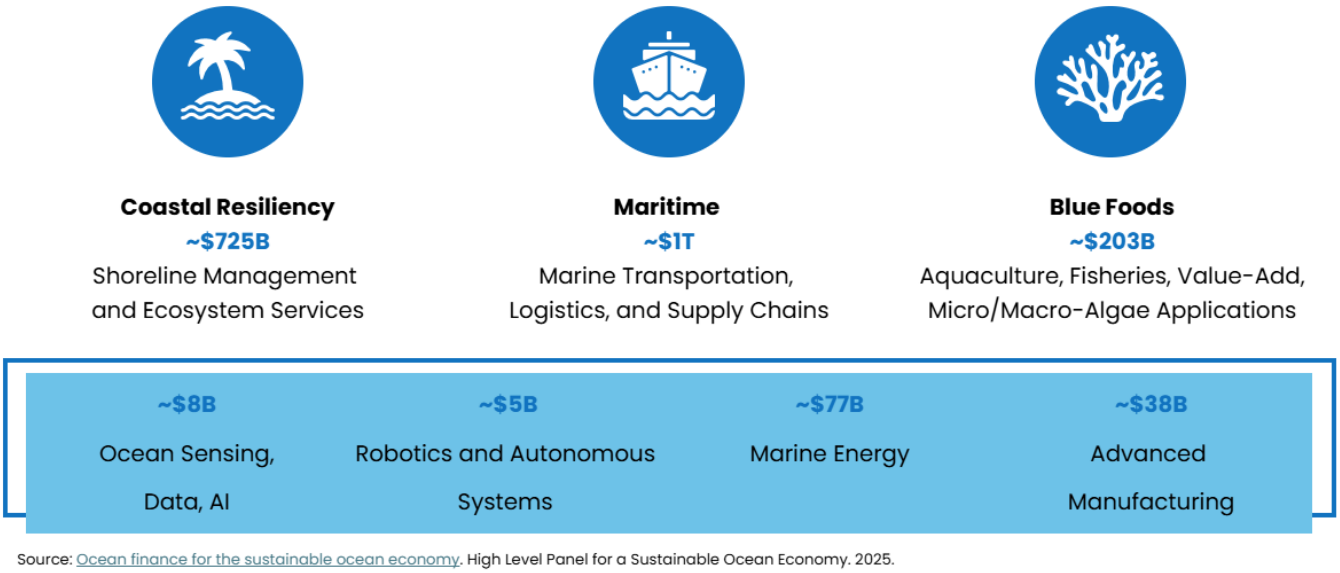
Hawai‘i is not positioned to compete across every sector of the blue economy, nor should it try. Globally, the sectors attracting the most sustained capital reflect where technology readiness and market demand are converging. Digitalization and smart infrastructure for shipping and ports continue to draw significant investment. Maritime decarbonization is accelerating across vessel types and fuel sources. Blue tech and ocean observation reached a record $1.5 billion in 2025, a 700 percent increase from 2023, driven by growing demand for autonomous systems, seafloor mapping, and maritime monitoring. Blue biotechnology, aquaculture, and ocean environmental protection are also maturing.[20]




**Notes: 1.** TRL = technology readiness level; **2.** Relative size of investments based on recent industry news on acquisitions, investments, and large-scale projects; focus on high-profile investments

The opportunities in the blue economy sub-sectors are mapped by technology readiness level (TRL) with circle sizes representing the investment scales and market readiness potential.[21]

The market segments and technology themes that follow reflect where Hawai‘i's potential is most concentrated within that global landscape. Market segments describe where Hawai‘i has an established industry presence and clear opportunities to pursue. Technology themes represent cross-cutting capabilities that power innovation across multiple segments simultaneously. Each is grounded in existing industry strengths, supported by statutory drivers, and backed by a credible pipeline of ventures and projects with real potential to grow at regional and global scales.




Source: Ocean finance for the sustainable ocean economy. High Level Panel for a Sustainable Ocean Economy. 2025.

Hawai‘i is focusing on these blue economy market segments and technology themes.
Note: As marine biotech continues to develop in Hawai‘i, it will emerge as a focus in the successor Strategic Plan, FY2032-FY2036.

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Blue Economy Market Segments

## At a Glance

| Market Segment | Global Market Size[22] | Global VC Investment[23] | GDP Share of Hawai‘i’s Blue Economy[24] |
|---|---|---|---|
| **Coastal Resiliency:** Shoreline Management Ecosystem Services | $725 billion (22% of total blue economy) | $10 billion (incl. water management, blue tech/observation, marine protected areas, marine pollution, biomaterials) | 88-90% |
| **Maritime:** Transportation, Logistics & Supply Chains | $1 trillion (30% of total blue economy) | $16.8 billion (incl. freight and passenger transportation, shipping and ports equipment, ports logistics and services) | 7-9% |
| **Blue Foods:** Aquaculture, Fisheries, Value-Added Products, Micro/Macro-Algae Applications | $203 billion (6% of total blue economy) | $5 billion (incl. aquaculture, fisheries, seafood processing, seaweed/algae, feed alternatives) | 2.0-2.5% |

## Coastal Resiliency: Shoreline Management and Ecosystem Services

Hawai‘i's coastline is both its greatest asset and its most pressing vulnerability. Stretching 1,052 miles across the Pacific, the state's shores face compounding pressures, sea level rise, shoreline erosion, coastal flooding, reef degradation, wastewater impacts, and marine pollution that threaten the communities, infrastructure, and industries built along them. With 88 percent of Hawai‘i’s blue economy dependent on marine tourism and recreation,[25] protecting the health of the state’s coastlines is both an economic imperative and an ecological one. This is also important for protecting the biodiversity those coastlines support. Hawai‘i's nearshore and marine ecosystems are among the most ecologically significant in the Pacific, yet they face the same pressures bearing down on ocean and coastal ecosystems worldwide. Globally, nearly 10 percent of marine species are at risk of extinction, marine vertebrate populations have declined by 49 percent since 1970,[26] and just 3.4 percent of the ocean is under effective protection.[27]

The state has codified its commitment through the Hawai‘i Coastal Zone Management Program, which was established in 1978 and laid the foundational framework for managing and protecting the coastal zone.[28] That commitment has deepened over time, reflected today in a growing set of statutory requirements and the state’s goals: a HRS §342D-72, which mandates statewide cesspool upgrade, conversion, or connection by 2050; Aloha+ Challenge goals for natural resource management, waste reduction, and smart sustainable communities; and the state's commitment to protect 30 percent of priority watersheds and effectively manage 30 percent of nearshore waters by 2030. These commitments require innovation, coordination, and sustained investments.

