

Collaborative Watershed Governance:
A Case Study of The New York-New Jersey Harbor and Estuary Program

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Executive Summary

This study seeks to evaluate the effectiveness of collaborative mechanisms within the New York-New Jersey Harbor and Estuary Program (HEP). Fundamentally, collaborative governance organizations seek to solve complicated problems through stakeholder engagement and social capital rather than through hierarchical authority. This study evaluates HEP's collaborative governance regime (CGR) to provide insights on the current strengths and weaknesses of the cooperative dynamics. It provides three focus strategies for HEP to leverage to achieve its mission and goals within its unique context:

- 1. Increase partnerships**
- 2. Improve convening opportunities**
- 3. Enhance communications**

The New York-New Jersey estuary sits in one of the most densely populated and developed regions in the United States. After facing decades of environmental degradation and conflicts between stakeholders, HEP was established to serve as the collaborative organization for addressing complex issues facing the estuary to meet the requirements of the Clean Water Act. HEP continues to make progress by convening stakeholders, generating guiding documents, and facilitating increased understanding about the estuary.

Collaborative governance regimes have the potential to effectively address issues that traditional governance mechanisms have been unable to meet. However, inadequate collaborative dynamics can stifle progress towards the collaboration's goals. This study seeks to determine the organizational factors that can lead to positive outcomes at HEP through sustainable and meaningful cycles of engagement.

The study applies Emerson et al.'s "An Integrative Framework for Collaborative Governance" (2012) to analyze participant interviews and selected internal and publicly available documents from HEP. After collating the results from this process and analyzing them through a Strengths, Weaknesses, Opportunities, and Threats matrix, three focus strategies become apparent for HEP to consider in improving engagement and overall organizational effectiveness.

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I. Introduction

Collaborative governance has become an increasingly used method of trying to resolve complicated problems and support equitable planning of common use resources across sectors, including housing, transportation, and the environment. Fundamentally, collaborative management is less hierarchical and offer a more inclusive and participatory form of decision making. Collaborative governance pivots from more conventional regulatory structures towards governance models that use networks relying on social capital and shared purpose to achieve outcomes (Kim, 2016; Moore & Koontz, 2003). Success for collaborative organizations depends on the building of social capital for achieving results.

This paper explores how one model of collaborative governance, HEP, is organized to approach challenges within its watershed. The report provides insights into the internal dynamics that determine HEP's ability to build social capital over time and offers recommendations for improving the collaboration to support future successes.

A. The Rise and Role of Collaborative Watershed Governance

Collaborative watershed management has emerged as a tool to address environmental concerns on a landscape scale, incorporating locally developed approaches and managing competing interests within the watershed, including matters related to the environment, economy, and social well-being. Often these organizations lack the legal authority to enforce policies but instead provide a new suite of tools to address watershed issues. For this report, several crucial characteristics define collaborative approaches:

1. Transcend political boundaries acknowledging that watersheds are multi-jurisdictional
2. Actively comprise a wide range of stakeholders
3. Provides direct stakeholder negotiations to build social capital
4. Seeks to achieve win-win solutions addressing environmental, social, and economic concerns without having to resort to litigation
5. Generates information to create a shared understanding among stakeholders (Benson et al., 2013)

Fundamentally, the premise of collaborative management is to reach successful outcomes for common-pool water resources, where the primary obstacle to successful outcomes is governance. CGRs seek to address the governance issue by focusing on the development of social capital (Imperial, 2005; Lubell, 2004). Governance structures need to successfully engage stakeholders through convening and information sharing to support the development of social capital required to take action to mitigate and resolve historical drivers of conflict. Structures must be able to reiterate over time to sustain engagement in the collaborative dynamics until resolving the targeted issues the organization is seeking to address.

Benefits of effective collaborations include reduced transaction costs, improved response capacity, maintained flexibility to changing conditions, arrival at win-win resolutions, reduced redundancy among participants, efficient pooling of limited resources (staff, equipment, and funding), and targeted application of organizational and individual strengths (Imperial, 2005; Knieper & Pahl-Wostl, 2016). One of the most significant impacts that collaborative governance can have is the integration of interdisciplinary knowledge and experience, which can bring to light previously overlooked issues and incorporate solutions that may not have been previously considered (Hedelin, 2007; Lubell, 2004).

In an ideal scenario, CGRs facilitate growing stakeholder involvement by helping to organize various parties towards achieving shared goals for the watershed. Long-term sustained commitment and collaborative action can result from a CGR that effectively facilitates collaborative dynamics of principled engagement, shared motivation, and capacity for joint action. When successful, the CGR creates virtuous cycles wherein participants have a clear sense of purpose and are motivated to continue with the collaboration because they see tangible achievements (Emerson et al., 2012).

Failure to create effective collaborative dynamics can lead to vicious cycles where participants lose interest due to inertia and distrust. Negative impacts leading to vicious cycles include failure to equitably include the full spectrum of affected stakeholders, inability to address issues through either a lack of authority or failure to reach consensus, participation failing to capture the strengths of the collaborators, or failure to provide a space for the presentation of grievances. These adverse outcomes can lead to vicious cycles of engagement where participants

cease their involvement because they do not see the collaboration as useful or worthy of continued engagement.

One of the most critical and challenging aspects of collaborative watershed partnerships is their longevity. Changes in leadership, political interest, or governance structure can cause hard-won social capital to evaporate (Imperial, 2005; Knieper & Pahl-Wostl, 2016; Kossmann et al., 2016). It is imperative that these partnerships not only work to achieve stakeholder engagement and targeted goals but also to ensure governance structures can withstand the test of time to address the complex and potentially intractable problems of watershed management (Joice, 2010). Building social capital takes time and care. Studies have demonstrated that social capital is essential to increase community resiliency in the face of changing conditions but dissipates under poor governance (Knieper & Pahl-Wostl, 2016).

B. History of Watershed Management in the United States

Watershed management in the United States has evolved significantly over the past century leading to the rise of collaborative governance organizations. Changes in approaches in watershed management have gone from nearly non-existent to heavily centralized to exploring newer, more collaborative approaches in addressing watershed issues. Each era demonstrates a specific approach to managing water resources while also presenting valuable critique leading to changes in the governance structures. The most recent era of watershed management has sought to develop CGRs, which, despite their inability to enact policy or enforce regulations, bring various stakeholders together in order to cultivate long-term engagement and positive impact on the watershed.

During the New Deal Era (1925-1964), the Federal government consolidated the management of watersheds under increasingly singular authorities such as the Bureau of Reclamation and the Tennessee Valley Authority. The intent was that to manage projects on such a scale required extensive interstate watershed planning, leaving the federal government as the best-equipped authority to coordinate such efforts. Throughout the period, projects largely overlooked considerations outside of their mandates for efficiency, ignoring issues of resource protection and water quality outside of public lands and subjecting those excluded resources to political influence at all levels (Sabatier et al., 2005).

The next era of watershed management was a centralized Environmental Era. This period from 1965-1986 was marked by an emphasis on the increased importance of environmental values compared to economic ones and a growing distrust in federal administration combined with a concern that local levels of governance were too vulnerable to economic interests. Several environmental disasters in this period informed public perceptions about the environment, including beach closures, fish die-offs, the Cuyahoga River fire, the Santa Barbara oil spill, and Love Canal (Sabatier et al., 2005). The result was an increase in resources from the federal government to support state and local efforts. Calls from environmental advocates for increased inclusion of citizens and environmental groups to balance out the perceived outsized impact of special economic interests, and improved environmental legislation were also growing too loud to ignore (Benson et al., 2013; Sabatier et al., 2005).

From 1965 through 1972, the federal government enacted a series of legislation addressing issues of watershed management. Congress created the Environmental Protection Agency (EPA) to help manage issues related to the degradation and pollution of resources. The EPA also received the authority to implement actions to meet federally defined water quality standards newly established through the Clean Water Act (CWA) (*FEDERAL WATER POLLUTION CONTROL ACT*, 2002). Concurrently, Congress implemented funding mechanisms to improve state and local capacity. The National Environmental Policy Act (NEPA) was approved, providing greater transparency on environmental decision-making for project development and sought to improve opportunities for public comment and action (*NEPA | National Environmental Policy Act—Laws*, n.d.).

