

Barriers and enablers to climate adaptation in fisheries

INTRODUCTION

Fisheries in the Northeast US are facing a range of climate change impacts, such as shifting species distributions, changing catch portfolios, and sea level rise effects on shoreside infrastructure. There are many adaptation options and pathways available to help communities buffer some of these risks and impacts, yet certain factors may help or hinder the adaptation process itself. This document contains information from a research project that summarizes stakeholder conversations to outline some of the challenges and opportunities for implementing adaptation options in fisheries.

WHAT ARE BARRIERS AND ENABLERS IN CLIMATE ADAPTATION?

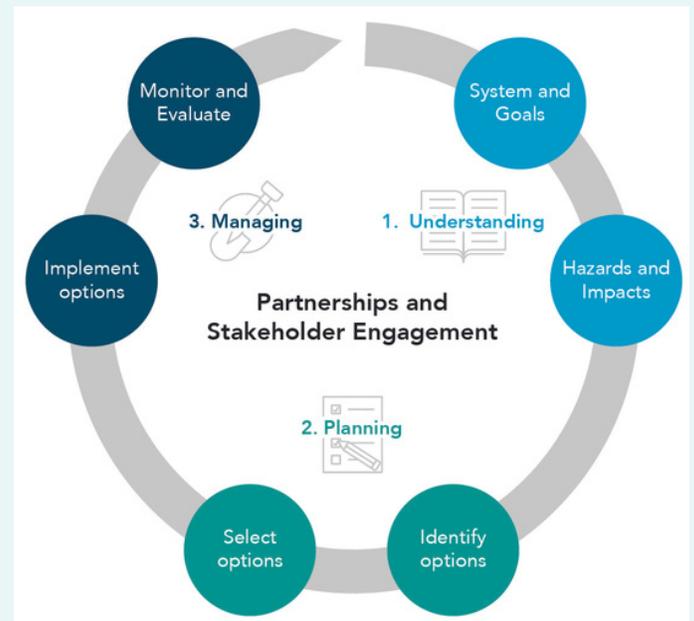
A variety of factors can help or hinder the implementation of adaptation actions. It is important to identify these factors prior to implementation to understand where to allocate resources and develop processes or methods to overcome barriers or support enablers. The IPCC defines barriers and enablers in the following ways:



Enablers of climate adaptation are factors that 'make it easier to plan and implement adaptation actions, expand adaptation options, or provide ancillary co-benefits'.



Barriers are factors that 'make it harder to plan and implement adaptation actions'.



Examining barriers and enablers forms an important part of the 'Managing' step of the adaptation cycle.

BARRIERS AND ENABLERS IN ADAPTATION

Barriers and enablers can arise from physical, biological, social, economic, financial, governance and institutional realms. This means they can stem from within the fishery system itself, as well as from broader outside influences. They can act independently of one another, or may interact in ways that create positive or negative feedbacks. Different groups of people within fishery systems may face different types of barriers and enablers in their adaptation efforts. In some cases, barriers can be overcome and enablers can be leveraged. However, some barriers may be too large or complex to address, requiring focused efforts from multiple groups or creative ways that enable adaptation to continue despite their presence. Many barriers and enablers aren't necessarily specific to climate change, but are broader issues within systems that can influence the ability (positively or negatively) to adapt to future climate impacts and uncertainties. The presence of barriers shouldn't deter or stop efforts to implement adaptation actions, but necessitates understanding how and why they may affect adaptation processes.