**Global Market Signals.** The global market size is about $725 billion (22% of total blue economy). The ocean tech venture capital investments flowing toward coastal resiliency challenges: water management ($2.3B), blue tech and ocean

observation ($4.9B), blue biotech ($2.8B) total to over $10 billion in capital flowing toward the exact challenges that Hawai‘i locally faces.[29]

Hawai‘i’s Joint Innovation Project (JIP) Opportunities:

- Sea level rise adaptation for ports and harbors
- Beach restoration and shoreline stabilization
- Shoreline and water-level monitoring
- Cesspool monitoring and alternative conversion solutions
- Marine pollution and water quality management
- Mooring buoy maintenance and expansion
- Watershed restoration for reef resilience
- Coral reef and marine biodiversity monitoring and regeneration
- Resilient coastal energy systems for monitoring and adaptation
- Environmental monitoring for marine energy deployment

**Examples of Key Partners (Non-Exhaustive).** Government & Infrastructure: NOAA, PacIOOS, U.S. Dept of Transportation, ONR/NAVSEA, USCG, DARPA, USACE, HDOT, DBEDT, OPSD, HSEO, DLNR, OHA, UH, HPU, Pacific Disaster Center. Capital: Builders Vision, Castle Foundation, CI Ventures, Elemental Impact, Earthshot Ventures, Future Planet Capital, Hawai‘i Investment Ready, Kamehameha Schools, Oceankind, Pacific Economics, Prime Coalition, Schmidt Marine Technology Partners. Corporates & Industry: Burns & McDonnell, Dolphin Quest, Hawai‘i Lodging and Tourism Association, Four Seasons, Kyo-ya Hotels and Resorts, Makai Ocean Engineering, Oceanit, OUTRIGGER Resorts and Hotels. Innovation Pipeline: 3RWater, Backyard Buoys (powered by Sofar Ocean), Captura, Coral Collective, Cruz Foam, Hawai‘i Ocean Power Solutions (HOPS), Hohonu, Kai Pono Solutions, LOLIWARE, Oceanworks, Reefgen, Reefmasons, Seatrec, Settide, Surf Block Maui, Symbrosia, WaiHome. Nonprofits: ʻĀkoʻakoʻa, Conservation International - Hawai‘i, Hawai‘i Coral Reef Initiative, Hawai‘i Green Growth UN Local 2030, Hawai‘i Marine Animal Response (HMAR), The Kohala Center, KUA, Kuleana Coral, Mālama Maunalua, Maui Ocean Center, Papahānaumokuākea Coalition, Papahānaumokuākea Marine Debris Project (PMDP), Purple Mai‘a Foundation, Shark Stewards, The Nature Conservancy - Hawai‘i and Palmyra, Sustainable Coastlines, Wastewater Alternatives and Innovations (WAI).

## Maritime: Marine Transportation Logistics, and Supply Chains

Hawai‘i's maritime system is both its greatest lifeline and its most pressing infrastructure challenge. As one of the most geographically isolated island chains in the world, the state relies on marine transportation for more than 85% of its consumed goods: food, fuel, medicine, and materials, with the O‘ahu harbor system handling 81% of the statewide harbor operations.[30] However, maritime is not only focused on supply chain management; it connects residents to access to medical care on neighboring islands, supports fishing communities, and links the state to global shipping routes, transportation networks, and the broader Pacific region. When there is a disruption, such as a fuel price spike, an extreme weather event, or a broken vessel fleet, it is felt immediately and unequally across islands with limited to no land-based alternatives.

Maritime modernization is one of the few areas where there is economic competitiveness for energy independence, national security, and environmental stewardship converging around solutions. Vessels operating on cleaner fuels help reduce energy costs and emissions. Resilient port infrastructure strengthens supply chain security. Smarter maritime logistics create jobs. Global shipping accounts for 3% of worldwide greenhouse gas emissions, a figure expected to rise by up to 50% by 2050 without intervention, and Hawai‘i's ports are already operating near capacity.[31] The state has codified this into law through HRS §225P-5 (net-negative emissions by 2045), HRS §225P-8 (zero emissions across all transportation modes), HRS §196-9(c)(11) (zero-emission state fleet by 2035), and HDOT Energy Security and Waste Reduction Plan. Together, these commitments represent a significant mandate for maritime modernization and a clear opening for ocean tech and innovation to help meet it.

**Global Market Signals.** Maritime is the largest market segment in the blue economy with a global market size of $1 trillion and accounting for 30% of the world's total blue economy. Globally, ocean tech venture investments have seen $16.8 billion going towards maritime: (1) shipping and ports; (2) shipbuilding and retrofitting; and (3) maritime logistics. Shipping and ports have attracted $8.7 billion, including USD $4.9 billion in digital freight forwarding and $2.5 billion in supply chain technology, driven in part by the COVID-19 pandemic wake-up call that exposed the fragility of global supply chains. Shipbuilding and retrofitting has drawn $3.2 billion, with vessel electrification alone accounting for $1.2 billion. Maritime logistics, including drones and underwater robots, represents an additional $4.9 billion.[32] Beyond cargo, marine transportation for tourism and passenger movement is equally significant: coastal and marine tourism contributes $1.5 trillion to global GDP and supports 52 million direct jobs worldwide.[33] For island communities like Hawai‘i, reliable passenger connections are essential. With coastal tourism and recreation contributing to 88% of Hawai‘i's marine economy, marine transportation and shipbuilding contributes 7% of the marine economy.[34] These global investment trends signal opportunities for tech and innovation in Hawai‘i's maritime.

Hawai‘i's Joint Innovation Project (JIP) Opportunities:

- Marine vessel decarbonization
- Port emissions planning and transition strategies
- Vessel and supply chain efficiency improvements
- Shore power and port electrification
- Marine microgrids and backup power systems
- Offshore and nearshore renewable energy demonstrations
- Vessel charging and alternative marine fuel infrastructure
- Resilient energy systems for port and harbor operations
- Maritime communications infrastructure
- Weather and ocean observations for ports and harbors
- Designated test areas for maritime technologies

**Examples of Key Partners (Non-Exhaustive).** Government & Infrastructure: NOAA, PacIOOS, U.S. Dept of Transportation, INDOPACOM, ONR/NAVSEA, Pearl Harbor Naval Shipyard, USCG, USACE, HDOT, DBEDT, OPSD, HSEO, HCDA, UH, HPU. Capital: Castle Foundation, Elemental Impact, Kamehameha Schools, Nēnē Ventures, Oceankind, Pax, Pacific Economics, Schmidt Marine Technology Partners, Tradewind Capital. Corporates & Industry: Aloha Freight, Burns & McDonnell, Hawai‘i Building & Construction Trades Council, Lynker, Makai Ocean Engineering, Matson, Maritime Institute, Oceanit, Pacific Impact Zone, Pacific Shipyards International, PacMar Technologies, The Pasha Group, Polynesian Adventure Activities, PICHTR, Retail Merchants of Hawai‘i, Young Brothers. Innovation Pipeline: Backyard Buoys (powered by Sofar Ocean), Blue Ocean Gear, Blue Robotics, Dakine Robotics, Havoc, Hawai‘i Ocean Power Solutions (HOPS), Hawai‘i Seaglider Initiative/REGENT, Liquid Robotics, Privateer, Ramp Robotics, Seatrec, SubSeaSail, Voltage Vessels. Nonprofits: Institute of Electrical and Electronics Engineers (IEEE) - Hawai‘i Section, Marine Technology Society - Hawai‘i Section.

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## Blue Foods: Aquaculture, Fisheries, Value-Added, Micro- & Macro-Algae Applications

The Native Hawaiians have been ocean stewards for centuries. Loko iʻa are traditional Hawaiian fishponds that are the living proof. Built at the place where freshwater meets the sea, these systems fed entire communities by being in sync with the ocean's movement. Today, more than 60 loko iʻa restoration projects are active across the islands. The continuity of this practice is one of Hawaiʻi's most distinctive characteristics.

The challenge Hawaiʻi faces today is that the state imports most of the seafood for its people to eat. Closing that gap is both a food security priority and an economic opportunity. This market segment focuses on the production systems, monitoring tools, and technologies that can help Hawaiʻi grow more of its own food from the seas, spanning loko iʻa to restorative aquaculture, land-based and offshore production, and the sensing, data, and AI tools that make all of it more efficient, traceable, and sustainable.

