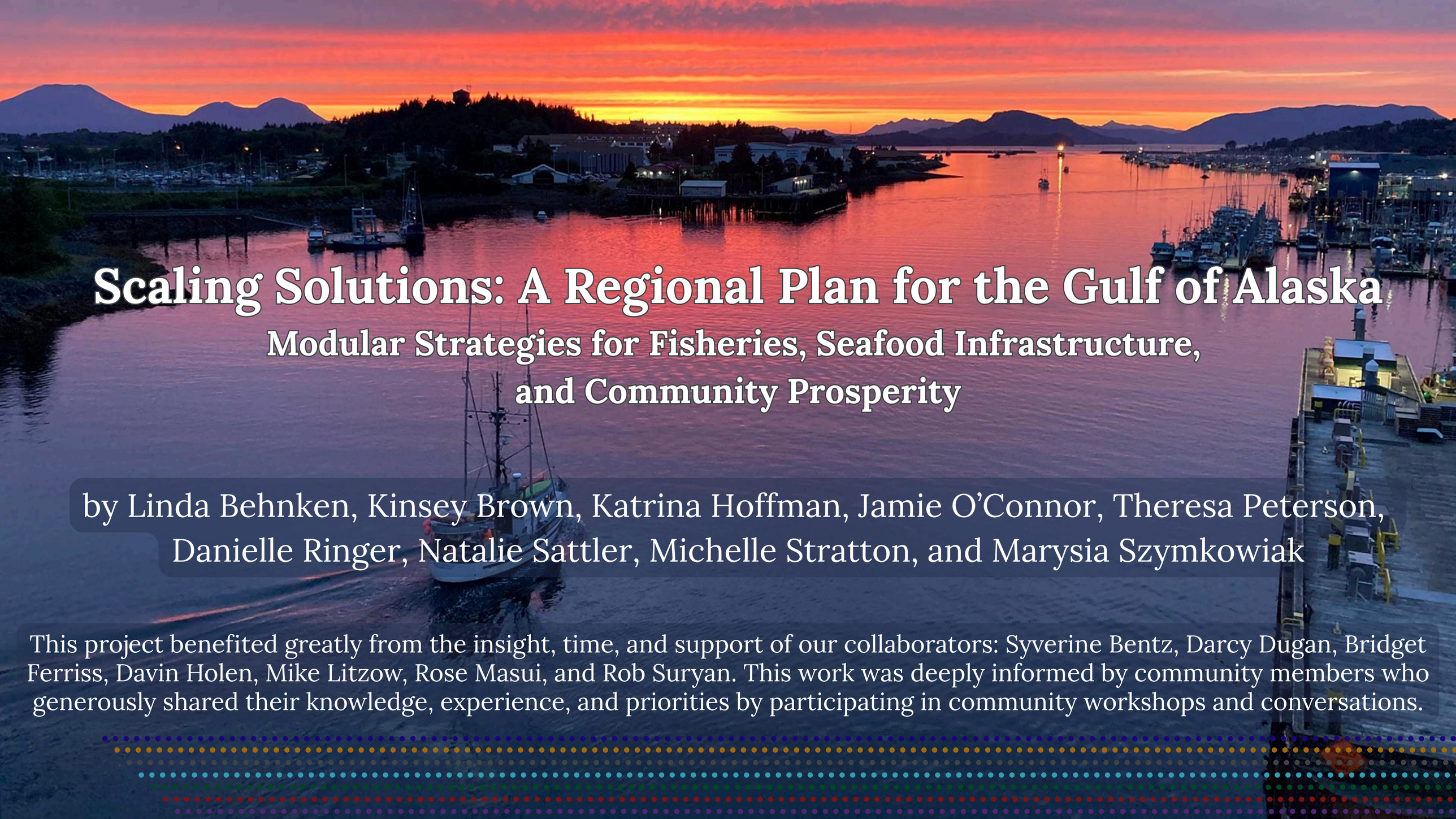


Scaling Solutions: A Regional Plan for the Gulf of Alaska

Modular Strategies for Fisheries, Seafood Infrastructure, and Community Prosperity

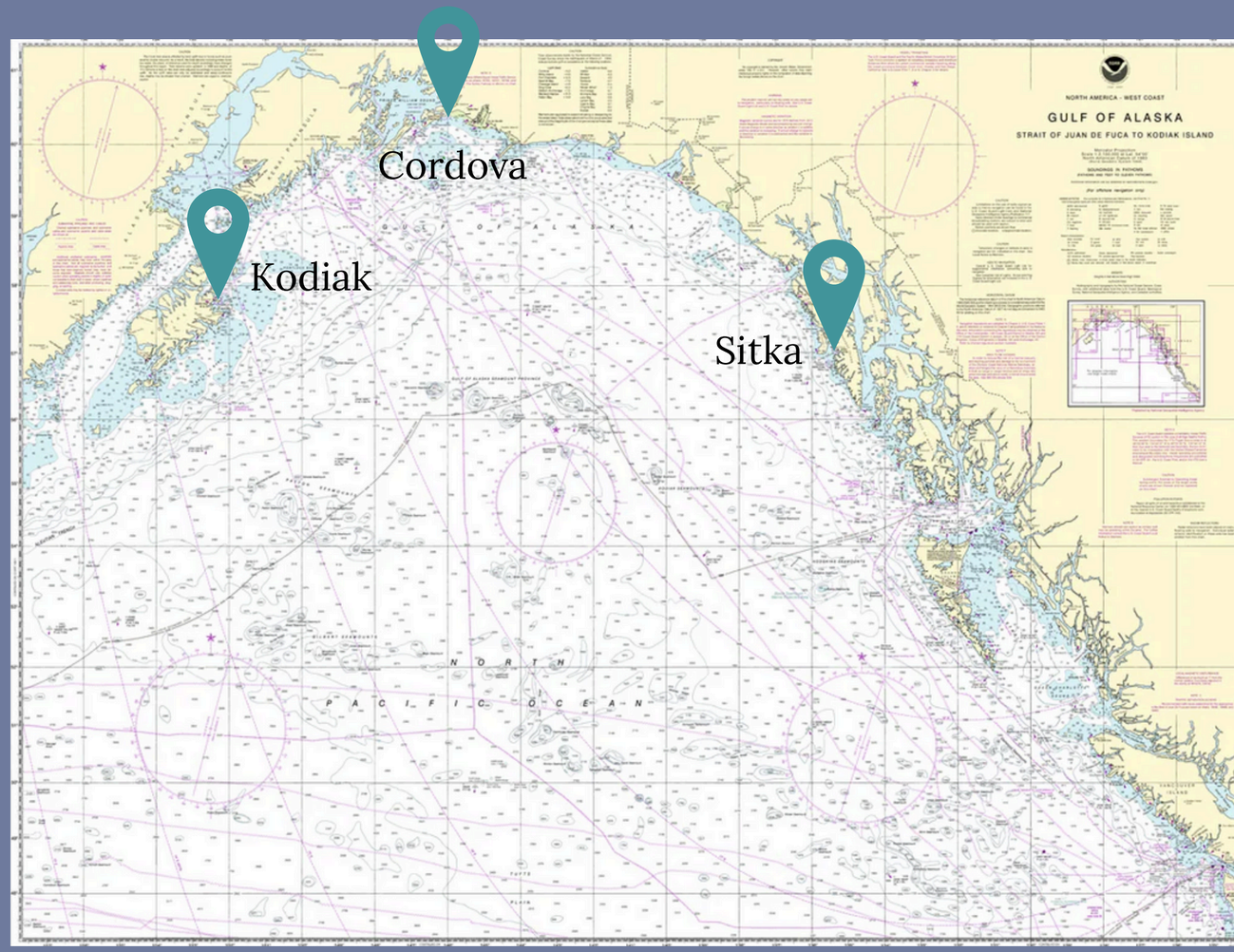
by Linda Behnken, Kinsey Brown, Katrina Hoffman, Jamie O'Connor, Theresa Peterson, Danielle Ringer, Natalie Sattler, Michelle Stratton, and Marysia Szymkowiak