In the 1980s, there was a growing sense among stakeholders that the previous federal command and control approach left more to be desired in managing watersheds, especially in the management of complex or “wicked” problems (Lubell et al., 2002; Sabatier et al., 2005). Water resource management is an issue of socio-ecological governance seeking to address a “wicked problem” for which the terms and solutions are difficult to define and implement (Churchman, 1967; Patterson et al., 2013).

The EPA, acknowledging the limitations of a sometimes distant federal authority to address these local issues and speaking to concerns that these issues should encompass a holistic approach (environmental, social, and economic), decided that management actions should occur

at the state and local levels. The belief was that watershed partnerships between government and private stakeholders at these more local levels were better suited to address the complex dynamics of the watershed and meet the goals of the CWA. The EPA would approve management plans set forth by these local watershed organizations (Sabatier et al., 2005). During this time, CGRs became a solution to the shortcomings of the previous eras.

C. National Estuary Program Overview

As part of the rise and focus on CGRs to address watershed issues, Congress authorized the creation of the National Estuary Program (NEP) in 1987 through section 320 of the CWA amendments. Based on successful models of the Great Lakes and Chesapeake Bay programs, NEPs are charged with conducting long-term planning and management to address complex problems facing estuaries (*Community-Based Watershed Management: Lessons from the National Estuary Program*", 2007).

NEP's serve to encourage collaboration among various stakeholder groups, including federal, state, local government, NGOs, and citizens (Mandarano, 2008). Efforts resulting from NEPs should reflect four cornerstones of the program, including focusing on watersheds as the primary management unit, science based decision-making, collaborative approaches to problem-solving, and public inclusion (*Community-Based Watershed Management: Lessons from the National Estuary Program*", 2007). To date, there are 28 such programs throughout the United States, including Puerto Rico.

NEPs are responsible for creating and using management conferences composed of relevant stakeholder groups that may either volunteer or be asked to participate. Management conferences initially guided by the EPA include representatives of relevant stakeholder groups who may participate in various committees hosted by the NEP. One of the significant outcomes of these conferences is the development of a Comprehensive Conservation and Management Plan (CCMP), which is developed and implemented by NEP partners (Imperial et al., 1993). As part of the CCMP, the management conference is charged with defining goals, identifying causes of environmental problems, and designating actions for the protection and restoration of the resource. The process for the development of the CCMP requires stakeholder involvement and consensus to update the original framework with new learning and challenges (*Community-Based Watershed Management: Lessons from the National Estuary Program*", 2007).

II. New York-New Jersey Harbor and Estuary Program

The New York-New Jersey Harbor and Estuary Program (HEP) exists as the NEP for one of the largest and most densely populated metropolitan areas in the country. HEP was founded in 1988 at the behest of the governors for New York and New Jersey, and initially situated in the EPA's regional New York offices. In 2014, HEP moved to the Hudson River Foundation (HRF), an NGO focused on the river (*Structure and Operating Procedures for the New York-New Jersey Harbor and Estuary Program*, 2016).

HEP's focus area incorporates 250 square miles of open water and nearly 1600 miles of shoreline from the Mario Cuomo Bridge between Tarrytown and Nyack, NY, to Sandy Hook, NJ (Figure 1). Four major rivers in the region converge in the harbor estuary, including the Hudson, Passaic, Hackensack, and Raritan. The waters within these boundaries are a public resource for more than 14 million people, with nearly five million people living within ten miles from the shoreline (Pirani et al., 2018).

HEP's watershed boundaries extend beyond the core focus area to include the entirety of each river's watershed. Although HEP collaborates with organizations outside of its core area to address the interconnected nature of concerns affecting the estuary, the primary focus of its efforts is to address issues within the core area. Overlapping watershed programs include the New York State Hudson River Estuary Program (non-NEP) and the Long Island Sound Study (NEP). Adjacent NEPs outside of the watershed boundaries include the Barnegat Bay Partnership and the Partnership for the Delaware Estuary (*National Estuary Program Study Areas*, n.d.). HEP collaborates with these other programs but serves as the leading watershed convener for the saline and urbanized harbor estuary.

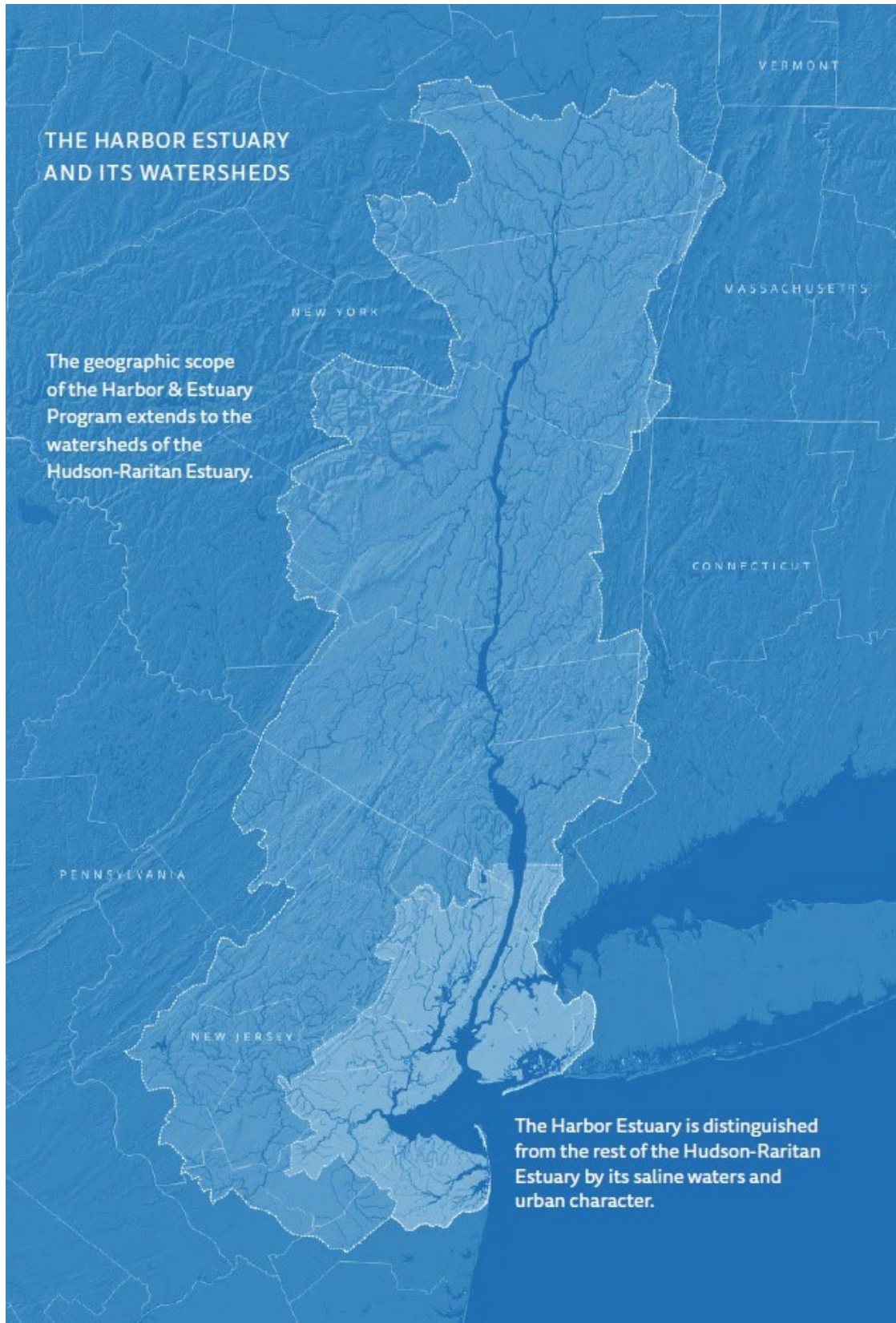


Figure 1 Program Boundary Map for the NY-NJ Harbor and Estuary Program (Hudson River Foundation, 2019)

A. Environmental Focus Areas of the CCMP

HEP's first CCMP in 1996, highlighted several critical environmental problems plaguing the estuary, including low dissolved oxygen, fecal pathogens, toxic metals, and declining populations of aquatic organisms. The CCMP further identified ecosystem health impairments and their effects on wildlife as concerns. For the most part, the same problems in 1996 continue to face the harbor today though updates to the CCMP reflect new information and approaches. Many of these initial conditions had been the result of point source pollution from processes such as sewage and industrial waste discharges and development in the watershed. Actions taken after the implementation of the CWA reduced many of the point sources.