The state has laid a clear policy foundation for this work. Act 151 (SLH 2019) directs Hawaiʻi to double local food production by 2030, and HB817 establishes local food procurement benchmarks for state agencies. At the federal level, NOAA's Marine Aquaculture Strategic Plan, the USDA, and Hawaiʻi Sea Grant's Aquaculture Development Plan (2023–2033) provide additional alignment, identifying regulatory efficiency, technology transfer, workforce development, and sustainability as shared priorities. The University of Hawaiʻi's recent selection as a core consortium member of CIFARM, NOAA's new Cooperative Institute Fostering Aquaculture Research and Markets, supported by an initial $13.5 million investment, further strengthens Hawaiʻi's position as a national leader in aquaculture research and development.[35] Hawaiʻi's aquaculture industry is forecast to reach $600 million by 2030.[36] Realizing that potential will require coordinated investment in technology, infrastructure, and the workforce capable of sustaining it.

**Global Market Signals.** The global market size is over $203 billion, which includes marine fisheries, aquaculture, and seafood processing.[37] Global investment trends in blue foods has reached approximately $5 billion in cumulative investment, with $3.7 billion in aquaculture, $533 million in fisheries, and $777 million in seaweed and algae.[38] These numbers reflect a global shift toward ocean-based food production that Hawaiʻi is already participating in, with companies and practitioners working across nearly every part of the value chain.

Hawaiʻi's Joint Innovation Project (JIP) Opportunities:

- Water quality monitoring and management tools to support loko iʻa restoration and productivity
- Technology adoption for existing aquaculture producers across subsectors
- Integrated multi-trophic systems combining seaweed, shellfish, and finfish
- AI and data tools for fisheries monitoring, traceability, and compliance
- Hatchery technology for native species
- Marine energy systems to power offshore and remote production infrastructure
- Tools to reduce illegal fishing and strengthen harvest monitoring

**Examples of Key Partners (Non-Exhaustive).** Government & Infrastructure: NOAA, USDA, FWS, USACE, DAB, DBEDT, ADC, OPSD, NELHA, UH, HPU, Pacific Aquaculture and Coastal Resources Center. Capital: Castle Foundation, Elemental Impact, Hatch Blue, Kamehameha Schools, Oceankind, Pacific Economics, Schmidt Marine Technology Partners. Corporates & Industry: Big Abalone Hawaii, Blue Ocean Mariculture, Cyanotech, Fresh Island Fish, Hawaiʻi Aquaculture & Aquaponics Association (HAAA), Indo-Pacific Sea Farms, Jamestown Seafood, Kona Butterfish, Kona Limu, Kona Coast Shellfish, Matsuyama Food and Fuel, Ocean Era, Pacific Planktonics, Pacific Seafood, Royal Hawaiian Sea Farms. Innovation Pipeline: AI.Fish, Blue Ocean Barns, Blue Ocean Gear, Hawaiʻi Ocean Power Solutions (HOPS), Kupu Place, Nāmaka Algae, NeuralX, Pacific Hybreed, Symbrosia. Nonprofits: Conservation International - Hawaiʻi, Germinate by HIPlan, Hawaiʻi Aquaculture and Aquaponics Association (HAAA), Hawaiʻi Aquaculture Collaborative, Hawaiʻi Agricultural Foundation, Hui Mālama Loko Iʻa, Indigenous Aquaculture Collaborative Network, KUA, The Nature Conservancy - Hawaiʻi and Palmyra.

## Cross-Cutting Technology Themes

### At a Glance

The cross-cutting technology themes support the capabilities of every key blue economy market segment's needs. Hawai‘i builds these horizontally through SBIR matching, partnerships, shared infrastructure, and federal-program alignment, so the investments compound across the blue economy market segments.

| Technology Theme | Global Market Size | Global VC Investment[39] | Hawai‘i's Strengths |
|---|---|---|---|
| Ocean Sensing, Data, Decision Support & AI | $7.8 billion[40] (of the total global market for data sensing, data & decision support: $317 billion[41]) | $5 billion | NOAA PacIOOS, DARPA, FWS, NASA, NELHA, UH and HPU oceanographic infrastructure |
| Kilo Tech: Indigenous Knowledge & Digital Earth Technologies (a part of Ocean Sensing, Data & Decision Support) | n/a | n/a | Loko i‘a, Papahānaumokuākea National Marine Sanctuary |
| Robotics & AUVs/ROVs | $5.2 billion[42] (of the total global market for robotics: $88.2 billion[43]) | $3.6 billion | ARL, ONR, NAVSEA, year-round deep water access |
| Marine Energy | $77 billion[44] (incl. oil, gas, and renewables) | $1.5 billion (focus: renewables) | NELHA-HOST, HNEI, DOE Water Power Technologies Office |
| Advanced Materials & Additive Manufacturing | $38 billion[45] (of total global market for advanced materials and additive manufacturing: $511 billion[46]) | $90 million (underreported based on cross-overs with other technology areas) | Maritime Institute - Center of Maritime Excellence, HPU Center for Marine Debris Research, biomanufacturing, import-substitution mandate |

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## Ocean Sensing, Data, Decision Support & AI

Every market segment in this plan depends on knowing what is actually happening in the water. Coastal resiliency needs flood and erosion data. Maritime needs port and vessel performance data. Blue foods need water quality data for aquaculture and fishpond restoration. Ocean sensing is the connective technology theme that makes all of it possible: sensors, telemetry, software, analytics, and decision platforms that help operators, regulators, and communities understand ocean conditions, infrastructure performance, environmental change, and operational risk in real time.

**Global Market Signals.** $7.8 billion total addressable market, with nearly $5 billion in ocean tech VC investment including $713 million in maritime-space technologies and $382 million in digital twins and underwater communications.

**Hawai‘i’s Strengths.** The PacIOOS observation network established oceanographic infrastructure, and DARPA-funded autonomous sensing programs already give Hawai‘i an advantage that most coastal states do not have. Cross-segment applications include shoreline and flood monitoring (Coastal Resiliency), harbor and port intelligence (Maritime), aquaculture monitoring (Blue Foods), and predictive maintenance for marine assets.

**Examples of Ventures:** AI. Fish, Backyard Buoys (powered by Sofar Ocean), Coral Collective, Havoc, Hohonu

**Kilo Tech with Indigenous Knowledge and Values.** Ocean sensing tells us what is happening. “Kilo” means to observe or look closely in the Native Hawaiian language. Kilo Tech describes technologies that help communities to observe, understand, and make decisions about their environment to support land management and food production systems. This technology theme may also be referred to as “digital Earth technologies,” which include environmental sensor networks, satellites, LiDAR, cloud-based computing, IoT, databases, machine learning, AI-enabled edge computing, data science, data visualization, digital twins, and biodigital innovations like precision agriculture.

No peer ocean cluster currently has the cultural foundation or the demographic position like Hawai‘i to integrate Indigenous knowledge into ocean tech and innovation.

## Robotics & Autonomous/Remotely Operated Vehicles (AUVs/ROVs)

Real-world ocean testing is expensive and often dangerous when it relies on human divers and crewed vessels. Robotics changes that calculus across every market segment.

AUVs, ASVs, drones, and robotic inspection systems improve the safety, frequency, and cost-effectiveness of marine monitoring, mapping, inspection, and operations across every market segment, including reef and habitat surveys, harbor and mooring inspection, shoreline and seafloor mapping, fisheries and aquaculture monitoring, persistent offshore observation, and maritime patrol.