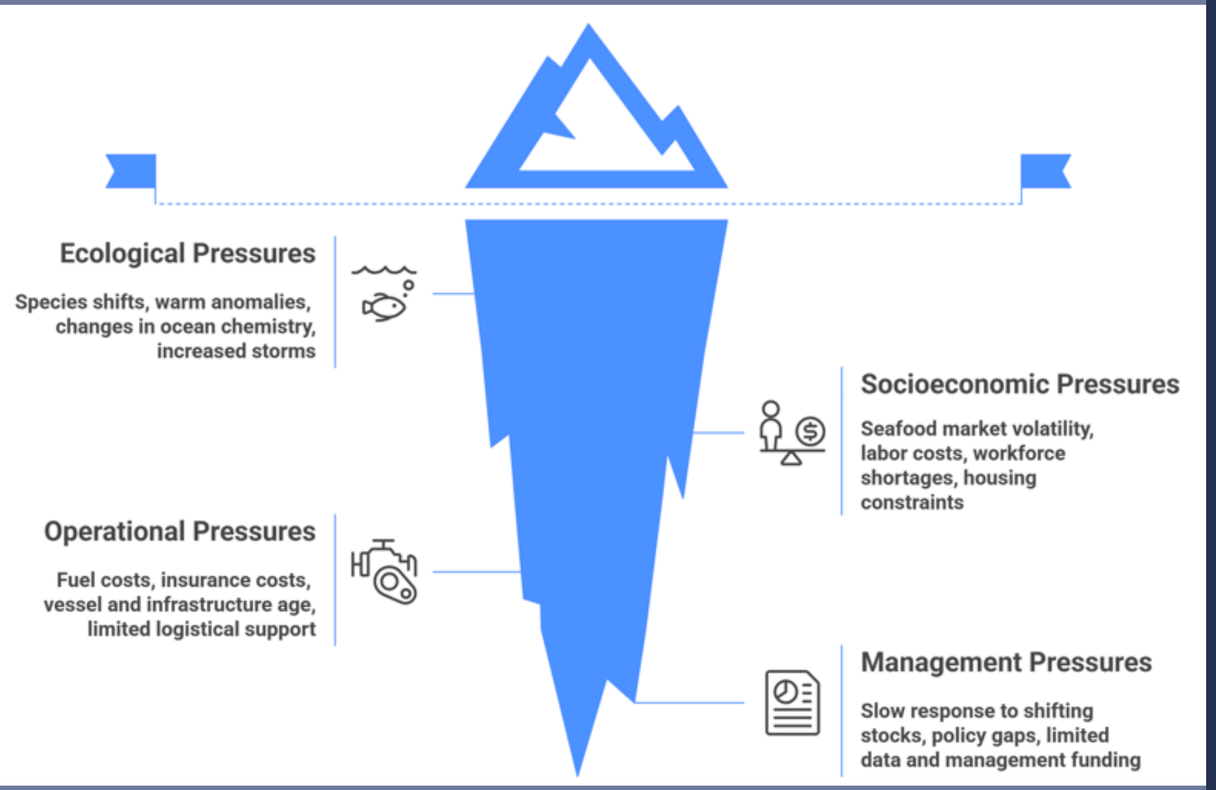
This project benefited greatly from the insight, time, and support of our collaborators: Syverine Bentz, Darcy Dugan, Bridget Ferriss, Davin Holen, Mike Litzow, Rose Masui, and Rob Suryan. This work was deeply informed by community members who generously shared their knowledge, experience, and priorities by participating in community workshops and conversations.

The Gulf of Alaska is a vital marine ecosystem that supports $2 billion in annual commercial fisheries and sustains isolated, fishing-dependent communities, including Alaska Native peoples with deep cultural ties to the region.

Over the last several years, the fishing communities of Cordova, Kodiak, and Sitka have undertaken an effort to develop strategies for resilience in the face of diverse socioeconomic and ecological stressors.

Through iterations of assessment, visioning, and strategic planning, communities developed plans that are intended to mitigate risks and seize opportunities. This GOA-wide plan provides a modular and action-oriented framework to strengthen the long-term viability of the fishing way of life in coastal Alaska and supporting economic security for communities across the region.





Fishing communities across the Gulf of Alaska face a convergence of environmental, socioeconomic, operational, and management pressures that together increase system-wide vulnerability. Environmental and ecological changes, including shifting species distributions, marine heat anomalies, changes in ocean chemistry, altered salinity and stratification, increasing storminess, and ocean acidification, are reshaping traditional fishing conditions and increasing uncertainty. At the same time, communities contend with socioeconomic pressures, such as seafood market volatility, workforce shortages, rising labor costs, and limited housing availability that constrain recruitment, retention, and economic stability. Operational challenges, including high fuel and insurance costs, aging vessels and infrastructure, insufficient local cold storage, further strain fishing operations and reduce adaptive capacity.

These pressures are compounded by management challenges, including limited real-time data, constrained monitoring and management funding, slow responses to shifting stocks, and policy gaps that hinder timely and effective adaptation. Together, these intersecting stressors underscore the need for coordinated, GOA-wide strategies that strengthen system performance and long-term viability for the fishing industry and connected communities.

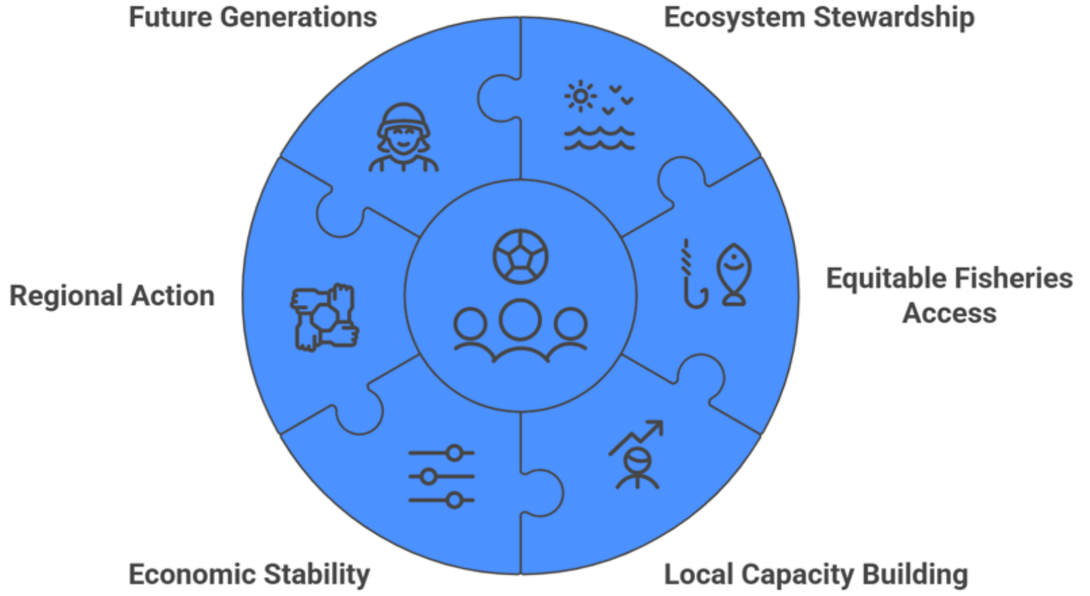
Shared Vision for a Stronger Gulf of Alaska