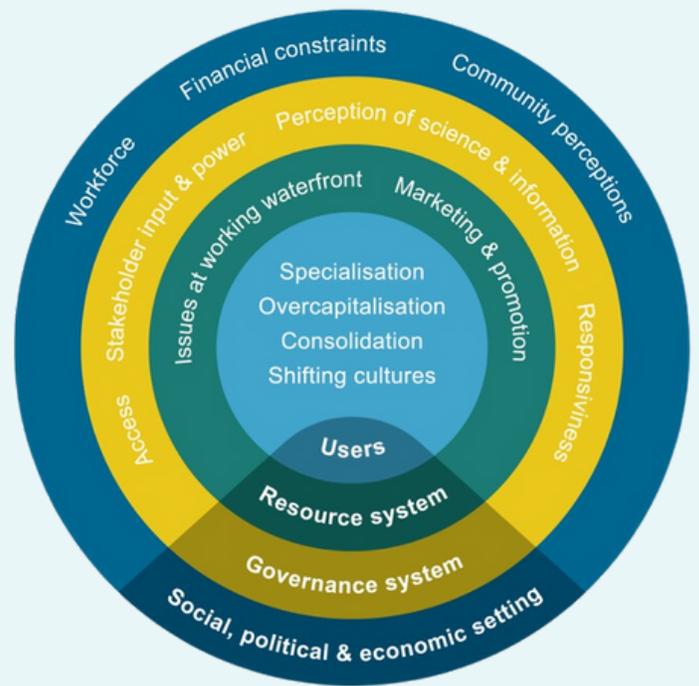
IDENTIFIED BARRIERS & ENABLERS

To help reveal some of the broad, overarching barriers and enablers fisheries and fishing communities may need to consider in adapting to climate change, this project undertook in-depth interviews and workshops with fisheries stakeholders from four Northeast US ports; Stonington, ME; Portland, ME; New Bedford, MA; and Point Judith, RI.

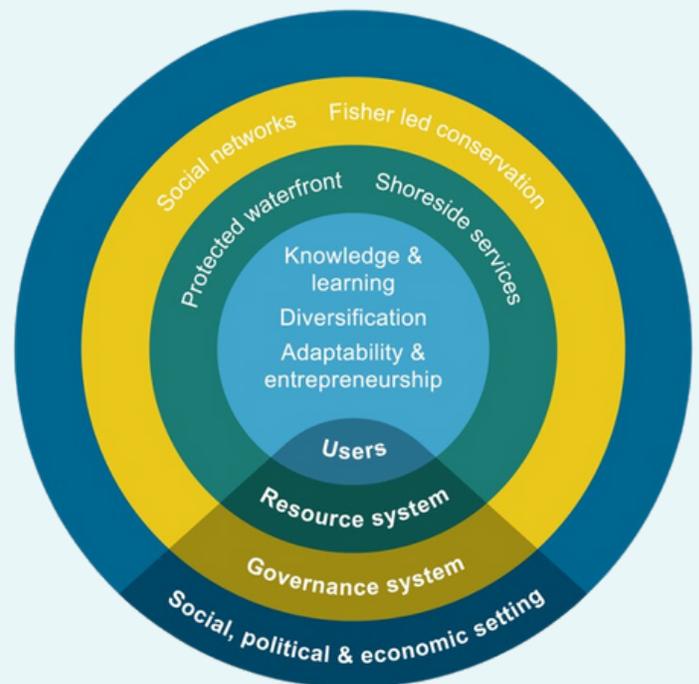
Barriers and enablers were organized into different 'sub-systems' of the fishery system including:

- 1) Users, including their traits, interactions and use of technology, information and knowledge;
- 2) Resource System, spanning physical (including infrastructure) and biological features and/or processes;
- 3) Governance System, including formal and informal organizations, institutions, relationships, networks and rules that govern action and affect adaptation; and
- 4) Social, Economic and Political Setting, encompassing external variables that influence adaptation within the fishery but are difficult to change from within the system itself (Leith et al., 2014).

Further details of this work are outlined in a published paper (Maltby et al., 2023). The list we provide is not exhaustive and there will be other examples of barriers and enablers depending on each fishery, community and its institutional and regulatory context. Examining current literature and information as well as working with different stakeholders can help to identify these factors within your own community or fishery.



BARRIERS



ENABLERS

Barriers and enablers identified in our research, explained in more detail overleaf.

Barriers to users

Business consolidation

- Increasing consolidation of vessels, fishing rights and shoreside services among fishing businesses.

Fisheries specialization and dependence

- Certain fisheries have become increasingly specialized, resulting in high dependence of fishers and fishing communities on particular species.

Overcapitalization

- Increasing specialization has resulted in large financial investments by some fishers into their operations, creating a situation in which companies or individuals are financially constrained by debt and equity on their assets.

Shifting culture among fishers

- A perceived shifting mindset in some fisheries of a stronger focus on short-term personal gains versus long-term planning and sustainability.

Barriers in the resource system

Issues at the working waterfront

- Loss of shoreside services and infrastructure at some ports constrains peoples' ability to diversify into other fisheries, while long-term continuity of the fishery and access is also threatened.