**Global Market Signals.** There is a total addressable market of over $5 billion. Global ocean tech investment in drones and underwater robots reached $3.6 billion between 2016 and 2025, making it the second-largest single investment category within the blue economy.[47]

**Hawai‘i’s Strengths.** UH ARL, NAVSEA Pacific operations, federal investment in autonomous-systems testing, and year-round deep-water access give Hawai‘i a strong foundation to build on.

**Examples of Ventures:** Blue Robotics, Dakine Robotics, Ramp Robotics, and SubSeaSail

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## Marine Energy

Hawaiʻi imports nearly all of its fuel, and that dependence shapes everything from electricity prices to maritime fuel costs to the state's exposure to global energy price shocks. Marine energy is one of the clearest paths out of that dependence. Marine energy is a critical capability for Hawaiʻi because the state's clean energy mandate (HRS §269-92) and net-negative emissions target (HRS §225P-5) require renewable generation at scale, and ocean-based renewables are uniquely viable in island contexts.

**Global Market Signals.** $77 billion total addressable market, including traditional forms of energy (oil and gas). Approximately $1.5 billion in cumulative venture capital investments, including $818 million in offshore wind, $461 million in other marine renewables, $215 million in wave and tidal, and $36 million in floating solar. Marine energy is structurally underbuilt relative to the climate mandate.

**Hawai‘i’s Strengths:** NELHA-HOST already anchors deep-water ocean energy applications through Makai Ocean Engineering's OTEC work and HNEI. Aligning HTDC, HNEI, NELHA, and the DOE Water Power Technologies Office will be essential to moving Hawaiʻi's marine energy technologies from pilot to commercial deployment.

## Advanced Materials and Additive Manufacturing

Hawaiʻi's structural import dependence imposes significant economic and environmental costs, and local manufacturing capacity can address both by producing corrosion-resistant marine materials, marine-derived biomaterials, replacement parts through additive manufacturing, and circular economy products made from marine debris. The state's statutory drivers already support this shift: Act 175 SLH 2009 establishes a Hawaiʻi products preference, HRS §103D-1005 establishes a recycled products preference, and §103D-1012 establishes a biofuel preference. Hawai‘i strengths: the advanced manufacturing pilot project on O‘ahu will serve as the first manufacturing node in Hawaiʻi's statewide pilot site network, building on existing maritime activity for managing supply chains, HPU’s Center for Marine Debris Research and its Nets-to-Infrastructure program. HTDC's role in this segment is to grow the advanced materials and additive manufacturing pilot, develop a circular economy supply chain, and align procurement with the state's Hawaiʻi products preference.

**Global Market Signals.** Marine manufacturing has a total addressable market of $38 billion, with approximately $90 million in venture capital investments deployed in seaweed-based bioplastics, biofuels, and materials. The $90 million is an underreported value due to various cross-overs in technology areas. Several ocean tech solutions required some baseline of advanced materials and additive manufacturing to build products like buoys, sensors, and other hardware components.

**Hawai‘i’s Strengths:** The pilot project at Kapa‘a Quarry on O‘ahu will serve as the first advanced materials and additive manufacturing node in Hawaiʻi's statewide pilot site network, building on existing anchor activities in maritime and HPU’s Center for Marine Debris Research and its Nets-to-Infrastructure program.

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## Measuring Progress

HTDC is committed to transparent, evidence-based tracking progress across the five goals.

### Our Philosophy

HTDC's tech and innovation flywheel and strategic framework aims to balance quantitative indicators (e.g., number of ocean tech jobs and companies supported and funding secured) with qualitative assessments (e.g., quality of the partnerships formed overtime, depth of community engagement, and authenticity of regenerative blue economy practices).

### Annual Reporting and Refresh

HTDC will publish an annual Hawai'i Ocean Tech and Innovation Report beginning in FY2028. HTDC's social media platforms will also be updated. This includes creating a live, dynamic dashboard that helps make key indicators and success stories available to state leaders, legislators, federal and global partners, residents, and communities impacted by this work.

### Mid-Cycle Review in FY2029

HTDC will conduct a comprehensive mid-cycle review in FY2029, assessing its progress as a backbone organization against all goals. Any changes or refreshed priorities, findings and insights will be shared with the Hawai'i Ocean Innovation Hui and the broader stakeholder community in this ocean cluster.

### A New Strategic Plan in FY2032

This Strategic Plan will conclude with a new co-developed successor plan for FY2032-FY2036. Marine biotech, identified here as an emerging focus, will be elevated to a full market segment. This assumes that ocean tech and innovation in some blue economy sub-sectors will mature from TRL 1-6 to above TRL 7.

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## Roadmap (FY2027 – FY2031)

The roadmap shows the priority goals that HTDC is committed to delivering across the planning period. Each year builds on the last, with FY2027-FY2029 focused on building and delivering the foundation and FY2030-FY2031 focused on replication, expansion, and renewal.

### FY2027 - Foundation

HTDC establishes the legal, organizational, and strategic foundation for Hawai‘i’s tech and innovation ecosystem. Hawai‘i formally positions itself as a Pacific ocean cluster, while HTDC begins building the governance structures, partnerships, infrastructure planning, and ecosystem mapping needed to coordinate long-term growth. FY2027 focuses on aligning stakeholders, identifying priority assets and opportunities, and creating the foundational systems that will support future commercialization, workforce development, and regional collaboration.

**KEY RESULTS BY END OF FY2027**

**G1 HTDC as the Institutional Backbone for Hawai‘i Ocean Innovation Cluster**

- Secure initial funding to launch the ocean tech program at HTDC
- Form the Hawai‘i Ocean Innovation Hui to oversee strategy, accountability
- Publish and launch Ocean Tech strategic growth plan
- Establish initial ocean tech policy priorities
- Identified a gap for an alliance of industry partners to support the development and implementation of strategy

**G2 Regenerative Blue Economy**

- Create and publish initial frameworks and KPIs around a regenerative blue economy
- Initiation of regenerative blue economy working group, gathering at least quarterly
- Incorporate regenerative practices into at least one of HTDC’s programs

**G3 Statewide Ocean Tech Testbed & Advanced Manufacturing Network**

- Initial mapping of key manufacturing and pilot-testing infrastructure
- Initial O‘ahu pilot site for ocean tech hub launched
- 2-3 target sites for quick permit improvements are identified

**G4 Thriving Ocean Innovation Pipeline**

- Innovation challenge partners and funding secured with clear problem sets identified
- Identify, map, and document
  - Innovation pipeline
  - Financing landscape
  - Local corporate partners
- Identify 1-3 state challenges that could be solved with JIPs
- MOUs signed with 1-2 cross-Pacific partners to support company offramps.

**G5 Blue Workforce: Nextgen Ocean Talent**

- Map and identify current workforce programs and gaps
- Create a roadmap of ocean tech career pathways
- Begin outreach with K–12 STEM and career pathway programs

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## FY2028 - Activation

In FY2028, Hawaii's ocean tech and innovation ecosystem transitions from planning into more coordinated execution. HTDC begins operationalizing the Strategic Plan through pilot programs, accelerator activities, working groups, demonstration site planning, and the launch of collaborative initiatives with regional partners. The ecosystem starts functioning more as an integrated system, with growing coordination across industry, government, academia, and community stakeholders.