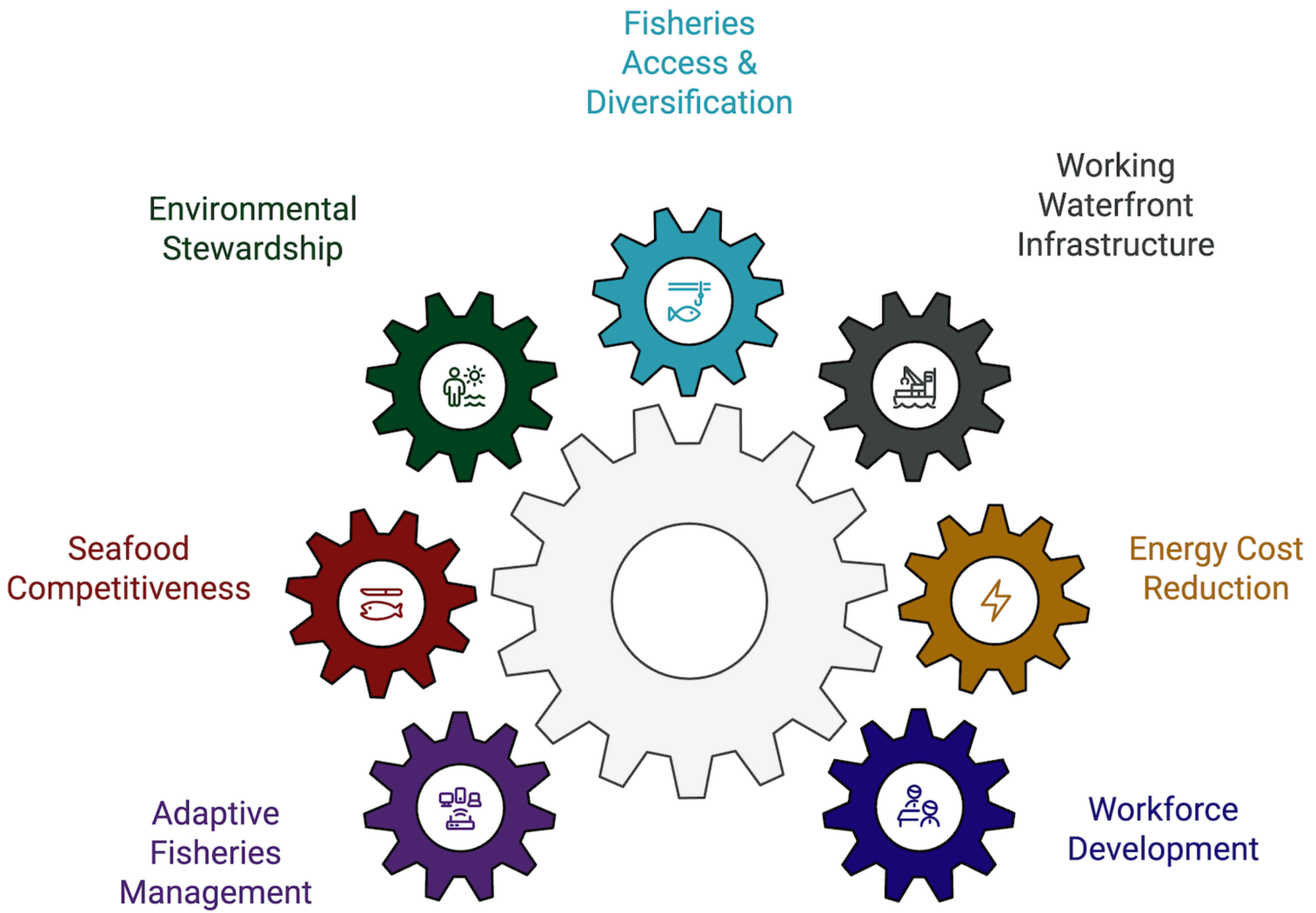
The Gulf of Alaska is a rich marine ecosystem that Alaska Native people have stewarded for thousands of years. Today, over 130 communities rely on this ecosystem for food, livelihoods, and cultural identity. While changes within the marine ecosystem pose significant threats to fishing livelihoods and communities, they also present opportunities for building resilience and transformative change. This adaptation planning project aims to shape the future of the GOA region by addressing systemic issues, drawing on local and traditional knowledge, and centering shared values and assets.

Strong human, social, physical, and natural assets enrich Gulf of Alaska communities. Core values include ecological stewardship, respect for local and traditional knowledge, social ties, education, and place-based identities. Subsistence and commercial fishing connect generations and are intertwined in coastal fishing ways of life. Our shared future will depend on today's choices. Our goal is to lay the groundwork for community investments to build local capacity and overall resilience while protecting ecosystem health and promoting energy independence.

Community development guided by these shared values can enhance economic diversification while maintaining a thriving blue economy. Through cohesive local and regional planning, we aim to bridge today's vulnerabilities by creating a customizable roadmap toward a sustainable and thriving future for Alaska.

Gulf of Alaska Fishing Community Vision





This plan focuses on seven key issues where GOA-wide coordination offers the strongest return on investment and local benefit:

- Adaptive Fisheries Management
- Seafood Competitiveness
- Environmental Stewardship
- Fisheries Access and Diversification
- Working Waterfront Infrastructure
- Energy Cost Reduction
- Workforce Development

These themes represent the core levers for securing long-term community resilience in the Gulf of Alaska by investing in people, reducing costs, strengthening infrastructure, diversifying and sustaining fisheries, and safeguarding the marine ecosystem.

Modular Framework

Across all themes, communities in the Fisheries Adaptation Planning project emphasized the need to move from planning to implementation. This includes identifying what could break within a delicate and interdependent system, anticipating the diverse costs of adaptation and inaction, and determining where coordinated investment and collaboration could have the greatest impact.

This plan employs a framework that summarizes these potential risks and resilience strategies by: **acknowledging challenges, anticipating risks of inaction, and identifying tactics for acting preemptively.** The plan uses a modular structure where each theme can stand alone for specific audiences and needs or be combined into a cohesive regional blueprint for increasing resilience. This modularity allows the content to be repackaged and tailored specifically for (amongst others):

- Congressional offices, state agencies, and funding partners
- Local governments, Tribes, and fishing organizations
- Public-facing communications and outreach materials

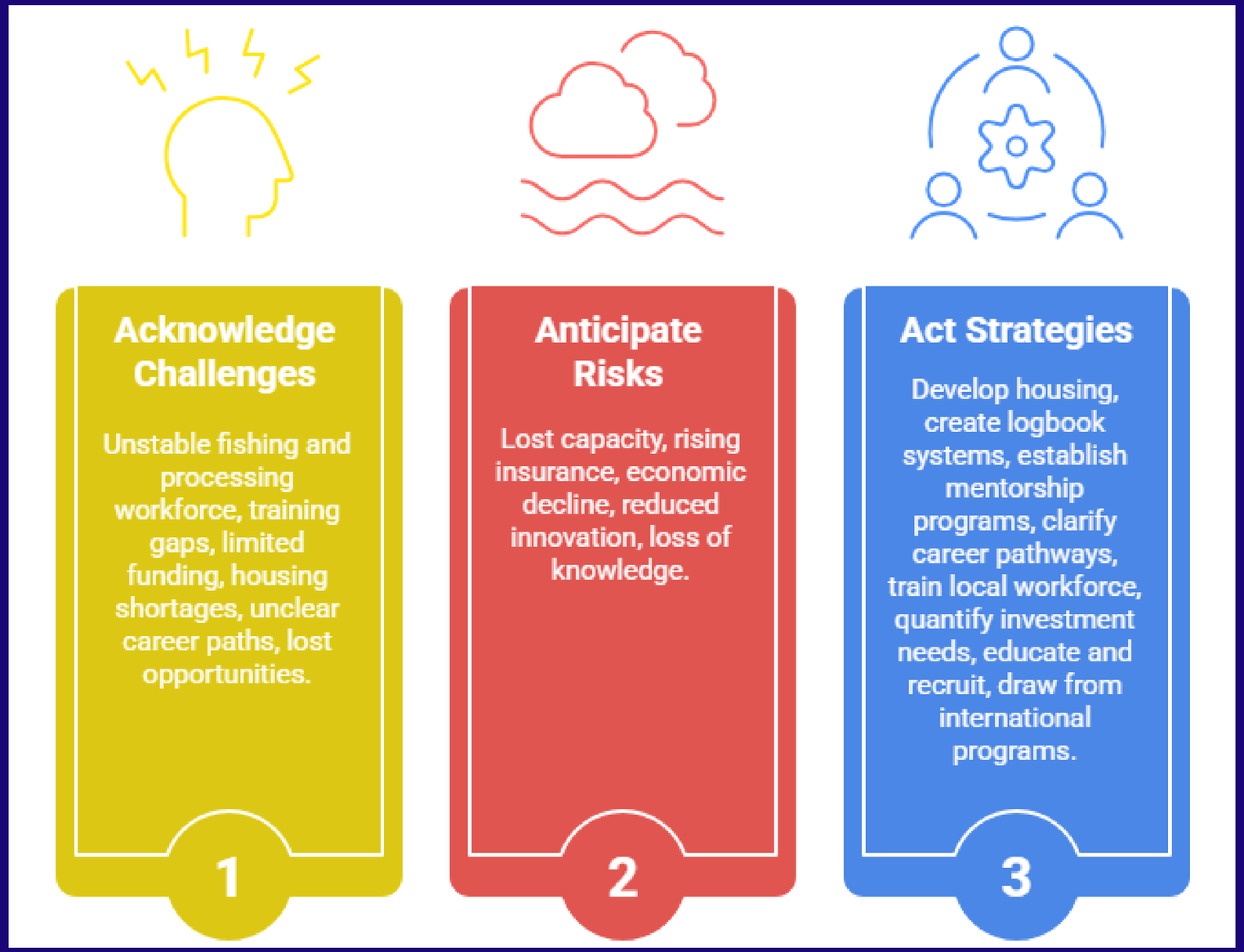
Module 1:
Workforce Development

Workforce Development: Challenges and Pathways Forward

A stable and skilled workforce is essential to the success of the fishing industry. While some regional organizations have established crew training programs and mentorship networks, there remains a pressing need to broaden access and increase funding for these initiatives. Training programs should also expand to cover navigation and wheelhouse operations for fishing vessels, and skilled technician training for seafood processing workers. Strengthening academic partnerships can facilitate formal accreditation, unlock additional funding, and raise program standards to encourage greater participation. Structured programs that connect experienced fishermen with the next generation can further enhance training and support smooth transitions within fishing businesses.