Persistent challenges remained from non-point source pollutants, including wastewater discharges and legacy contaminants. The continued impact of these pollutants and legacy development along the watershed threatened human health and wellbeing and the goals of the CWA of achieving “fishable, swimmable water wherever possible” (*Final Comprehensive Conservation and Management Plan*, 1996).

HEP's most recent iteration of the CCMP (2017-2022) reflects an EPA request to NEPs for a significant revision. HEP determined that creating several smaller documents would make the content more relevant to different audiences and direct attention to specific focal areas of the CCMP. The current iteration contains five separate documents, including the Action Agenda, State of The Estuary, Climate Change and Its Impact, 2018 Environmental Monitoring Plan, and Options for Funding Program Priorities. The current CCMP still requires a communications plan and case statement, which are both under development as of February 2020 (Pirani et al., 2018; R. Pirani, personal communication, February 8, 2020). Together these documents work to address HEP's five core goals for 2017-2022 of:

1. **Water Quality**- “Reduce the sources of pollution so that the waters of the estuary will meet the fishable/swimmable goal of the CWA, where attainable.” Significant pollutants and their sources include wastewater discharges from treatment plants, residual industrial contamination, combined sewer overflows, and stormwater discharges.
2. **Habitat and Ecological Health**- “Protect and restore the vital habitat, ecological function, and biodiversity that provides society with renewed and increased benefits.”

Many of these ecological resources suffer from years of fragmentation, development, historical filling, overuse, and legacy toxic contamination.

3. **Public Access and Stewardship-** “Improve public access to the waters of the estuary and the quality of experience at public spaces along the waterfront.” Drivers for adverse conditions include poor water quality preventing healthy human contact, private development obstructing physical access, and limited public infrastructure to facilitate greater access to the resource.
4. **Port and Maritime-** “Support port and associated maritime operations so that they are both economically and ecologically viable.” The main concerns from this sector include impacts from channel dredging and marine discharges.
5. **Community Engagement-** “Foster community understanding and involvement in decisions about the estuary.” Key components include increasing and improving citizen science, supporting Urban Waters Federal Partnerships, and enhancing overall community understanding about the estuary (Pirani et al., 2018).

The CCMP revision process included ongoing conversations with government, utility, civic, academic partners, and the public, organized through the policy and management committees. An additional 25 public meetings convening more than 500 people organized by 30 civic partners contributed to the creation of the most recent plan (Pirani et al., 2018).

i. Water Quality

HEP identifies water quality as the cornerstone of its efforts to meet the CWA’s goals. For this goal, HEP works to convene stakeholders through workgroups and workshops to promote communication channels across the estuary. HEP further works to direct projects and research to understand better the impact of a suite of pollutants on the estuary, including pathogens, nutrients, toxins, and floatable debris.

Some of the most significant sources of water quality impairment come from wastewater treatment plants, residual industrial contamination, and combined sewer overflows. Various municipalities impact each of these issues throughout the estuary’s watershed. On the New Jersey side of the estuary, interviews revealed that several municipalities have agreements to pump their wastewater to a single treatment plant downstream. Addressing these issues involves intricate coordination across levels of government and spanning multiple jurisdictions.

Furthermore, these issues face uncertainty from climate change and new information. Limited swimming opportunities and impaired fish communities due to water quality challenge the realization of these goals. HEP has established five objectives to work towards in its most current plan. They include:

1. Improve coordination and begin to establish consensus amongst regulatory agencies on science, standards, and design conditions in shared waters.
2. Accelerate the creation, adoption, and implementation of Long-Term Control Plans and MS4 permits.
3. Address monitoring gaps and lack of information for critical locations, parameters, and state and local track-down programs.
4. Share water quality information in a clear and easy to understand way with the public, focusing on uses and potential public health risks.
5. Assess the potential impacts of climate change on water quality (Pirani et al., 2018).

ii. Habitat and Ecological Health

In 1996, HEP identified the loss of natural habitat as a significant concern. The CCMP highlighted that nearly 75% of historical wetlands had disappeared, and shallow water habitat in many parts of the region had been filled in to create land. Decades of development, shoreline alterations, channel dredging, and upland development had reduced habitat suitability (*Final Comprehensive Conservation and Management Plan*, 1996).

In the current Action Agenda, HEP further defines 12 target ecosystem characteristics (TEC) and 13 actions it intends to take between 2017-2022 to implement the 2016 Hudson-Raritan Estuary Comprehensive Restoration Plan. The plan is a collaborative development between the U.S. Army Corps of Engineers, the NY-NJ Port Authority, and HEP (US Army Corps of Engineers et al., 2016). HEP seeks to advance restoration in the face of competing land uses in an ecologically significant estuary in a densely developed metropolis. Major challenges facing the realization of this goal include insufficient areas of existing habitat and substantial degradation of habitat for many of the TECs. The Action Agenda identifies four objectives to meet their goals:

1. Make progress towards restoring the Estuary's target ecosystem characteristics.
2. Improve the quality and likely success of habitat restoration.

3. Support habitat and restoration monitoring and the utility of monitoring data.
4. Advance an understanding and incorporation of climate change impacts in habitat management and restoration (Pirani et al., 2018).

iii. Public Access and Stewardship

The harbor estuary represents one of the most significant public resources in the region. In addition to providing greater recreational access and improved economic opportunity, HEP identifies access as essential to cultivating increased stewardship of harbor. HEP seeks to create and enhance waterfront access so that all residents may be within a short walk or public transit trip to public waterfront areas. HEP's Action Agenda, explicitly recognizes that for maritime and security, some sections of the harbor must be left inaccessible to public access. Challenges facing the realization of these goals include limited public access and capacity of stewardship organizations. The Action Agenda identifies three objectives to meet their goals:

1. Increase public access and new possibilities for contact recreation, particularly in areas of higher need.
2. Improve stewardship and programming at existing public access sites, particularly in areas of highest need.
3. Promote and expand awareness of public access opportunities and issues (Pirani et al., 2018).

iv. Port and Maritime

The New York/New Jersey harbor is home to the largest port on the Atlantic seaboard. Cargo transfers valued at \$200 billion annually provide approximately 190,000 local jobs. Sediment deposition, dredging, and commercial ship traffic, complicated by past contamination in sediments, present intricate issues to the health of the harbor estuary. Latently contaminated sediment increases the costs and concerns of dredging activities while information gaps on the impact of dredging on wildlife make arriving at solutions, especially challenging. The Action Agenda identifies two objectives in this area:

1. Improve understanding and management implications of changing sediment contamination in the Estuary, including the timeline for achieving historic area remediation site (HARS) suitable sediments in the navigation channels.

2. Help design and implement port and maritime improvement projects that are more environmentally friendly (Pirani et al., 2018).

v. Community Engagement

HEP identifies the importance of community engagement as part of realizing their goals for the harbor estuary. Recognizing the incredible importance of the harbor estuary as a public resource and the many competing uses for the resource, HEP expresses that successful public participation will result from informed stakeholders. Science literacy and awareness of government agencies' operations support citizen and NGO engagement. To support this, HEP is developing a communications strategy to disseminate information to relevant stakeholders more effectively.