**KEY RESULTS BY END OF FY2028**

**G1 HTDC as the Institutional Backbone for Hawai‘i Ocean Innovation Cluster**

- A strategic alliance of industry partners is formed and fully operational as an entity
- Grow HTDC’s current ocean tech programming
- Launch project specific working groups within the Ocean Innovation Hui
- Launch a fundraising strategy to pursue federal, state, philanthropic, and other funding sources
- Publish baseline Hawai‘i blue economy ecosystem report

**G2 Regenerative Blue Economy**

- 1-2 additional HTDC programs are updated to incorporate regenerative practices
- Mechanisms for external organizations to reinvest wealth back into the community are designed

**G3 Statewide Ocean Tech Testbed & Advanced Manufacturing Network**

- Develop improvement plans for existing demonstration sites
- Develop a proposed network of ocean tech piloting sites statewide

**G4 Thriving Ocean Innovation Pipeline**

- Begin developing “Blue Economy Playbook” which includes:
  - Investment (blue financing) map
  - Live innovation ecosystem dashboard
  - Pilot-testing and permitting playbook
- Launch initial innovation challenge in partnership with a state agency
- Request for clear bucket of funding (Green Fee or other) for JIPs
- Secure 10-20 core partners and develop implementation for JIPs

**G5 Blue Workforce: Nextgen Ocean Talent**

- Design a workforce development program aligned with ocean tech skills
- Secure employer commitments for internships and placements
- Pursue workforce development grant funding with key workforce development partners in Hawai‘i

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## FY2029 - Milestone Year

By FY2029, the ecosystem begins demonstrating tangible outcomes and statewide coordination. Hawai‘i has launched its first statewide Blue Economy Summit, activates initial pilot projects and Joint Innovation Projects (JIPs), expands workforce and commercialization programming, and formalizes stronger international partnerships across the Pacific region. This year represents the transition from ecosystem building to ecosystem validation, with increased focus on accountability, reporting, and measurable impact.

**KEY RESULTS BY END OF FY2029**

**G1 HTDC as the Institutional Backbone for Hawai‘i Ocean Innovation Cluster**

- Standardize collaboration and impact measurement across Hawai‘i Ocean Innovation Hui

**G2 Regenerative Blue Economy**

- Regenerative wealth mechanism is launched (e.g., community fund)
- At least 2-3 companies participate regenerative wealth mechanism (e.g., donate % of equity to community fund)
- 2-3 additional HTDC programs are updated with regenerative principles

**G3 Statewide Ocean Tech Pilot Testbed & Advanced Manufacturing Network**

- Finalize network of ocean tech piloting sites, broken down by market segments
- Launch 1-2 technologies at ocean tech piloting sites statewide
- Fundraise for improvement of other existing demonstration sites

**G4 Thriving Ocean Innovation Pipeline**

- Launch initial ocean tech accelerator/incubator programming at ocean tech hub pilot site
- Launch finalized “Blue Economy Playbook”
- Create a materials and equipment procurement dashboard
- Formalize at least 2 corporate partners and launch one pilot corporate innovation challenge in partnership with local academic institutions (e.g., hackathon)
- Sign MOUs with 4-5 ocean cluster partners
- Launch 1-2 initial JIPs with secured funding from public-private partnership funding (e.g., Green Fee)

**G5 Blue Workforce: Nextgen Ocean Talent**

- Launch at least one workforce development program (e.g., career exploration programs, internships, mentorships) from college-post-graduate with local academic institutions (e.g., UH, HPU, ASU)
- Launch a blue jobs site

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## FY2030 - Expansion

In FY2030, Hawai‘i launches a permanent Blue Economy and Ocean Innovation Hub. At the same time, it scales and deepens the systems established in earlier years. Successful programs, partnerships, and pilot models expand across islands and into broader Pacific collaborations, while HTDC increasingly shifts from direct builder to ecosystem steward and coordinator. The ecosystem becomes more institutionalized, with growing investment activity, workforce infrastructure, commercialization support, and regional integration.

**KEY RESULTS BY END OF FY2030**

**G1 HTDC as the Institutional Backbone for Hawai‘i Ocean Innovation Cluster**

- Begin strategic planning for FY2032-FY2036

**G2 Regenerative Blue Economy**

- 5-10 additional companies participate in regenerative mechanism
- HTDC publishes data based on KPIs

**G3 Statewide Ocean Tech Testbed & Advanced Manufacturing Network**

- Begin any necessary improvements for other demonstration sites
- Develop sustainable operation model for ocean tech piloting sites statewide

**G4 Thriving Ocean Innovation Pipeline**

- Expand ocean tech accelerator/incubator programming as appropriate
- Hard launch new blue financing vehicles (e.g., blue bonds) to support ocean tech growth
- Operationalize annual blue economy investment data tracking and reporting
- Scale up successful corporate engagement models and celebrate partnership successes
- Develop commercialization partnerships with corporate buyers
- Begin identifying 2-3 new JIPs

**G5 Blue Workforce: Nextgen Ocean Talent**

- Expand workforce development programming
- Launch certification or degree program(s) focused on identified blue economy topics and workforce gaps

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## FY2031 - Sustainment & Growth

By FY2031, Hawai‘i operates as a mature and globally recognized Pacific ocean tech and innovation hub. The statewide network of partners, demonstration sites, workforce programs, financing tools, and commercialization systems is operational at scale, positioning Hawai‘i as a leader in regenerative blue economy development and Pacific collaboration. This year focuses on measuring long-term impact, securing sustained investment and partnerships, and preparing the next generation of strategic growth through the FY2032-FY2036 planning process.

**KEY RESULTS BY END OF FY2031**

**G1 HTDC as the Institutional Backbone for Hawai‘i Ocean Innovation Cluster**

- Finalize strategic planning for FY2032-FY2036

**G2 Regenerative Blue Economy**

- 10-20 additional companies participate in regenerative mechanism
- HTDC is capturing and publishing KPIs

**G3 Statewide Ocean Tech Testbed & Advanced Manufacturing Network**

- Share ocean tech piloting sites with cross-regional partners in the Pacific
- Formalize a statewide network of ocean tech piloting sites
- Launch O‘ahu-based ocean tech piloting and manufacturing hub

**G4 Thriving Ocean Innovation Pipeline**

- Update “Blue Economy Playbook”
- Develop multi-year corporate partnerships
- Improve and launch new additional blue financing vehicles to support ocean tech growth
- Operationalize ocean tech commercialization processes

**G5 Blue Workforce: Nextgen Ocean Talent**

- At least three workforce development programs are operational
- Operationalize annual workforce development data tracking and reporting
- Institutionalize workforce development programs, certificates, and degrees

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## Governance and Execution

HTDC will organize execution, guide decision-making, and keep the Hawaiʻi Ocean Innovation Hui and broader stakeholder community informed about this Strategic Plan and any updates over time. Governance of the ocean innovation cluster rests on these complementary components. HTDC serves as the backbone organization that catalyzes the coordination and supports the execution. The Hawaiʻi Ocean Innovation Hui helps bring stakeholder expertise and shared accountability. The Office of Marine Affairs and its governing body provide the legislative and institutional foundation and governance overseeing the efforts that may have significant statewide impact. Together, this structure connects community-driven collaboration with formal state authority, so the cluster's work is both grounded in partnership and backed by policy.

### HTDC’s Operating Role

HTDC serves as the backbone organization and field catalyst for the ocean innovation cluster. In FY2027, HTDC takes on an active operational role. This includes fostering stakeholder engagement, building local and global partnerships that create momentum for the industry, and driving the development of statewide strategies and policies. HTDC also provides infrastructure and currently facilitates the Hawaiʻi Ocean Innovation Hui. Starting in FY2028, HTDC will progressively shift toward convening, coordinating, and stewarding partners and working group leads as they take on more direct execution responsibility. This phased approach builds shared ownership and helps sustain the cluster beyond any single organization.