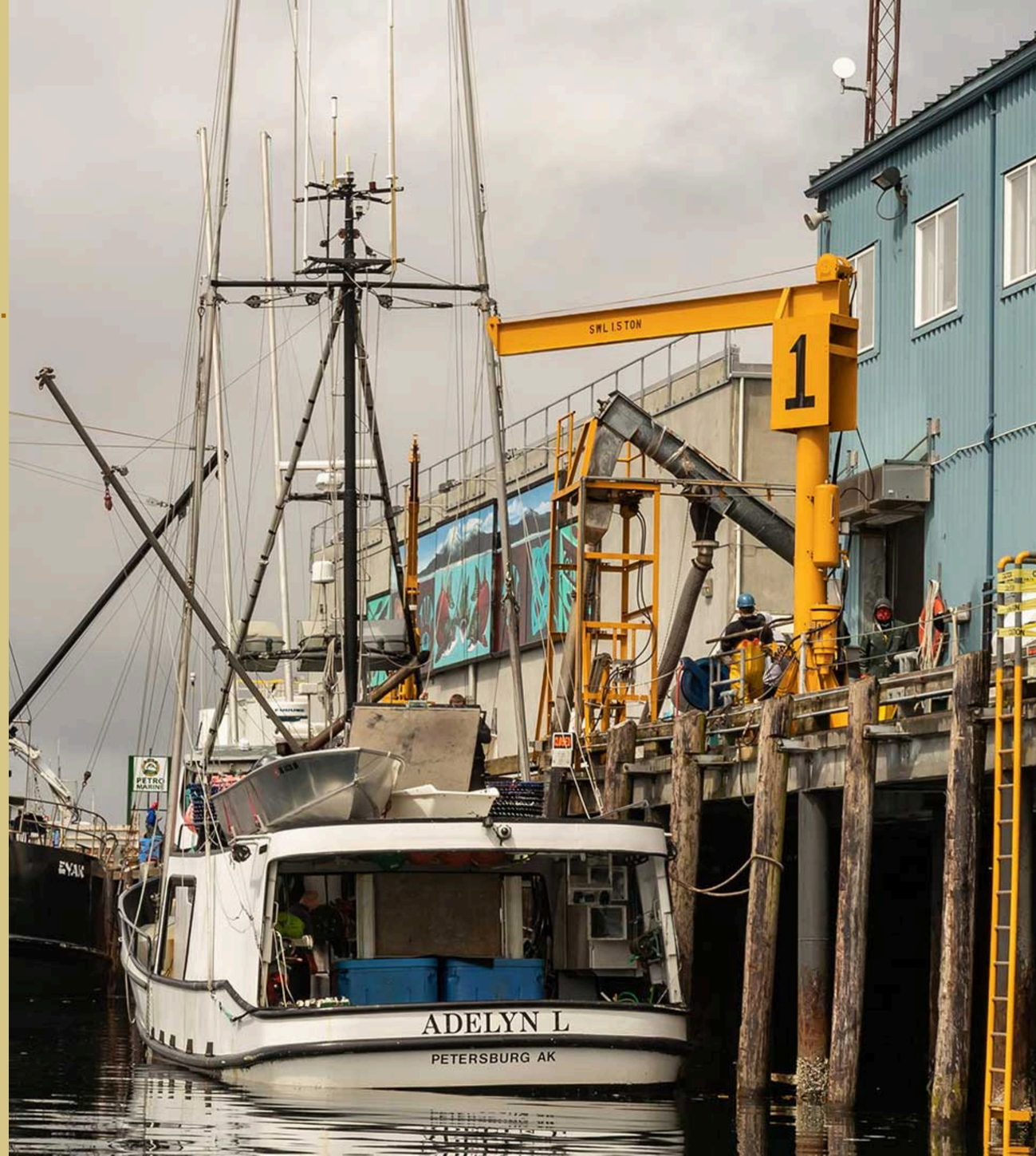
Communities recognize an urgent need for creative, affordable housing solutions, as limited supply and high costs make it difficult to recruit and retain a strong local workforce. Financial and other incentives for entry-level fishermen and processing workers, paired with tools like crew logbooks to support maritime licensing and advanced technician training, can help people enter the industry and move up over time. A consistent theme is the importance of clear, actionable career pathways that guide workers from entry-level jobs into long-term roles with opportunities for advancement, diversified maritime income, and professional credentials.

Failing to address these challenges threatens the seafood industry's fishing capacity and safety. Economic decline is a real risk as unfilled roles reduce operational effectiveness and adaptability. Without intervention, the sector could lose vital intergenerational knowledge, reduce its ability to innovate and diversify, and compromise the resilience of coastal communities dependent on fishing livelihoods. Proactive workforce development is therefore essential to sustaining fishery resources, communities, and economic stability.



- Develop innovative and creative affordable housing solutions for seasonal and permanent workers, including group, cooperative, and new development models.
- Develop crew logbook systems integrated with training and maritime programming to track career progression and days at sea.
- Establish accredited mentorship and incentivized apprenticeship programs offering stipends and comprehensive training to support recruitment and career development in fisheries.
- Establish clear career pathways from deck to wheelhouse to ownership, and in processing plants to management.
- Train local workforce for skilled positions within processors associated with shift to automation.
- Quantify workforce investment needs.
- Work with diverse partners to educate about and recruit for fishing careers (e.g., local schools, vocational training programs, Tribal organizations).
- Draw from international farming succession planning programs (Ireland) to support entry/exit.

Module 2:
Energy Cost Reduction



Energy Cost Reduction: Challenges and Pathways Forward

The fishing industry faces mounting challenges due to its high dependence on fossil fuels and rising operational costs, which significantly erode profit margins. Current energy efficiency tools are often outdated or poorly promoted, while a lack of baseline data on energy consumption across fishing operations hampers efforts to identify savings opportunities. Compounding these issues is limited funding for energy efficiency innovations and seafood industry transitions, as well as an absence of infrastructure and skilled technicians to support emerging vessel technologies like electric and hybrid systems. Moreover, there is insufficient understanding and workforce expertise regarding existing and emerging energy options, creating additional barriers to adoption.

If these challenges remain unaddressed, the industry risks increase vulnerability to fuel and equipment price spikes and supply chain disruptions, which will further drive up operating costs and threaten fleet viability. Coastal communities may also fall behind as technological advances accelerate elsewhere, impairing their ability to innovate or diversify.

To act on these issues, strategies across the state include piloting renewable and hybrid vessel technologies, building harbor infrastructure to support electric and hybrid systems, and expanding outreach on fuel use reduction strategies. Additional measures include facilitating access to grants via energy audit tools, experimenting with low-cost energy solutions in seafood processing, and fostering partnerships across marine sectors to collaboratively pursue energy transitions. Investing in infrastructure and conducting viability assessments aimed at sustainable energy adoption will help secure the industry's economic and environmental future while enhancing resilience to ongoing fuel-related uncertainties.

Acknowledge Challenges

High fuel dependence, outdated tools, lack of information, limited funding, infrastructure gaps, limited understanding, workforce shortage.

1

Anticipate Risks

Increased vulnerability, increased costs, communities falling behind.