Partner groups already engaged in environmental education, outreach, and stewardship are charged with building bridges with communities to deliver an increased understanding of challenges and opportunities in the harbor estuary. HEP also seeks to improve citizen science capacity and collaborative participation in resource management decisions to bolster community engagement further. Challenges facing the realization of the goals of the Action Agenda include limited public understanding of the harbor ecosystem and engagement in civic organizations. The action agenda identifies three objectives in this area:

1. Increase and improve the quality of citizen science efforts.
2. Support Urban Waters Federal Partnerships in targeted waterways.
3. Enhance public understanding of the Harbor Estuary (Pirani et al., 2018)

HEPs focus areas identify central driving issues for the organization to address. Most importantly is the organizational structure and ability to effectively engage in collaboration dynamics that will create the conditions for fruitful collaboration. Each focus area provides clear goals and objectives to achieve over the lifetime of the CCMP through the work of various committees. It is essential to establish the structure and dynamics of the whole organization to identify where strengths and deficiencies may exist to improve the potential for effective outcomes.

B. Organizational Structure

HEP's organizational structure reflects a typical design encouraged in EPA's recommendations for developing a management conference. Statutory requirements for assembling the conference require a minimum representation of each state located in the estuary, interstate or regional agencies that have jurisdiction over the estuary, interested federal agencies, local governments, affected industries, public and private educational institutions, and the general public as determined appropriate (33 U.S. Code § 1330—National estuary program, n.d.). To a large extent, HEP has met all these requirements. Beyond simple inclusion, though, there are layers of hierarchy determining the extent and role each of these groups plays within the organization detailed below:

i. Management Conference

Following the approval of the first CCMP in 1997, HEP established a framework for its management conference. The conference consists of four committees and embedded workgroups, including policy, management, citizens advisory, and science and technical advisory (Figure 2). Structure and operating procedure revisions occurred in 2016. The current management conference is illustrated below.

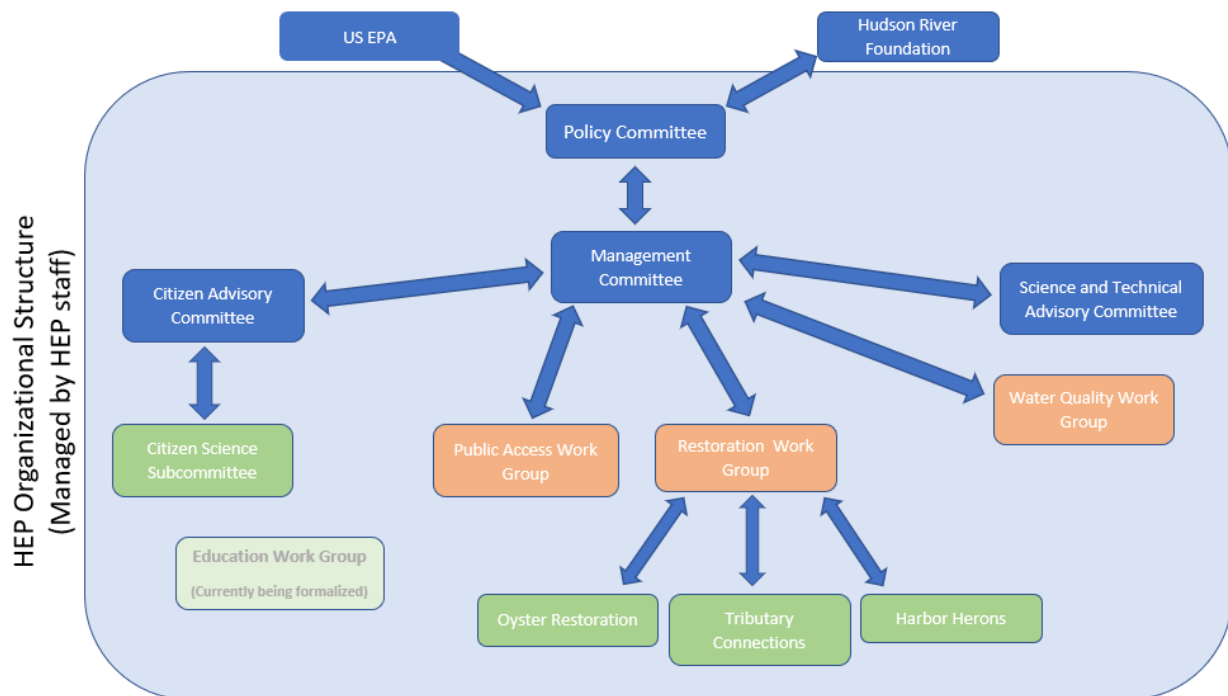


Figure 2 HEP Management Conference

ii. Current Participatory Framework at HEP

HEP provides opportunities for all stakeholder groups to participate in the management conference structure. The hierarchy of decision making within HEP is as follows:

Policy Committee: Committee membership consists of executive-level positions at relevant federal, state, and local governments along with representatives of the CAC and STAC. The committee's responsibilities include approval of HEP goals, objectives, short-term priorities, and overall direction as established in the CCMP/Action Agenda. As part of their responsibilities, the policy committee reviews and approves management committee proposals, funding allotments, operating procedures, program directorship, and membership into the policy and management committees. Furthermore, and perhaps most significantly, the policy committee is responsible for acting on their agencies' behalf to cultivate *substantial support* for the CCMP and Action Plan. The operating procedures allow for the member or designated alternates to attend meetings but require representation at meetings either bi-annually or quarterly. The meeting frequency has been at best bi-annually though some years even less frequent.

Management Committee: Committee membership consists of representatives from agencies and groups in the policy committee (though not explicitly their leadership), additional agencies, and the chairs of each committee and workgroup. Committee expectations are to take an active role in implementing the Policy Committee's agenda through developing and implementing management strategies. The committee's responsibilities include reviewing work plans, budgets, and providing resource allocation recommendations to realize the goals set by the CCMP/Action Agenda. The committee meets at least quarterly with expected active engagement between official meetings.

Citizens Advisory Committee (CAC): The CAC membership is open to the general public and mainly consists of representatives of NGOs working on issues related to the harbor estuary. Two co-chairs, one from New York and the other from New Jersey, are elected by the CAC to represent them. The two primary responsibilities for the CAC are to support the management committee in developing and implementing the CCMP/Action Agenda and promote outreach and public awareness of HEP's goals and identified harbor concerns. Within the CAC exists the Citizen Science Subcommittee, which works to foster citizen participation in relevant research development and data gathering.

Science and Technical Advisory Committee (STAC): STAC membership is more fluid in its composition than other committees. Participation occurs on an invitation basis; however, the management committee selects two co-chairs. Responsibilities for the STAC are to ensure adequate incorporation of current and independent/non-agency scientists into planning and implementation activities at HEP. The co-chairs can convene meetings, which can also occur at the behest of the management and policy committees. However, in practice, the members are asked for input by Program staff for specific projects or publications, such as the State of Estuary report. The most common method of communication is through emails and meeting around specific emerging issues.

Restoration Work Group (RWG): The RWG assists the Management Committee by focusing specifically on restoration activities within the CCMP/Action Agenda. Membership is closed and consists primarily of large-scale agency and NGO actors whose work deals with restoration within the estuary. The group has by-laws that are approved by the management committee. Within the RWG exist three subcommittees, including Harbor Herons, Tributary Connections, and Oyster Restoration. The subcommittees consist of experts and groups dedicated to advancing the restoration of their respective focus areas.

Water Quality Work Group (WQWG): The WQWG structure and membership are like the RWG, except the group focuses specifically on water quality within the harbor. Reconvened in 2013 at the behest of the management committee, the group convenes invested agency, utility, and NGO stakeholders in understanding and addressing complex issues of water quality in the estuary and between various municipalities towards achieving the goals of the CWA. The group has by-laws that are approved by the management committee.

Public Access Work Group (PAWG): Like the other workgroups, the PAWG brings together agency and nonprofit experts on public access and stewardship. However, the group has not met as regularly over the past four years, having convened mostly around specific projects and public planning efforts. It does not have formal by-laws.