### Hawaiʻi Ocean Innovation Hui

The Hawaiʻi Ocean Innovation Hui is the cluster's primary multi-stakeholder body. It brings together government, academia, industry, funders, innovators, community members, and Indigenous knowledge holders. The Hui advises HTDC on the statewide ocean tech and innovation strategy, contributes expertise in the areas its members know best, coordinates Joint Innovation Projects (JIPs), and shares accountability for collective progress. HTDC provides coordination, facilitation, and strategic continuity, while the Hui keeps the work moving forward. By FY2028, a strategic alliance of these partner organizations will be fully formed and operational. That alliance will sustain the Hui's growth and collaboration for the next five years and beyond.

### Office of Marine Affairs

Established under Act 186 (SB2907) Relating to Marine Affairs, the Office of Marine Affairs sits within HTDC and provides governance for the state's blue economy and ocean innovation activities. The office includes a Marine Affairs Coordinator role. It helps co-design and deliver ideas, funding, and programmatic support for stewarding the state's ocean and aquatic resources through a technology, innovation, and entrepreneurship lens. It gives ocean tech and innovation activities the structure, resources, and access to funding they need to grow. This helps guide the resiliency and growth of Hawaiʻi's blue economy and ocean tech-related industries.

### Marine Affairs Governing Body

Also established under Act 186 (SB2907) Relating to Marine Affairs, the Marine Affairs Governing Board provides legislative and institutional oversight of the state's ocean and aquatic activities that make up Hawaiʻi's blue economy. The Board continues the work of the former Governor's Advisory Committee on Marine Affairs, whose members carry forward as its initial members. HTDC works closely with the Board to coordinate inter-agency alignment, advance shared priorities and policies, and maintain Hawaiʻi's leadership as a recognized ocean cluster.

### Annual Review Cycle

Each year, in these quarters:

Q1: Annual progress update and prior-year ecosystem report is published.
Q2: The Marine Affairs Governing Body set priorities for the year ahead.
Q3: There is an optional mid-year check-in and course correction is taken as needed.
Q4: Planning for next year is happening. The Hawai‘i Ocean Innovation Hui working groups review progress and suggest new priorities. There is a statewide-refresh with stakeholder input on the strategies from the Hawai‘i Ocean Innovation Hui.

FY2029 provides a comprehensive mid-cycle review of the Strategic Plan.

FY2031 includes the co-development of a successor plan for FY2032-FY2036.

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# Appendix

## Key Terms

**Accelerators and Entrepreneur Support Organizations (ESOs)** are accelerators and incubators that provide funding, mentorship, network access, and technical assistance to help start-ups refine their business models and reach commercial readiness.

**Backbone Organization** is a dedicated organization that guides the vision, strategy, and learning of a collaborative network, while supporting aligned activities across partner organizations.

**Blue Economy**, as defined by the World Bank, is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health. It spans activities including coastal tourism, fisheries and aquaculture, maritime transportation and logistics, waste management, and energy.

**Blue Foods (or Aquatic Foods)** include aquaculture, fisheries, food processing and distribution, food transportation and equipment, micro-/macro-algae applications. See detailed descriptions for each:

- **Aquaculture:** Implementation of precision aquaculture, genetic optimization, and real-time monitoring systems for sustainable seafood farming, including fish, shellfish, and seaweed;
- **Fisheries:** Adoption of ecosystem-based management, digital monitoring, fish aggregating devices (FADs), and sustainable harvesting practices to maintain healthy wild aquatic populations;
- **Microbial, Micro-/Macro-Algae Applications:** Used in food, agriculture, biofuel production, pharmaceuticals, cosmetics, environmental remediation, and carbon reduction through advanced bioprocessing and ecosystem management;
- **Food Processing and Distribution:** Adoption of advanced processing, packaging, and cold chain technologies to enhance food safety and quality, and efficiently deliver them to consumers; and
- **Transport and Equipment:** Use automated logistics and smart equipment to streamline the movement and handling of aquatic foods.

**Coastal Resiliency** includes marine tourism, infrastructure, transportation, disaster preparedness, marine conservation, marine pollution, nature-based solutions. See detailed descriptions for each:

- **Marine Tourism:** Integration of digital platforms for coastal hospitality, leveraging sensor networks for environmental monitoring and sustainable visitor management;
- **Infrastructure:** Use of advanced materials and construction methods for resilient coastal infrastructure, combined with GIS-based conservation planning;
- **Transportation:** Deployment of eco-friendly and multi-modal transport systems for optimized coastal connectivity;
- **Disaster Preparedness:** Implementation of AI-driven early warning systems and resilient design protocols for infrastructure protection;
- **Marine Pollution:** Deployment of monitoring technologies, bioremediation methods, and policy-driven solutions to detect, reduce, and clean up pollution in coastal and marine environments;
- **Marine Conservation:** Use of remote sensing, data analytics, and community engagement tools to protect and restore marine habitats and biodiversity; and
- **Nature-Based Solutions:** Application of ecological engineering and biomimicry to restore and enhance natural coastal defenses, supported by geospatial modeling.

**Corporates and Industries** are mid-to-large size companies, from shipping and aquaculture to energy and insurance, are increasingly recognizing ocean innovation as both an operational necessity and a strategic opportunity. They partner with start-ups for pilots, provide offtake agreements that de-risk scaling, and invest directly in technologies that align with their sustainability commitments.

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**Field Catalyst** is a backbone organization that activates and sustains ecosystem-level change, operating across the system rather than within a single program or sector.

**Innovation Challenge** is a competition where an entity, like a state agency or large corporation, provides real problems and small- to medium-sized companies from around the globe pitch ready-to-test solutions. The winner receives prize money to run a pilot in partnership with the host. As a result, the host entity can test a solution to a pressing problem, and companies have a path to their first customer.

- **HTDC's Role:** Partner with local organizations to find problem sets and launch innovation challenges.
- **Example:** In 2025, New York had a statewide goal to decarbonize buildings and improve energy efficiency. The New York State Energy Research and Development Authority (NYSERDA) responded by launching an innovation challenge inviting companies to submit innovative building technologies for clean heating, ventilation, and air conditioning (HVAC) systems, thermal storage, etc. Through this innovation challenge, NYSERDA awarded over $23 million to 23 pilot projects. That said, over the past 15 years, NYSERDA's Innovation programs have deployed $1.2 billion of grants and commercialization support. For every $1 of NYSERDA funding invested in these innovation programs, an additional $15 is attracted in additional investment. To date, over $1 billion of private capital has been raised, supporting the commercialization of 300+ different innovative products for consumers and businesses.

**Innovation Cluster** is A cluster is a geographic concentration of interconnected companies, suppliers, and institutions in one field that compete and cooperate using proximity to boost productivity, innovation, and new business formation.

- **HTDC's Role:** Acting lead public economic development agency fostering Hawaii's ocean cluster growth.
- **Example:** Ocean clusters have developed across the US and the world including in San Diego, Washington, Los Angeles, Maine, Singapore, etc. The **Iceland Ocean Cluster** was established in 2011 to strengthen the connections across the country's existing seafood sector and catalyze new opportunities. One of its signature initiatives, **"100% Fish,"** brought companies, researchers, and entrepreneurs together around a simple challenge: how can Iceland extract more value from every fish rather than treating parts of the catch as waste? That effort helped drive new products and businesses across food, cosmetics, biotechnology, and medicine—including **Kerecis, which developed medical technology using fish skin to heal human wounds**. Kerecis became Iceland's first unicorn when it was acquired by Coloplast for **$1.3 billion in 2023**

**Investors and Funds** include venture capital funds, impact investors, development finance, institutions, and family offices provide the capital that enables startups to scale. Their role extends beyond capital by validating solutions, connecting startups to customers and partners, and signaling market confidence to the broader investment community.