2

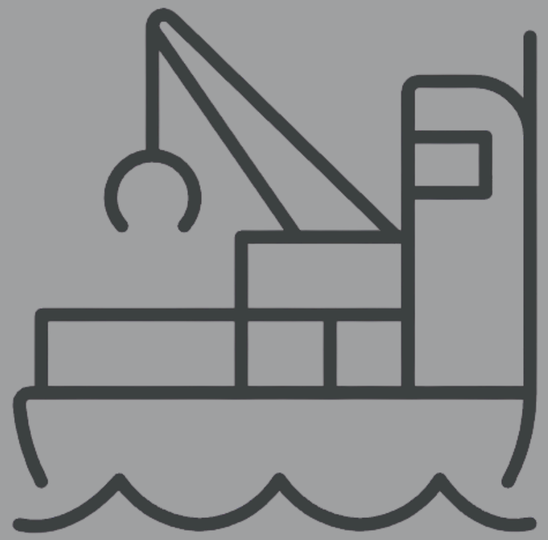
Act Strategies

Pilot technologies, build infrastructure, estimate costs, update outreach, experiment with solutions, facilitate grant access, pursue funding, implement projects, explore assessments, create partnerships, invest in infrastructure.

3

- Pilot renewable and hybrid vessel technologies.
- Build electric/hybrid-supportive harbor infrastructure.
- Estimate cost ranges: electric charging stations, audits, vessel retrofits.
- Update, expand, and provide outreach on the relative fuel usage of different elements of fishing operations and low-cost opportunities to reduce fuel consumption.
- Experiment with diverse low-cost energy efficiency solutions within the seafood processing sector.
- Facilitate grant access for fishing operations through accessible energy audit software.
- Pursue novel funding opportunities for energy transitions and upgrading of legacy mains.
- Implement a diversity of pilot energy projects to understand returns on investment at different scales.
- Explore funding to support viability assessments of energy solutions for the seafood industry.
- Create partnerships and collaborative working relationships across diverse marine sectors pursuing or interested in energy transition.
- Invest in infrastructure that supports broader energy transitions.

Module 3:
Working Waterfront Infrastructure

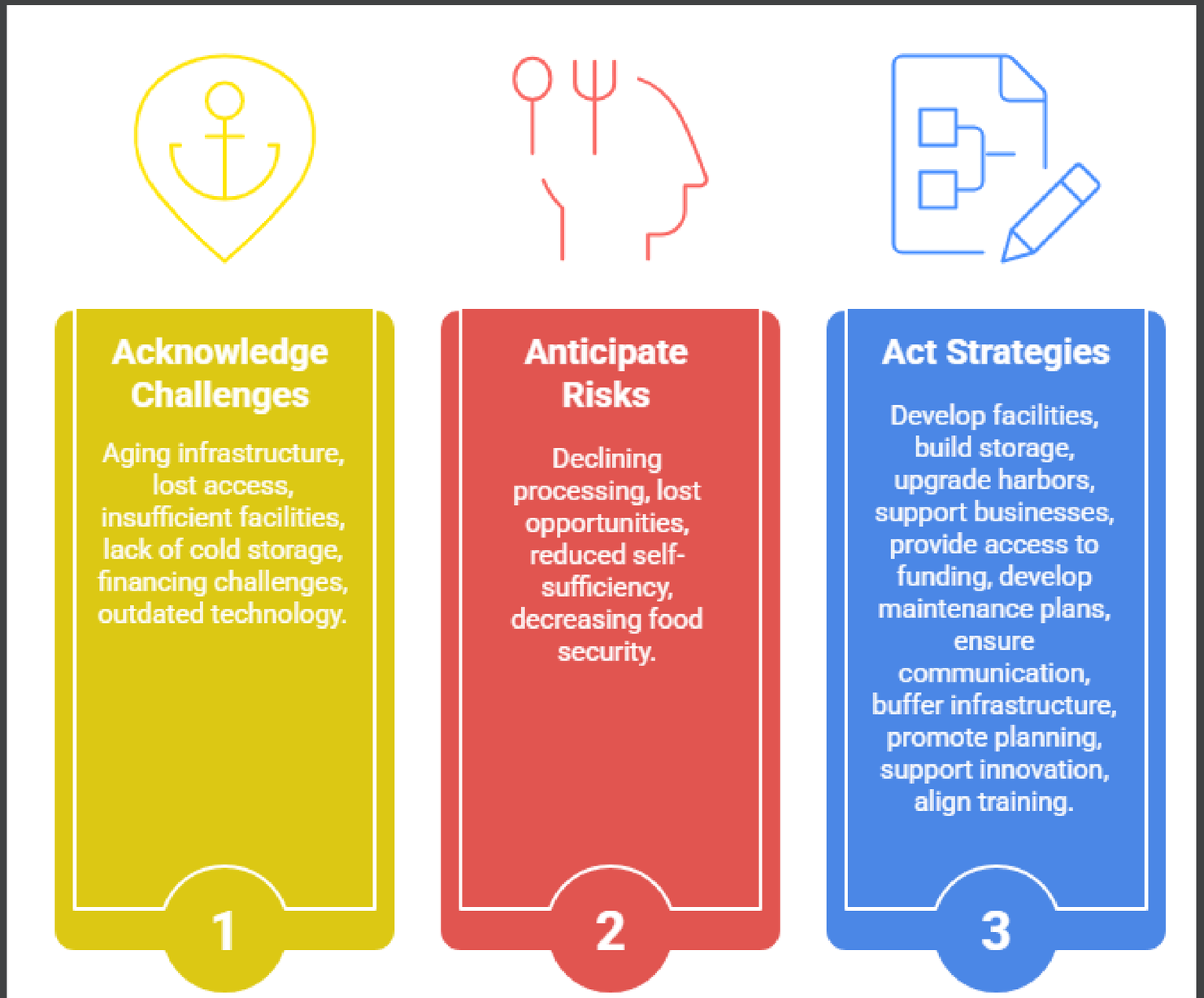


Working Waterfront: Challenges and Pathways Forward

Working waterfronts across Alaska fishing communities face a diversity of issues: infrastructure aging and closure, lack of options for custom processing and direct marketing, decreasing marine support services, and financing challenges for processor and harbor upgrades. If issues go unaddressed, local processing capacity will continue to decline resulting in less competition and lower dockside prices. These impacts may increase costs and decrease revenues for fishing businesses, contributing to economic distress in fishing communities and the loss of local jobs for both processors and fishermen. This trend threatens the overall resilience and self-sufficiency of Alaska's seafood sector and could accelerate community revenue loss and reduce food security at both local and national scales.

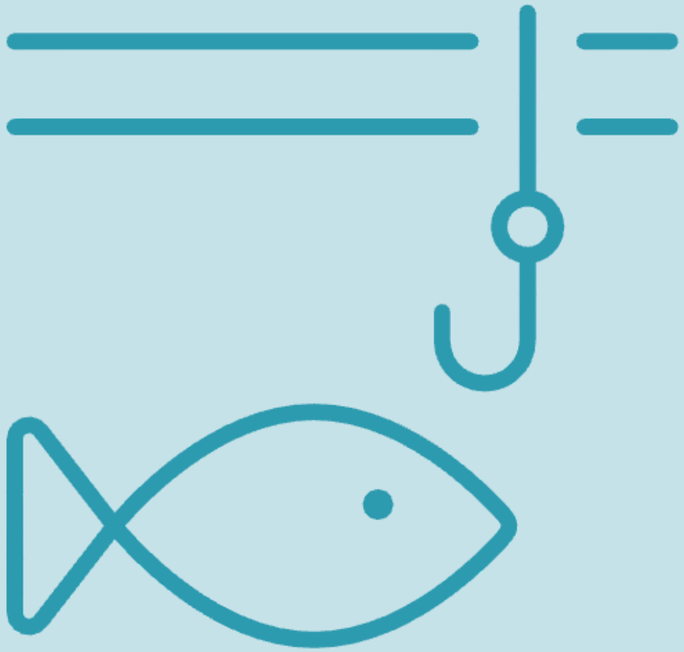
Modernizing and diversifying working waterfronts is essential so they can support multiple uses and adapt to changing community and industry needs. Aging vessels and fisheries infrastructure will require coordinated planning among fishermen, municipalities, and other harbor users, along with upgrades that protect harbors from storm surge, coastal erosion, and sea level rise. Processing facilities need significant investment to advance technology, product development, and value-added processing, while working waterfronts also need strong marine service businesses and new infrastructure, such as electric charging and energy-efficient systems, to support the next generation of vessels. In smaller rural communities with limited infrastructure and market access, creative options include partnering with processors to incorporate landings from remote fishermen into regular delivery routes.