Program Staff: HEP program staff are based out of the HRF offices, which agreed to comply with the terms and conditions of the EPA. HRF responsibilities include providing office space, allocating funding, and securing additional support. The HEP staff consists of five full-time professionals tasked with running HEP. Their responsibilities range from administration,

committee oversight, coordination, and communicating progress on the CCMP. Additional responsibilities include coordinating efforts and partnerships to achieve CCMP goals (R. Pirani, personal communication, February 8, 2020; *Structure and Operating Procedures for the New York-New Jersey Harbor and Estuary Program*, 2016).

III. Evaluative Methods and Study Design

A. Methods

Twelve semi-structured qualitative interviews totaling thirteen hours were conducted with the core staff at HEP and representative members from each of HEP's five central committees, including policy, management, STAC, CAC, and the RWG using this framework as a guide. Overlapping roles with these representatives included two additional workgroups of the WQWG and the Citizen Science Subcommittee. Anonymity for interviewees provided greater candor in responses.

Additional information for the analysis was obtained through detailed reviews of HEP's foundational documents, publications, and direct observations at several HEP events including CAC meetings, Citizen Science Subcommittee planning, the annual HEP conference, and events where HEP staff were in attendance such as New York City's Waterfront Planning and the NYC Department of Environmental Protection's Long Term Control Plan meetings.

Results from the interviews were coded using NVivo. Response coding was determined by the components identified using the Emerson framework, including system context, drivers, collaborative dynamics, and outcomes and associated components for evaluative purposes. The proceeding results are based on existing HEP documents, communication with the HEP staff, and interview responses. If the Emerson framework represents ideal and necessary components for successful collaborative governance, then the following analysis highlights areas of success and vulnerability towards ensuring virtuous cycles of governance.

B. Analysis

Using Emerson's framework, McKinsey's 7-S framework for organizational alignment was applied to create a framework for evaluating HEP's CGR. The McKinsey 7-S framework is a tool to assess internal organizational coordination and effectiveness (Bradach, 1996). The framework has been used across sectors to highlight seven critical areas of an organization that should be aligned and integrated within the organization in order to realize optimal effectiveness. Using this hybrid approach, an analysis of HEP's organizational effectiveness that utilizes both best practices for CGRs as well as organizational design generally provides more precise insights for strengths, weaknesses, opportunities, and threats (SWOT) moving forward.

IV. Strengths, Weaknesses, Opportunities, and Threats Analysis

SWOT analysis is a commonly used strategic planning tool to identify internal and external factors affecting the mission and strategy of an organization. The analysis helps to identify and focus choices facing organizational leadership through structured problem solving by aligning external trends (opportunities and threats) with internal structures and processes (strengths and weaknesses). The framework creates a matrix through which targeted strategies can be developed (Kearns, 1992). Strategies fall into four categories of domination, mitigation, confrontation, and minimization.

The SWOT provides a summary analysis of the results section of this document. Results were compiled using input from HEP documents and interviews to help define the relationships between observed experiences and organizational components HEP may consider addressing to strengthen participation in its CGR.

i. Strengths

HEP has a strong mandate for its existence based on historic stakeholder conflict and uncertainty in the system context. As a result, its role as a neutral convener is established and necessary. Through the collaborative process, HEP provides consequential incentives for participation by defining problems and solutions suitable to a broad array of stakeholders. HEP is structured to create a shared understanding of the scope of environmental problems in the estuary to frame future actions and priorities. The organizational structure is adaptable and capable of withstanding changes in the system context in the long-term. HEP's neutrality as a CGR allows it to avoid conflicting or competing with the efforts of partner groups, which makes it an ideal facilitator and partner. HEP has established trust with partners through its dedicated staff and leadership. The organization is well-positioned to create collaborative partnerships.

ii. Weaknesses

HEP faces several frequently identified weaknesses. Stakeholders identified unclear outcomes from participation aside from collaborative documents, which creates conditions for vicious cycles of engagement. Limited opportunities for authentic partner engagement between committees and absent representation from decision-making positions within key agencies diminishes a sense of consequential incentives for existing and potential partners.

Underrepresentation from specific stakeholders, including broader geographic, socio-economic/cultural, and sectoral participation leads to outcomes that are not fully representative or inclusive of the whole community of affected stakeholders. Underrepresented stakeholders commonly cited by interviewees included groups from New Jersey, environmental justice representatives, and the business community. Inadequately defined expectations for participants, including no explicitly defined values or mission for various committees, further exacerbates the issue of consequential incentives and creates uncertainty that participants are meeting a level of engagement that can produce substantial outcomes. Finally, HEP's limited resources internally restrict the quantity of work HEP can achieve alone and places a heavy reliance on sometimes uncertain partner capacity.

iii. Opportunities

Since HEP's founding, there has been a growing body of organizations focused on environmental and community concerns related to HEP's goals. Many of these groups are not currently participating fully with HEP's CGR. These potential project partners can bring in new resources that HEP would otherwise be unable to. These conditions lead to increasing interest in resolving conflicts through collaborative means. HEP's unique situation provides such capabilities.

iv. Threats

HEP faces many external threats to the success of its CGR. The core group of participants is not fully representative of all the affected stakeholders. HEP has a limited ability to recruit new stakeholders, especially those groups of which it may not currently be aware. The low cost of exit from the program risks diminishing commitment to the process when actions are more easily accomplished alone, although potentially fraught when done without HEP. Uncertainty of collaborative outcomes exacerbates issues of disengagement for existing participants and creates difficulty in establishing initial commitment from new partners.

B. Strategies

i. Domination Strategies

HEP has several opportunities to implement domination strategies where its strengths and opportunities align. HEP should continue and increase its efforts to develop partnerships with underrepresented groups. It should consider creating opportunities specifically for these

stakeholders both through its management conference as a subcommittee or through less formal meetings, which it could later formalize through the management conference. HEP has experience adapting in this way and is currently working towards this with education groups (R. Pirani, personal communication, February 8, 2020).

Refocusing committee meetings to address timely concerns related to policy and project cycles that have a broad impact on the HEP community would be something that HEP is suited to do well. Workgroups such as the WQWG and the RWG do this well. Other groups, such as the management committee and the CAC, could improve their engagement with timely and relevant discussions catering to their stakeholders. To a certain extent, HEP currently provides these opportunities through its communications and sometimes through convening separate issue-specific meetings. Integrating salient issues into all committee meetings and structuring conversations around the components of principled engagement would serve to strengthen this function and provide more significant consequential incentives for participation. Creating topic-specific crash courses to ensure all participants have relevant updated information is another opportunity for HEP to build understanding and capacity.

ii. Mitigation Strategies

Potential mitigation strategies will help to reduce deficiencies in HEP's CGR, where weaknesses and opportunities align. HEP should provide consistent project updates with direct alignment to Action Agenda goals to create a greater sense of cohesion between meetings and goals. Facilitating the participation of agency representatives and committee members between siloed committees can foster the dynamic of shared motivation by increasing mutual trust, understanding, internal legitimacy, and a shared commitment among stakeholders. Convening meetings where representatives of other committees share their current work and can directly address questions from other committees is one way to integrate the committees better. HEP currently does this to some extent through its annual conference and with the management and policy committees.

Opportunities for authentic engagement during the annual conference are often limited to plenary talks, which stifle conversation. Management and policy committee meetings only represent a small subgroup of participants. Other participants must rely on the communication of committee chairs to convey their concerns and relay relevant information. Surveying members of

the management and policy committees to determine opportunities for greater engagement would be helpful. Creating more opportunities for participant discussion and how to engage further with HEP at the annual conference would be one possible strategy to improve opportunities for authentic engagement.

To improve resource conditions of both financial and social capital, HEP should more assertively identify and cultivate partnerships. For financial resources, HEP staff should target partners with the means and motivation to collaborate on cultivating funding for implementing aligned projects.