**Joint Innovation Project** is the next step after a successful innovation challenge: a multi-stakeholder initiative that brings together public agencies, private companies, and research partners to move a validated solution from pilot to real-world deployment at larger scale. Think of an innovation challenge as the pilot, and a JIP as the pathway to broader implementation and long-term procurement.

- **HTDC's Role:** Support companies through the transition from Innovation Challenge to JIP and help reduce procurement and implementation barriers.
- **Example**: The **Kalaeloa Hybrid Reef Project** brings together HDOT, the UH Applied Research Laboratory, Makai Engineering, and other local firms to deploy a DARPA-funded living breakwater to protect coastal highways. The state's Green Fee funds the first year of monitoring, while HDOT takes ownership of the structures. The investment supports Hawaii's first large-scale demonstration of a nature-based alternative to seawalls that aims to reduce coastal erosion, wave damage and storm surge while enhancing marine habitats.

**Low-Carbon Blue economy** refers to any low-carbon and/or transitioning ocean economy activities.

**Marine Biotechnology** includes marine organism research, medicine, nutraceuticals, health and wellness, bioinformatics, aquaculture and safety, and biofuels. See detailed descriptions for each:

- **Marine Organism Research:** Investigating ocean plants, animals, and microbes to discover valuable compounds, genes, and biological processes for new technologies and solutions
- **Medicine:** Developing new drugs, therapies, and diagnostics from marine-derived chemicals and genetic materials to treat diseases and improve human health
- **Nutraceuticals:** Creating dietary supplements and functional foods from marine resources (like microalgae, macroalgae, seaweed) that provide health benefits beyond basic nutrition
- **Health & Wellness**: Producing bioactive ingredients from the ocean for personal care, skin health, and overall well-being, including products for skincare, haircare, and holistic health
- **Bioinformatics:** Applying advanced computing and data analysis to understand the genetic makeup and biological functions of marine organisms, accelerating innovation
- **Aquaculture & Safety:** Using biotechnology to improve fish and seafood farming—such as disease prevention, genetic improvements, and ensuring the safety and quality of seafood

**Marine Energy** includes offshore and nearshore marine renewables (wave, floating solar, wind, geothermal, hydrogen, ocean thermal energy conversion (OTEC), biofuels, traditional oil and gas, energy storage, energy equipment (subsea cables, monitoring infrastructure).

- **Offshore & Nearshore Marine Renewables:** Wave, floating solar, wind, geothermal, and hydrogen energy systems, leveraging floating platforms, subsea turbines, and electrolysis technologies to harness ocean and coastal resources;
- **Ocean Thermal Energy Conversion (OTEC):** Implementation of OTEC plants that utilize the temperature gradient between warm surface water and cold deep water to generate continuous, baseload electricity;
- **Biofuels**: Generating renewable energy from marine sources like algae and other ocean biomass, offering sustainable alternatives to fossil fuels;
- **Traditional Oil & Gas:** Utilization of enhanced recovery and monitoring technologies for offshore transport of oil and gas (that's how we get our energy to the islands), with improvements in environmental safeguards and integration into transitional energy strategies;
- **Energy Storage:** Development of marine energy storage solutions, including battery arrays, pumped hydro, and hydrogen storage, to stabilize renewable energy supply; and
- **Energy Equipment:** Installation of robust subsea cables for high-capacity power transmission, real-time monitoring infrastructure, and smart grid integration to optimize energy flow and system reliability.

**Maritime: Marine Transportation, Ports, Shipping, Logistics & Supply Chain** includes maritime transportation, ports, industry trade, shipbuilding, equipment manufacturing, logistics and supply chain, R&D services. See detailed descriptions for each:

- **Marine Transportation:** Implementation of smart shipping solutions for cargo and passenger movement, including autonomous vessels and predictive logistics platforms;
- **Maritime Ports:** Deployment of smart port infrastructure with automated cargo handling, blockchain-enabled tracking, and AI-driven traffic management;
- **Maritime Industry Trade:** Utilization of digital marketplaces and e-commerce platforms to streamline global maritime trade, supported by secure data exchange and fintech solutions;
- **Maritime Shipbuilding:** Advanced design and engineering of vessels leveraging composite materials, automation, and digital twin technologies to optimize performance and sustainability;
- **Maritime Equipment Manufacturing:** Development of cutting-edge navigation, propulsion, and safety systems, integrating IoT sensors and AI for real-time operational insights;
- **Logistics & Supply Chain:** Application of integrated supply chain management systems, including cloud-based tracking, robotics, and data analytics to optimize warehousing, shipping, and distribution; and
- **R&D Services:** Focused research on decarbonization, vessel efficiency, alternative fuels, and maritime cyber-physical systems to drive sector innovation.

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**Ocean Innovation** encompasses new approaches, solutions, business strategies and models that transform how we address marine issues. Innovation may involve cutting-edge technology solutions, but also includes creative partnerships, community-driven models, and novel ways of organizing and financing ocean projects.

**Ocean Intelligence** includes autonomous systems, imaging, sensors, ocean observation data, data science and artificial intelligence, subsea cables, connectivity, cybersecurity, digital infrastructure, digitalization, R&D services. See detailed descriptions for each:

- **Autonomous Systems:** Deployment of uncrewed vehicles (AUVs, drones, marine robots) for real-time data collection, environmental monitoring, and resource assessment;
- **Imaging & Sensors:** Utilization of high-resolution imaging, acoustic monitoring, and sensor networks to capture critical environmental parameters (e.g., water quality, biodiversity, climate indicators);
- **Ocean Observation Data, Data Analytics, Machine Learning & AI:** Leveraging big data platforms, predictive modeling, and artificial intelligence to interpret complex oceanographic datasets and support adaptive management;
- **Subsea Cables & Connectivity:** Expansion of fiber-optic and communication infrastructure to enable rapid data transfer, remote sensing, and real-time decision support;
- **Cybersecurity:** Implementation of robust security protocols to protect sensitive environmental data and ensure the integrity of marine technology systems;
- **Digital Infrastructure & Digitalization:** Integration and upgrading of digital technologies, including cloud computing, automated data management, and secure connectivity, across ocean monitoring, data transmission, and decision-making systems. This enhances efficiency, transparency, and accessibility for communities and stakeholders; and
- **R&D Services:** Focused research and development on integrating Indigenous knowledge systems with contemporary digital technologies, supporting innovation in environmental monitoring, disaster preparedness, and biocultural restoration.

**Ocean Tech** is applying cutting-edge science and technology, such as sensors, data analytics, robotics, and digital platforms, to address ocean challenges and opportunities.

**Policy and Multilateral Actors** include governments, development banks, and international bodies like the UN Ocean Decade. Create the frameworks that enable scaling: funding programs, regulatory clarity, public procurement, and international coordination.

**Regenerative Blue Economy** refers to ocean economy activities that contribute to “nature positive” outcomes (i.e. dedicated to restoration/conservation or having regenerative elements).

**Research Institutions and Universities** are academic institutions that drive early-stage research, validate emerging technologies, and often spin out start-ups. They also train the next generation of ocean innovators and provide independent data and analysis that inform both business decisions and policy.