As fishermen face increasing market volatility and ocean variability, many are turning to value-added and direct marketing strategies to stabilize their income and increase profits. To succeed, they need access to diverse facilities and resources that let them process, store, and market their catch while meeting complex regulatory requirements. Business support is also crucial, since direct marketers must navigate extensive permitting, reporting, and accounting obligations. Some communities are pursuing cold storage and other infrastructure through innovative, multi-use facilities, but small-scale, custom, and shared facilities, and the capacity to manage them, are still badly needed across the region. Together, these investments and supports provide a roadmap for more adaptive, self-reliant, and sustainable fishing communities.



- Develop small-scale, custom, and multi-use facilities that can integrate alternative resources, learning from related national and international marine industries.
- Build local and regional cold storage hubs.
- Upgrade harbors for electric/hybrid systems.
- Support multi-service marine businesses.
- Provide fishing community access to grant and loan programs that support working waterfront modernization (i.e., akin to diversified capital funding pathways for agricultural producers).
- Develop publicly available comprehensive vessel maintenance plans with funding pathways to prevent deferred maintenance.
- Ensure transparent communication between harbor users, fishing associations, and local municipal entities.
- Buffer infrastructure against increasing storm surge, erosion, and other increasing hazards.
- Promote adaptive waterfront planning initiatives at municipal level.
- Support processor innovation and energy efficiency technology adoption with access to funding and assistance mirroring that of agricultural entities.
- Align processor training for capacity to operate and repair technology.

Module 4:
Fisheries Access and Diversification



Fisheries Access and Diversification: Challenges and Pathways Forward

Alaska fishing communities face growing barriers to fisheries access, including high costs and risks for new entrants, loss of working waterfront infrastructure in small communities, and limited access to affordable financing. Market and resource volatility, along with competition from other user groups, make revenues unpredictable and livelihoods harder to sustain, increasing the risk that access and ownership continue to centralize away from coastal communities. Without action, these trends threaten intergenerational fishing opportunities, raise the likelihood of loan defaults, and drive economic instability and population decline in fishing-dependent areas, undermining the cultural, economic, and social fabric of Alaska's coastal communities.

As species migrate and new fisheries emerge, fisheries managers and communities need a clear, forward-looking framework to guide access and allocation; one that prioritizes community-based participation and long-term stewardship. Anchoring fisheries access in local communities is a vital strategy, which may be achieved through sustained investment in Community Quota Entities (CQEs), exploring novel funding mechanisms, and replicating successful quota purchase models for CQEs and individual fishermen. Expanding regional CQE capacity through diverse partnerships could integrate fisheries access with broader resilience initiatives like energy transitions, food security, and workforce development.

Access and diversification depend on risk-mitigation tools like risk-sharing loans and insurance programs. For smaller rural communities with limited infrastructure and market access, creative solutions include coordinating with processors and tenders to integrate landings from remote fishermen into regular delivery routes. Financial literacy training for new entrants, retirement and transition support planning with incentives, and local committees to build capacity can sustain fishing businesses and promote long-term resilience. Together, these strategies secure access, foster adaptability, and strengthen the social fabric of fishing communities.

Acknowledge Challenges

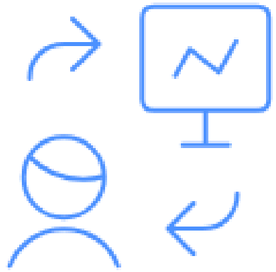
Loss of access, high costs, barriers for new entrants, limited quota, logistical barriers, limited lending, weak engagement, increasing competition, unpredictability.

1

Anticipate Risks

Loss of opportunities, centralization of access, reduced adaptability, increasing loan defaults, declining populations.

2



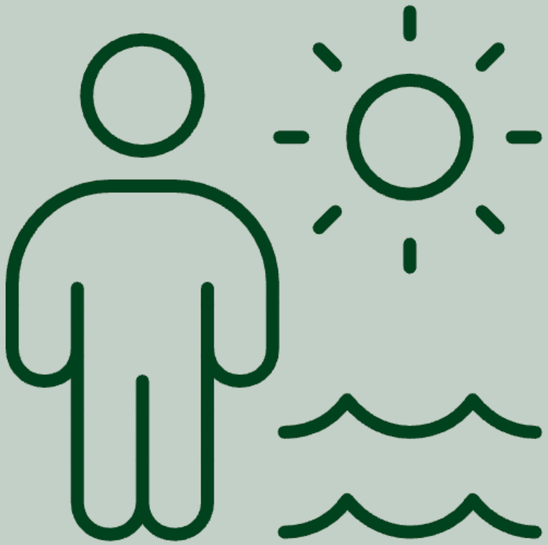
Act Strategies

Innovate frameworks, develop regional lending, support community committees, develop financial literacy, create retirement planning, explore different models.

3

- Innovate and invest in frameworks that anchor access to communities.
- Develop regional lending products to support diversification.
- Support community-led fisheries committees and forums to build capacity.
- Develop financial literacy training programs for new entrants and families.
- Create retirement and transition planning for fishermen, with financial incentives for retaining fishing businesses in communities.
- Explore different models for allocations and access that increase flexibility and alleviate debt loads for fishermen, e.g., cooperatives, mixed-species allocations, territorial use rights, etc.