For social capital, HEP should continue building relationships with outreach organizations such as Riverkeeper, Waterfront Alliance, and the Bronx Coalition of Parks and Green Spaces that can build connections with underrepresented groups. Relationships with policy-oriented organizations would further build capacity. Such relationships would lend a more significant voice to HEP's goals in decision-making circles, increase its relevance with stakeholders, and provide more substantive outcomes that align with HEP goals. It would also allow HEP to avoid advocating or lobbying for any policy itself. HEP's role should continue to focus on its convening function with attention towards coalition building for the estuary.

iii. Confrontation Strategies

Confrontation strategies are those derived from the intersecting internal strengths and external threats to the CGR. To promote sustained engagement, HEP should focus on targeting communities experiencing the most timely and pressing issues in the Action Agenda. Targeting engagement would establish both relevance and awareness of HEP's value. HEP should also take advantage of its network to cultivate these stakeholders and provide partners with communications materials that are clear in both their messaging and means. Aligned communications would support not only program relevance to new audiences but focus the attention of current partners on the mission of HEP. Through continued emphasis on the Action Agenda items, HEP can keep its goals clear and relevant in the minds of stakeholders to improve principled engagement.

HEP should periodically survey participants to determine where HEP is most useful and where areas of improvement exist. Surveys should be done at consistent intervals between revisions to the CCMP to ensure that the program is progressing appropriately to the needs of

stakeholders. Throughout the year, HEP should clearly and effectively communicate to current stakeholders the status and progress of HEP goals across program areas. Creating transparency and identifying potential areas of need on these goals throughout the process to a broad range of participants will help to further increase engagement by reducing uncertainty regarding the outcomes of collaboration.

iv. Minimization Strategies

Minimization strategies are those that address where internal weaknesses and external threats align. To address this, HEP should repeatedly and explicitly establish a strong understanding of the expectations of both the HEP organization and participation expectations. While some stakeholders may find the updated commitments either insufficient or burdensome, the clarity will serve to manage expectations, which interviewees noted as sometimes unclear. Increased understanding of expectations can further support dynamic components of interdependence, internal legitimacy, and shared commitment.

As mentioned in other strategies, for HEP to leverage existing partnerships to better utilize available resources in the pursuit of the Action Agenda goals is imperative. This leveraging should be particularly directed towards cultivating increased communication and outreach. Facilitating growing opportunities for leadership among HEPs partners will serve to broaden the partnership base, increase incentives for participation, and create greater accountability for all stakeholders to focus on achieving the Action Agenda goals.

v. Focus Strategies

Based on the above strategic analysis, three key focus strategies that address multiple concerns become apparent. The evaluation recommends that HEP consider these focus strategies to harness its strengths and opportunities to address potential threats and weaknesses.

1. Increase partnerships to achieve program goals

HEP should continue to build strategic partnerships both with existing and potential participants. Efforts should focus on identifying and providing outreach to underrepresented groups. To be successful in this process, HEP will need to leverage partners that may already have experience or capacity in this area. It may also be advantageous to consider hiring a consultant or dedicated staff member internally, though resource limitations may prevent that.

HEP has considered this through their unpublished Communications Strategy draft plan (R. Pirani, personal communication, February 8, 2020).

In addition to outreach, partnerships are essential for implementing projects associated with HEP goals. HEP must continue to prioritize partners with a unique capacity to implement large-scale projects in the realm of restoration, science, public access, and port and maritime issues. It should also equitably include partners who may have less capacity but relevant stakes in the outcomes. Through developing these coalitions, HEP is more likely to achieve additional resources in the form of increased flexibility in raising financial capital and greater legitimacy in cultivating social capital.

2. Improve convening opportunities

HEP should focus on creating more opportunities for collaboration to address timely issues and provide more dedicated time and structure at existing convenings to have a meaningful discussion of these issues. HEP has identified this goal in its unpublished Communications Strategy draft plan. Improved convenings are essential as they expand HEP's most identified benefit of networking and two other essential dynamic components of principled engagement and mutual understanding.

Greater access to agency representatives and inter-committee networking within convenings would provide even higher value. HEP should consider opportunities to bring stakeholders together, including shared learning on both general topics of the harbor and issue-specific meetings. HEP serves to create a community and to so should take advantage of opportunities to bring people together. One possible way to do this is to ask partners to lead tours, happy hours, and other engaging activities for partners to build understanding, awareness, and collaboration.

3. Enhance communications

The single most impactful strategy HEP can implement to drive other components of its CGR is to improve its communications. An area to focus on is addressing achievements towards the Action Agenda goals regularly, including both progress and setbacks to build increased understanding, improve expectations, and create shared motivation for areas that require more support from participants.

HEP should also focus on improving communications related to relevant and timely decision-making processes that affect stakeholders. While some participants may find this information is already apparent, providing timelines for milestones and clarity on the processes themselves would support increased investment in the activities and outcomes.

To improve awareness and engagement with the CGR itself, HEP should improve its offerings in terms of resources and opportunities. This effort should include improving clarifying participant expectations. Improving communications is not something that HEP can do alone, nor would it be faithful to the intent of the CGR to do so. HEP partners represent a potent and potentially underutilized resource in developing and disseminating communication materials.

V. Evaluative Framework

Research on the adaptive capacity of collaborative organizations has created a growing body of work as well as measurement tools to determine the level of adherence to sustainable collaborative efforts in managing common-pool resources (Hedelin, 2007; Joice, 2010; Leach et al., 2009; Mandarano, 2008; Ostrom, 2010). Emerson and colleagues (2012) developed an integrative framework for CGRs. The framework seeks to generalize successful components of a CGR by identifying a small number of dimensions whose components work together in a “nonlinear, interactive fashion to produce actions, which lead to outcomes (actions and impacts), and in turn adaptation.” The framework provides a basis on which to evaluate the CGR of HEP.

The framework posits that any CGR exists within a system context. Defining the system context are geographic, political, legal, socioeconomic, environmental influences. Influences on the system context include resource conditions in need of improvement; historical failures to address system issues through alternative conventional means and historical conflict among stakeholders arising from prior failures; the political and power dynamics within and across communities and government; connectedness within and among networks; and the socio-economic and cultural diversity of the boundary area.

In each system context, Emerson et al. (2012) identify four drivers to establish a need and desire for a collaborative governance organization.

1. The **leadership** of a person or group who can secure resources, commit to collaborative problem solving, is willing and able to not advocate for a particular position, is impartial to who participates, and is willing to absorb potentially high transaction costs of initiating an effort.
2. **Consequential incentives** for participation, which can include internal and external factors that are relevant to participants and timing for action is suitable. Incentives can be in the form of negative or positive consequences for engagement.
3. **Interdependence** is where success is contingent on collaboration among stakeholders.
4. **Uncertainty**, the final driver, is defined as ambiguity over how to manage a wicked problem.

Within a CGR, exist three collaborative dynamics that can determine the effectiveness and durability of the CGR. Collaborative dynamics include principled engagement, capacity for joint action, and shared motivation.

Principled engagement involves the open and equitable discourse of all stakeholders over a long-term period and collaborating across sectors, interests, and disciplines to achieve program goals. The successful outcome is an active social learning process that establishes a shared sense of intent and understanding in addressing the problems. Four elements make up the principled engagement component of discovery, definition, deliberation, and determination.

1. **Discovery** is the revealing of an individual or shared interests, concerns, and values leading to a shared understanding of relevant information and its implications.
2. **Definition** is the process of building shared meaning in understanding the issues, terminology needed to discuss issues, and clarifying expectations of the group to move forward on addressing issues.
3. **Deliberation** is the candid discussion and involves potentially difficult conversations among stakeholders where challenges and disagreements can be thoughtfully discussed in a safe space to collectively determine what is in the common good of all involved.
4. **Determinations** made through robust engagement processes are more likely to represent values of fairness and would be more productive and lasting.

Shared motivation has a reciprocating influence on principled engagement but is the main component behind the development of social capital within the CGR. Elements within the cycle of shared motivation include mutual trust, mutual understanding, internal legitimacy, and shared commitment.