**Startups** are the companies developing and deploying ocean technologies: from alternative seafood and AI-powered fish welfare systems to low-emission shipping solutions, marine carbon removal, and plastic-free materials derived from seaweed or shell waste. They range from early-stage ventures testing prototypes to growth-stage companies with commercial traction.

**Total Blue Economy** encompasses any economic activity taking place in ocean and/or coastal environments or otherwise relying on/benefiting from their presence.

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## Sources

[1] *The Blue Economy*. World Bank, 2017.

[2] *Smart data, better jobs: How technology is transforming labour markets*. World Economic Forum. May 2025. https://www.weforum.org/stories/2025/05/smart-data-better-jobs-technology-labour-markets

[3] *The Ocean Economy Imperative: Defining Value, Managing Risk and Mobilizing Investment*. World Economic Forum. Jan 2026. https://reports.weforum.org/docs/WEF_Ocean_Economy_Imperative_2026.pdf

[4] *The ocean economy is booming. But for how long?* UN Trade & Development. 2025. https://unctad.org/news/ocean-economy-booming-how-long

[5] *Ocean Finance for Sustainability*. UN Environment Programme. https://www.unepfi.org/blue-finance

[6] *UN Ocean Decade: Vision 2030*. https://oceandecade.org/vision-2030

[7] *Ocean finance for the sustainable ocean economy.* High Level Panel for a Sustainable Ocean Economy. 2025. https://oceanpanel.org/publication/finance-for-the-sustainable-ocean-economy

[8] *Funding Trends 2025: Tracking the State of Global Ocean Funding*. CEA Consulting. November 2025. https://oursharedseas.com/wp-content/uploads/2025/11/ocean-funding-report-2025-1.pdf

[9] *The Ocean Returns: A Deep Dive*. Katapult Ocean and Builders Vision. 2025. https://oceanreturns.com/a-deep-dive/index.html

[10] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[11] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[12] *NOAA Marine Economy.* NOAA. https://coast.noaa.gov/states/fast-facts/marine-economy.html

[13] *2024 Marine Economy Report: Hawaii.* NOAA. 2024. https://coast.noaa.gov/data/digitalcoast/pdf/marine-economy-hawaii.pdf

[14] *2024 Marine Economy Report: Hawaii.* NOAA. https://coast.noaa.gov/data/digitalcoast/pdf/marine-economy-hawaii.pdf

[15] *DBEDT Projects 1.6 Percent Growth for 2026*. DBEDT. 2026. https://dbedt.hawaii.gov/blog/26-42

[16] *UH Mānoa ranks top 12 in the U.S. for oceanography, atmospheric science, tourism*. University of Hawai‘i News. 2026. https://www.hawaii.edu/news/2026/01/04/gras-ranking-2025

[17] *New Blue Economy*. NOAA. https://www.noaa.gov/blue-economy

[18] *Washington State’s Strategy for the Blue Economy*. Washington Maritime Blue. January 2019. https://maritimeblue.org/wp-content/uploads/2022/10/MaritimeBlueExecutiveSummary.pdf

DRAFT

[19] *Flooding Hawaiian fishponds get help from UH technology startup*. University of Hawai'i News. February 2023. https://www.hawaii.edu/news/2023/02/28/flooding-hawaiian-fishponds-hohonu

[20] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[21] *The Ocean Economy Imperative: Defining Value, Managing Risk and Mobilizing Investment*. World Economic Forum. Jan 2026. https://reports.weforum.org/docs/WEF_Ocean_Economy_Imperative_2026.pdf

[22] *Ocean finance for the sustainable ocean economy.* High Level Panel for a Sustainable Ocean Economy. 2025. https://oceanpanel.org/publication/finance-for-the-sustainable-ocean-economy

[23] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[24] 2024 Marine Economy Report: Hawaii. NOAA. 2024. https://coast.noaa.gov/data/digitalcoast/pdf/marine-economy-hawaii.pdf

[25] Recreation boating, recreational fishing and shellfishing, scenic and sightseeing transportation, and water sports (e.g., swimming, surfing, outrigger canoe paddling, sailing, snorkeling, scuba diving, and freediving) as well as related competitions and events to these recreational activities.

[26] *Living Blue Planet*. World Wildlife Fund. https://assets.wwf.org.uk/custom/stories/living_blue_planet

[27] *The 2025 Ocean Data Gaps Report*. Ocean Central. June 2025. https://oceancentral.org/stories/articles/the-2025-ocean-data-gaps-report

[28] *Hawai'i Coastal Zone Management Program*. State of Hawai'i Office of Planning and Sustainable Development. https://planning.hawaii.gov/czm/

[29] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[30] Hawai'i Statewide Transportation Plan. 2022. https://hidot.hawaii.gov/administration/files/2022/12/HawaiiStatewideTransPlan_Draft_compressed.pdf

[31] *Maritime Shipping*. The International Council on Clean Transportation. https://theicct.org/sector/maritime-shipping

[32] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[33] *The Ocean Economy to 2050*. OECD. March 2025. https://www.oecd.org/en/publications/2025/03/the-ocean-economy-to-2050_e3f6a132.html

[34] *2024 Marine Economy Report: Hawaii.* NOAA. https://coast.noaa.gov/data/digitalcoast/pdf/marine-economy-hawaii.pdf

[35] *UH joins $13.5M consortium to strengthen U.S. Seafood Supply*. University of Hawai'i News. June 2026. https://www.hawaii.edu/news/2026/06/09/grant-seafood-supply

[36] *Aquaculture in Hawai'i*. State of Hawai'i Department of Agriculture: Animal Industry Division. https://dab.hawaii.gov/ai/aquaculture-and-livestock-support-services-branch/aquaculture-in-hawaii

[37] *Ocean finance for the sustainable ocean economy.* High Level Panel for a Sustainable Ocean Economy. 2025. https://oceanpanel.org/publication/finance-for-the-sustainable-ocean-economy

[38] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[39] *Blue Economy: Discover the blue economy VC funding trends, main geographies, top segments, most active investors and much more*. Dealroom.co. 2025. https://dealroom.co/guides/blue-economy

[40] *Ocean Data and Government AI: How IoT Sensors and AI Transform Marine Monitoring*. NetO. April 2026. https://net0.com/blog/ocean-data

[41] *Software-as-a-Service (SaaS) Market*. Dataintelo. 2025. https://dataintelo.com/report/software-as-a-service-saas-market#:~:text=Global%20Software%20as%20a%20Service%20(SaaS)%20market,AI%2Dpowered%20SaaS%20adoption%2C%20and%20remote%2Fhybrid%20work%20proliferation.

[42] *Underwater Robotics Market Size, Share & Global Forecast 2026-2035.* S&S Insiders. April 2026. https://www.snsinsider.com/reports/underwater-robotics-market-5579

[43] *Robotics Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031).* https://www.mordorintelligence.com/industry-reports/robotics-market

[44] *Ocean finance for the sustainable ocean economy.* High Level Panel for a Sustainable Ocean Economy. 2025. https://oceanpanel.org/publication/finance-for-the-sustainable-ocean-economy

[45]*Additive Manufacturing Market Size, Share, Global Analysis Report, 2026-2034*. Polaris Market Research. 2025. https://www.polarismarketresearch.com/industry-analysis/additive-manufacturing-market

[46] *Robotics Market Size & Share Analysis - Growth Trends and Forecast (2026 - 2031).* https://www.mordorintelligence.com/industry-reports/robotics-market

[47] *A Deep Dive: The Ocean Returns. Dealroom. 2025.* https://oceanreturns.com/a-deep-dive/index.html

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