Module 5:
Environmental Stewardship

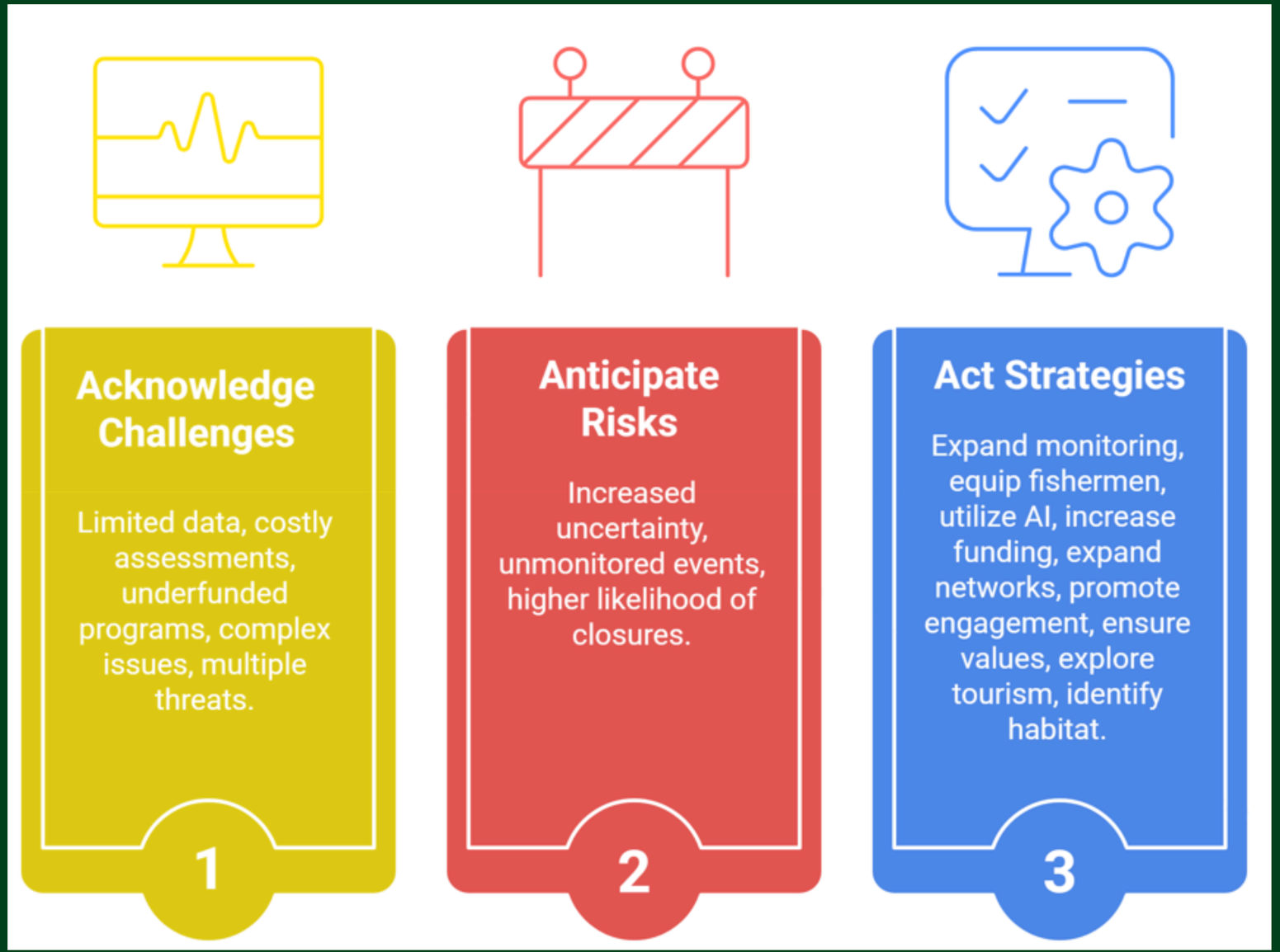


Environmental Stewardship: Challenges and Pathways Forward

The ecosystems and fisheries management that fishing communities rely upon face the duality of rapidly changing ocean conditions and underinvestment in monitoring and science. Real-time monitoring is limited and chronically underfunded, while fish stock assessments are often labor intensive and costly, and also increasingly subject to cuts. Furthermore, local ecological complexity and geohazards are compounded by increasing threats. Taken together, these factors threaten fishing communities' viability through increased uncertainty in management decisions, along with precautionary limits and closures, as well as more frequent unmonitored ecological events.

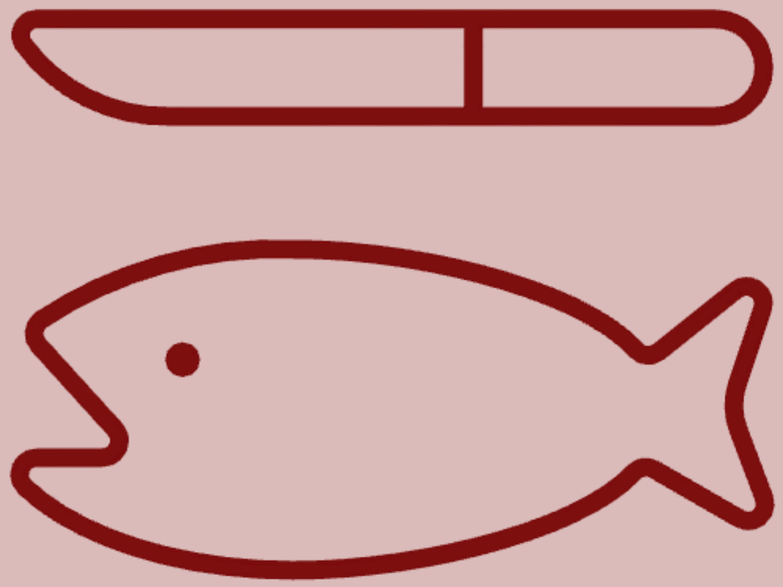
Fishing communities see a clear need to strengthen local science and monitoring to navigate growing uncertainty and sustain healthy ecosystems. Grounded in the experience of people who live and work on the water, community-driven and citizen science can keep data collection relevant, timely, and responsive to real-world conditions while engaging a broader cross-section of residents. Fishermen offer invaluable observational insight and, with the right tools and training, can collect real-time data that enhances collaborative research and supports more responsive management. At the same time, investing in emerging and AI-driven technologies can ease the workload of traditional stock assessments, making it faster and more efficient to gather, analyze, and apply critical fisheries data.

Healthy ecosystems are fundamental to sustaining productive fisheries and resilient coastal communities, underscoring the need for stewardship-centered approaches. Grounding local science and monitoring efforts in stewardship values ensures that sustainable resource uses remain central, supporting both ecological health and community well-being. Crucially, these efforts should honor Indigenous peoples as vital stewards whose deep-rooted knowledge enriches understanding and guides sustainable management. Together, these strategies weave local knowledge with innovation, supporting a more adaptive, informed, and resilient future for fishing communities.



- Expand community-based monitoring & citizen science.
- Equip fishermen for real-time data collection.
- Utilize AI tools to reduce stock assessment labor burdens.
- Increase funding for state & federal monitoring programs.
- Expand local and regional collaborative research networks linking fishermen, Tribes, agencies, and academics.
- Promote public engagement and ecosystem education.
- Ensure traditional values are captured in regional documentation of ecosystem value.
- Explore regenerative tourism opportunities.
- Identify critical fish habitat and target those areas with environmental initiatives.

Module 6:
Seafood Competitiveness



Seafood Competitiveness: Challenges and Pathways Forward

Alaska's seafood sector faces intense global competition, volatile markets, rising processing labor costs, and outdated technology, while many species and value-added products remain underdeveloped and under-marketed. Small-scale and direct marketers often lack the support, training, and regulatory guidance needed to navigate complex permitting and reporting requirements, limiting their ability to grow. If these challenges persist, Alaska risks losing domestic and international market share, leading to more frequent price swings, income uncertainty for fishermen, and greater economic instability in coastal communities, weakening long-term resilience to price shocks and broader disruptions.

Building resilient seafood economies requires diversification of markets and products, processing modernization and automation, consumer education, and expanding support for custom processing and direct marketing. Integrating emerging technologies, such as advanced freezing, packaging, and traceability systems into processing lines is essential for maintaining quality, meeting regulatory and buyer expectations, and staying competitive in evolving seafood markets. Broadening access to new markets, both domestic and international, alongside efforts to increase national seafood consumption and integrate more seafood into school lunch programs, can provide long-term stability for fishing communities. Diversifying seafood products, through exploring novel uses of underutilized species or fish parts, can help open new revenue streams.

At the local level, encouraging restaurants to feature more local seafood and ensuring tourism operations procure local seafood can foster deeper connections between consumers and the fishing way of life. Direct marketing remains a powerful tool for fishermen which necessitates stabilized logistics and expanding training and support. Meanwhile, collaborative seafood consumer education campaigns can elevate national recognition of the nutritional value, quality, and sustainability of Alaskan seafood. These campaigns, especially when paired with social media storytelling and firsthand accounts from fishermen, offer powerful ways to build trust, boost awareness, and ensure the next generation values and supports local seafood.

- Diversify markets and product forms.
- Expand custom processing capacity.
- Build consumer education campaigns and national storytelling efforts.
- Expand institutional purchasing.
- Strengthen direct marketing through training and support.
- Partner with local military (USCG) on seafood education and campaigns.
- Stabilize rural direct marketing logistics.
- Promote local seafood retail and couple to tourism initiatives.
- Modernize, diversify, and future-proof fisheries processing and working waterfront infrastructure.
- Integrate new technologies and automation into seafood processing plants.