1. **Mutual trust** comes from stakeholders working together over a period to understand each other's perspectives and can result in improved relations, reduced transaction costs, and accelerating knowledge and innovation.
2. **Mutual understanding** is the ability of stakeholders to appreciate and respect differences of opinion even without an agreement.
3. **Internal legitimacy** is the ability of stakeholders to confirm the trustworthiness and credibility of each other, building confidence in the effort.

4. **Shared commitment** is essential for allowing stakeholders to engage in the cross-boundary mission of the CGR.

Capacity for joint action is a crucial component for both the collaborative dynamics and outcomes of a CGR. Capacity for joint action is the ability of the CGR to create conditions necessary to implement actions to achieve its goals. Four components make up this dynamic, including procedural/institutional arrangements, leadership, knowledge, and resources.

1. **Procedural and institutional arrangements** are the processes and structures used to support sustained engagement over time, both intra- and inter-organizationally. The longer-lived the effort, the more formal structures are needed, though CGRs tend to be complicated and fluid compared to more traditional organizations.
2. **Leadership** in this context can be the result of the collaborative process where the CGR creates opportunities for leadership roles in implementing its goals.
3. **Knowledge** can be the generation, dissemination, discussion, or application of information resulting from the collaboration.
4. **Resources** represent the ability of the collaboration to share or use a broad array of human, social, physical, or monetary capital towards shared goals.

These three collaborative dynamics of principled engagement, shared motivation, and capacity for joint action, when active, will produce collaborative outcomes that include actions followed by adaptation, which in turn will reiterate back into the collaborative dynamics (Emerson et al., 2012). Collaborative actions are those that could only result from collaboration and should involve new pathways developed or identified through the CGR. Impacts can be deliberate or consequential changes to the system context, such as value generated from social or technical advancement of goals over an undefined period; however, if accountability is essential, they will be more discrete and quantifiable. Adaptations are the learning mechanism wherein, based on past experiences, the CGR can adjust accordingly by applying new information or insight gained from a previous iteration of the regime.

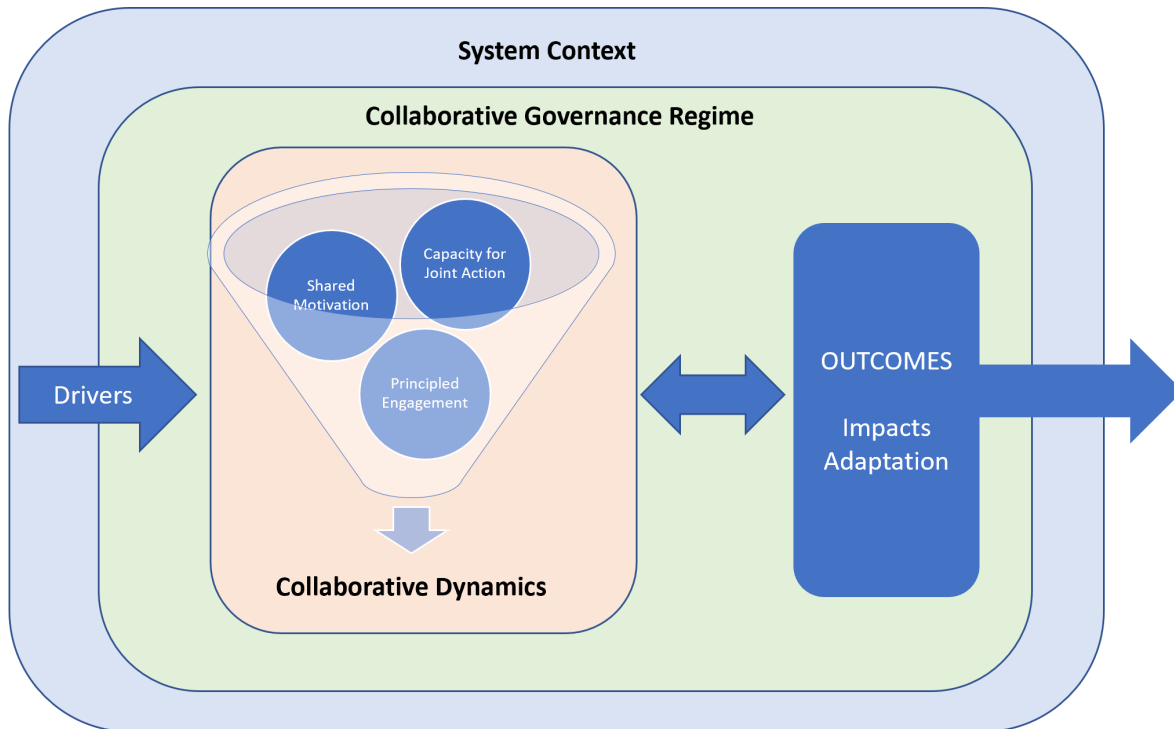


Figure 1 Illustration of the collaborative framework adapted from Emerson, K., Nabatchi, T., & Balogh, S. (2012). An Integrative Framework for Collaborative Governance. *Journal of Public Administration Research and Theory*, 22(1), 6.

VI. Results

A. Emerson Framework Alignment

i. System Context

HEP sits within the system context of the NY/NJ Harbor Estuary. Interviews revealed decades of failure in addressing environmental issues in the harbor before the establishment of HEP. Failed approaches had resulted in, as several interviews revealed, slow progress and a constant stream of litigation. The defining example of this conflict, as one interview identified, was the Westway project, which planned to fill in 250 acres of the Hudson River along the west side of Manhattan for real estate development. Environmental groups were able to reverse the approval process and halt the project based on evidence showing negative impacts on striped bass spawning habitat. Issues such as the Westway project and other challenging-to-solve environmental problems represent historical conflicts among stakeholders rife with legal challenges that justified the creation of HEP.

The inter-jurisdictional nature of the harbor further supported the need for the creation of an organization that could address resource conditions, speak to various actors within the policy and legal framework, and mitigate political dynamics and power relations between communities, private industry, and government agencies. The system context also creates a need to improve communication and connectedness between interdisciplinary stakeholders and provide a space to address historical conflicts while welcoming social-economic and cultural diversity to the table.

ii. Drivers

HEP exists within and addresses several essential drivers for collaborative success. HEP's focused goals, as presented in the Action Agenda, address both regulatory and community concerns affecting a myriad of stakeholders. It is the ability to convene these parties in a neutral safe space through which HEP provides consequential incentives. Some of these incentives include highlighting issues with broad relevance, communicating essential steps in the decision-making process for agencies to the general public, and directing funding opportunities to projects and programs that target HEP goals.

Interdependence is another role that HEP's design provides through its convening function. Using the management conference, HEP can impartially provide opportunities for

communication for affected stakeholders and create a shared mission that relies on the input and feedback of stakeholders, which strengthens the bonds of interdependence.

The complex physical and political nature of the estuary creates significant uncertainties in managing the environmental resource. These complexities serve as a driver for collaboration that HEP is suited to take on. HEP is also situated to take on the high transaction costs of initiating the collaborations with a dedicated staff committed to facilitating knowledge exchange and impartiality in arriving at potential solutions.

iii. Principled Engagement

HEP's structure provides pathways for principled engagement dynamics. Given the changing composition of committees and the longevity of the HEP program, periodically revisiting who is participating and what their motivations are would strengthen this component. Through HEP's convening function, committee members can reveal their shared interests and concerns.

Groups such as the STAC, RWG, and WQWG can provide analysis of information and its implications. When HEP facilitates the sharing of information with groups like the CAC and management committee, further analysis and discussion is possible. Documents such as the collaboratively derived, "Structure and Operating Procedures for the New York-New Jersey Harbor and Estuary Program," reflect processes to provide an opportunity for evolving the management structure.

The process of revisiting the CCMP every five years and conducting regular meetings enables the components of definition and deliberation. Participants can continue to develop shared meaning in purpose, objectives, concepts, terminology, adjustment of tasks and expectations, and criteria for measurement and adaptation. HEP creates opportunities for open discussion, though sometimes challenging, to be had within various committees and assembled in the management committee.