Marketing and promotion of species

- Issues include difficulty in accessing markets; a lack of established markets for new or emerging species; and a lack of consumer demand for new fish species. These conditions hinder the sale of certain species that may be increasing with climate change, thereby creating disincentives to catch them. Food health and safety regulations can constrain opportunities for harvesters to sell directly to consumers.

Barriers in the governance system

Access to alternative or emerging fisheries

- Access issues affect the ability of harvesters to participate in new fisheries. Access can be constrained by: 1) high costs of permits, 2) lack of available permits at commercially viable volumes for many 'new' or emerging species, 3) regulatory processes associated with obtaining quota or permits.

Perceptions of science and information

- Information used in management decisions does not represent or account for all the factors influencing a fishery, including environmental and socioeconomic conditions. In addition, observations, knowledge, and experiences of fishers are not incorporated into scientific processes that produce management advice.

Responsiveness of management

- Management decisions often lag fishers' experiences due to time lags between data collection and management decisions. In other instances, management responses to apparent declines in a stock can require rapid adjustments in harvest levels that are challenging for fishers to plan for and adapt to in time to buffer economic impacts.

Stakeholder input and power imbalances

- Different types of stakeholders do not always have equal voices in or influence on decisions in the fishery management or community planning arenas. In some cases, engagement processes are not designed to ensure stakeholder input is considered in meaningful ways in decisions, thereby reducing buy-in to resulting actions.

Barriers in the social, political & economic setting

Workforce

- Factors such as aging and retirement of current fishers, appeal of other types of jobs for younger fishers and crew, and general societal issues that affect hiring influence recruitment and retention of fishing industry participants.

Wider community perceptions

- Mindsets of community members outside of fisheries can influence onshore and offshore development in ways that affect preservation of working waterfronts, determine the accessibility of livelihood diversification options such as aquaculture, and facilitate or constrain growth in other ocean uses (e.g., wind farms).

Financial costs

- Fishing and shoreside investments (e.g., facilities) are financially challenging and often involve high financial risk. This can mean diversifying into other fisheries or non-fishing livelihoods is financially difficult or even unviable for many individuals.

Enablers for users

Adaptability

- Fishers and fishing businesses have always had to adjust and adapt to a dynamic marine ecosystem, meaning they have some of the experience, skills and ability needed to overcome or buffer future challenges.

Diversification out of the industry

- Alternative incomes or other employment options outside of fishing—such as aquaculture, other marine industries, or non-marine jobs or investments—provide options to build assets or confer flexibility needed to adapt to climate impacts in fisheries.

Knowledge and learning

- Knowledge and learning help inform people's decision making, business ideas or fishing practices and also empower people to advocate for their needs and interests with decision makers.

Enablers in the resource system

Prioritizing shoreside services

- Shoreside infrastructure, facilities and services play a vital role in sustaining fisheries, enabling fishers to diversify into other fisheries and providing access to markets.

Protected working waterfronts

- Protecting working waterfronts from non-fishery related developments through historical or current regulations ensures ongoing access to important facilities and infrastructure for the fishing industry.

Enablers in the governance system

Fishermen-led conservation efforts

- Fishermen-led conservation efforts and involvement in fishery management processes can support the health of stocks and adoption of management measures that are more aligned with observations, experiences, and needs of fishery participants.

Social networks

- Social networks among different actors within or associated with fisheries systems can enable the exchange of information, skills and resources, and provide help and assistance in decision making or in times of change/difficulty.

➔ BEYOND IMPLEMENTATION OF ADAPTATION ACTIONS

Once an action has been implemented, it is important to monitor and evaluate how effectively it is meeting the original goals and performing under the changing environment. Monitoring and evaluation involves collecting information to track the progress of particular actions, assess the effectiveness and impact of adaptation actions, and evaluate whether objectives are being achieved. This process may include the development of qualitative or quantitative indicators to help measure progress, as well as collecting stakeholder feedback and input. Like the adaptation process, monitoring and evaluation steps are continuous and iterative. They rely on having specific measurable objectives to track progress, but objectives may also be revisited as the adaptation process proceeds and if priorities and values change due to changing ecological, social, economic and political conditions. Stakeholder engagement throughout the monitoring and evaluation process is critical for tracking progress and adjusting strategies as needed based on findings of the evaluation.