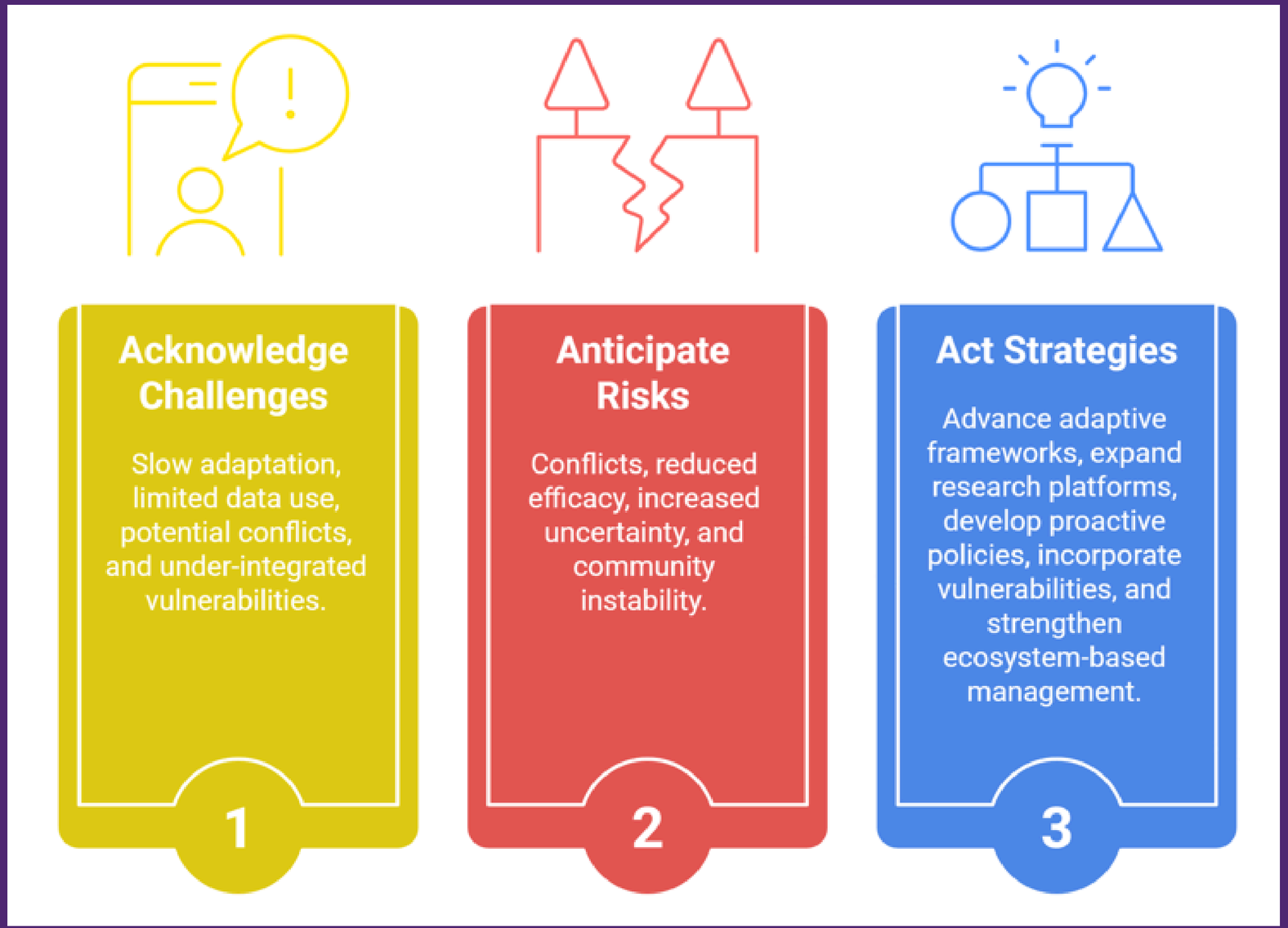
Module 7: Adaptive Fisheries Management

Adaptive Fisheries Management: Challenges and Pathways Forward

Alaska's fisheries are struggling to keep pace with current climate-driven shifts in species distribution, abundance, and fitness, while real-time data, cooperative science, and local observations are not yet fully incorporated into day-to-day management. As some species move northward and into new areas while other species shift in the timing and abundance of returns, potential conflicts are emerging between regions and fleets, and social and economic vulnerabilities in fishing communities remain under-integrated in management decisions.

If these challenges are not addressed, Alaska could see increasing tensions and disputes as user groups compete over changing fishing grounds and fisheries productivity. Management decisions may become less efficient and less effective in the face of rapid ecosystem change, adding uncertainty for fishermen and heightening community instability. In turn, this may weaken the ability of coastal communities to adapt, plan for the future, and maintain both economic and cultural ties to fisheries.

As ocean conditions change, fishing communities stress that fisheries management must be more adaptive, using flexible, science-based tools, continuous monitoring, and stakeholder input to respond to shifting ecological and social conditions. Cooperative research, real-time ocean and fisheries data, and improved technologies are central to this approach. As fish stocks move north or change in abundance, Alaskan fishermen may gain new opportunities but also face greater competition and market lags. The practical and policy pathways for preempting these conflicts need to be established in fisheries management. Adaptive management should also integrate social and economic vulnerability assessments and ecosystem-based structures to sustain both fisheries and the communities that rely on them.



- Advance adaptive, iterative management frameworks.
- Expand cooperative research and data-sharing platforms.
- Develop proactive policies for allocation as stocks shift.
- Incorporate social/economic vulnerabilities into management frameworks.
- Strengthen ecosystem-based management.

The Path to Implementation

This plan is intended as a practical, living, and customizable framework. Its modular structure allows communities, agencies, and partners to implement individual strategies immediately, align ongoing efforts, or scale investments over time.

Implementation can begin by identifying priority actions within one or more modules, convening local and regional partners to define roles, and aligning those actions with existing funding opportunities and policy processes. Early pilot projects, supported by clear cost estimates and lead partners, can build momentum, demonstrate value, and inform broader GOA-wide scaling over time.

Implementation Table

An implementation table is designed as a practical starting point for moving concepts into action. By organizing priority actions by scale, timeframe, partners, costs, and potential funding pathways, communities and project leaders can quickly assess feasibility, identify gaps, and align ideas with possible grant opportunities.

The table can be used to support early community project scoping, partner conversations, and internal planning, as well as to pre-populate core elements commonly required in grant applications (if needed to pursue), such as project description, timeline, budget range, and responsible parties. As projects advance, tables can be updated to track progress, refine cost estimates, and coordinate implementation across communities and agencies.

Solution Category

- The primary theme or focus area the solution supports (e.g., workforce development, energy transition, working waterfronts, fisheries access).

Scale

- The geographic/governance level that solution is coordinated, indicating whether implementation is local, regional, statewide, or requires federal engagement.

Timeframe

- The anticipated planning and implementation horizon for the solution.

Partners

- The organization(s) responsible for managing or administering the solution, alongside partners providing technical expertise, funding, or coordination.

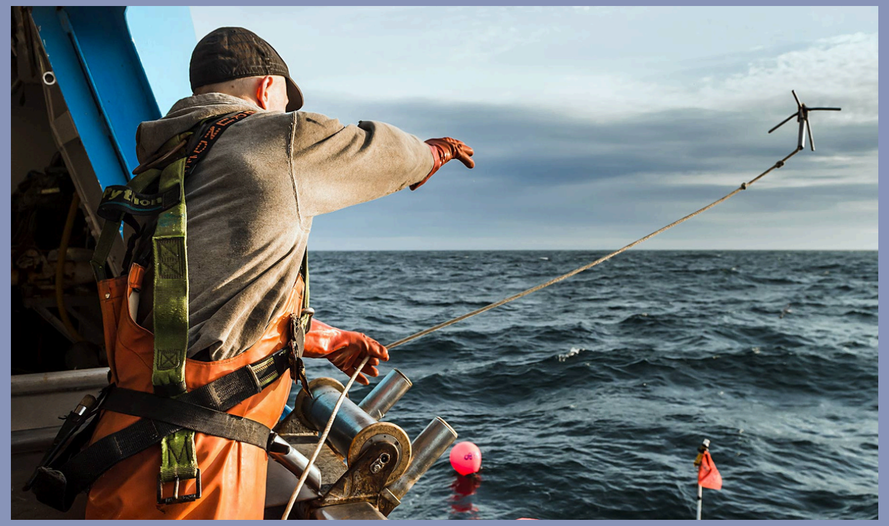
Cost Range

- An estimated cost to plan and implement the solution, intended to support early feasibility discussions and alignment with funding opportunities.

Funding Pathways

- Potential public or private funding sources that could support planning, capital investment, or implementation.

Call to Action: Advancing GOA-wide Collaboration



Fishing communities across the Gulf of Alaska are bound by shared waters, seafood markets, fisheries management systems, and ways of life. The economic, infrastructure, ecological, and workforce challenges outlined in this plan are regional in scale and cannot be addressed effectively by any single community, fleet, or sector acting alone. Coordinated action is essential. By acknowledging shared vulnerabilities, anticipating emerging risks, and acting collectively, the Gulf of Alaska region can reduce effort duplication, leverage limited resources more effectively, and strengthen long-term outcomes for fishing-dependent communities.

Moving forward will require:

- ***Shared regional commitment to collaboration & information-sharing.***
- ***Clear priorities & achievable timelines for implementation.***
- ***Cross-sector partnerships spanning communities, Tribes, industry, agencies, & researchers.***
- ***Strategic alignment of funding & policy tools to support locally driven solutions.***

With sustained coordination and investment, Gulf of Alaska fishing communities can turn today's uncertainty into opportunity to strengthen socioeconomic stability, steward healthy ecosystems, and ensure that the fishing way of life continues to thrive for generations to come.