Although the mechanisms exist for the dynamic of principled engagement, it was unclear through interviews what specific outcomes may have resulted from these components in the form of deliberations, beyond the establishment of guiding documents like the Action Agenda. Given the transient nature of some participants' engagement, it seemed that many engaged with the

introduction of new products such as the Hudson-Raritan Comprehensive Restoration Plan. Participation diminished after the completion of these collaborative products. Interviews with members of the STAC indicated that although they did not meet regularly, email chains addressing specific issues kept them engaged as needed. A start and stop cycle of action can create a disengaging process over a long-term period (Putnam et al., 2004).

HEP's meetings themselves can be opportunities to provide consistent value to a range of stakeholders. They should be conducted not just as summaries of relevant findings between meetings but as reflections themselves on how to improve the program, including managing differences, cultivating more explicit understandings, building trust, and increasing social and operating capacity.

iv. Shared Motivation

Shared motivation is another essential dynamic of HEP's CGR. HEP's convening mechanisms develop several dynamic components. Mutual trust improves as a result of participants attending meetings over time. Interview results suggest that HEP brings together relevant actors and that community of groups focused on HEP issues, although growing, is relatively small. Several respondents noted that the same people keep showing up, and as a result, they have personally gained familiarity with the participants.

Interview respondents indicated that they would not remove anyone from participating. However, several noted that the core group of participants was not entirely reflective of all the stakeholders who would be relevant to include. When asked which voices might be missing, respondents identified a need for more representation from different locations, marginalized communities, and businesses. Several cited an absence of participation from many sections of the program's boundary areas, environmental justice representatives, and New Jersey representatives. One respondent noted real estate and commercial boating. Some respondents acknowledged that they were likely unaware of who else to include. Weakness in the dynamic of shared motivation can negatively affect mutual trust and understanding or at least reasonable expectations of how various actors may respond.

Respondents indicated that often within committees, there was a sense of internal legitimacy; however, the lack of inter-committee representation outside of the management committee challenges the ability to reinforce collaborative dynamics and motivate continued

engagement. Internal legitimacy is developed within HEP when participants can confirm the credibility of each other. An example of this is how the CAC rarely has the opportunity within HEP to communicate with agencies directly. HEP does build towards shared commitment by providing opportunities for cross-organizational, sectoral, and jurisdictional engagement. HEP's annual conference and partnerships with organizations like the HRF and the Waterfront Alliance for science seminar talks and City of Water Day, respectively, illustrate some of the provided pathways.

v. Capacity for Joint Action

HEP's structures and processes support the capacity for joint action in several ways. In general, expectations do not explicitly go beyond reaffirming commitment to the development of the Action Plan. The inclusion of more detailed commitment expectations may provide a stronger foundation for HEP to motivate more engaged participation. Procedural and institutional arrangements provide regular meetings for all participants on at least an annual basis. For some committees such as the CAC and RWG, there are bi-laws approved by the committee (*Structure and Operating Procedures for the New York-New Jersey Harbor and Estuary Program*, 2016). Commitment beyond the basic expectations of the management conference may also be the result of inadequate consequential incentives for those who are not currently participating or other inadequate collaborative dynamics.

HEP provides numerous opportunities for leadership within its framework. Most basically, there are multiple chairs for each committee who also sit in the management committee. Within workgroups, there are opportunities for higher engagement and situational leadership. Within the Action Agenda as well, there are opportunities for leadership with partners taking responsibility to implement components of the agenda.

Knowledge and resources are two components that HEP can facilitate through its CGR. With support from HRF, HEP can help direct research grants, facilitate greater transparency on environmental conditions, and support understanding of complex environmental processes. These actions build social capital and direct focus on HEP's agenda. There could be better communication to affected stakeholders on the impact of these knowledge-generating processes and resources available to their communities.

EPA guidelines for HEP limit the organization's ability to survey potential partners directly who have not engaged first. It is advantageous for HEP to partner with organizations that are not bound by these restrictions. HEP has successfully engaged with new partners through joint efforts, such as its partnership with HRF, asking existing partners to forward relevant communications, and collaborating with the Department of City Planning or the Waterfront Alliance.

Resources are another area where HEP has a presence, but it is limited. Given the limited funding available to HEP through the NEP, HEPs budget and staffing allocations are mostly fixed. All respondents identified resources as the most significant obstacle that they saw in implementing the Action Agenda. Despite HEP's limitations on their budget and other financial resources, their ability to provide staff time, technical expertise, and logistical support constitute valuable resource contributions.

HEP's connections with various partners can produce needed resources. Both the Action Agenda and a separate document, "Options for Funding Estuary Program Priorities," highlight potential funding opportunities to improve HEP's resource capacity. These documents detail relative costs and possible partnerships to make better use of existing resources.

An essential consideration in expanding partner contributions would be to address power disparities among stakeholders mindfully. Some interviewees responded that previous iterations of HEP (before moving to HRF) had ineffectively allocated existing resources. The impact of this perception was diminished engagement with HEP until earlier leadership conditions changed. HEP must continue to seek out funding both directly and through partnerships to strategically realize the goals of the Action Agenda by identifying how aligning priorities and relying on outside resources can further achieve common goals.

vi. Outputs, Impacts, and Adaptations

Outputs are the most tangible outcomes of a CGR and represent those things that could not have happened without HEP. The most significant outcome is the development and revision of the CCMP through the Action Agenda and associated documents. The documents provide clear goals and actionable items to work towards over the five-year program period. Beyond progressing on the goals of the CCMP, the most significant outcome HEP can achieve is building collaboration that leads to long-term sustainable engagement with the process itself. HEP serves

as a thought leader synthesizing and focusing on the collaborative process into demonstrable outcomes. Multiple interviewees indicated that the networking function of HEP was the most realized and tangible benefit of collaboration.

HEP's presence in both internal convenings and more broadly at in-the-field meetings supports knowledge sharing and trust. HEP can marshal resources through small grants and partnerships such as their 2019 #NYNJCommunityScience outreach, collaboration with HRF's research grants, partnering with civic groups, and by writing letters of support for partners seeking outside funding towards addressing HEPs.

When an agency partners with HEP, they benefit from getting greater buy-in to their effort. HEP and its partners benefit from having the agency committed to the collaborative vision for the harbor and contributing their resources to realizing HEP goals. Preparing documents such as its workgroup reports, updated Action Agenda, and associated documents, and efforts like the Regional Sediment Management Plan builds partnerships and guides how other actors consider and design projects. Impacts result from these efforts in the form of collaborative documents, which build new forms of shared visioning and commitment. Other outputs, such as the Environmental Monitoring Plan, help provide accountability in tracking progress and help capture the scope and intent of project partners to facilitate HEP's goals.

Many of these outcomes represent adaptations to HEPs CGR as the program progresses and revises the CCMP. Given the low costs of exits for participants to generate knowledge, adaptation is perhaps the most significant strategic way that HEP can maintain and build its participation.

B. 7-S Organizational Model Alignment

i. Strategy:

In the case of HEP, the strategy is not seeking a competitive advantage over another organization but instead building functional collaboration. There are groups within the HEP program area that may supersede aspects of HEP's goals or replace its function as a leader and mediator in specific focus areas. In a situation where another group has taken responsibility for addressing a HEP goal, it could be a success for HEP as its mission is to see the resolution of such issues without needing to seek credit for it. Within the general system context that HEP

exists, it strategically provides a neutral convening function that supports collaborative dynamics listed in the above section. HEP's role in creating unique value in the collaborative process is facilitating and addressing overlooked components of its system context.

ii. Structure

Structure, or how tasks and human resources are divided and coordinated to focus attention on what needs to accomplish (Bradach, 1996), is an area where HEP is well aligned. HEP functions in a networked structure where semi-autonomous groups join either for discrete periods or indefinitely to achieve common objectives. This porous structure provides adaptability to change priorities and impacts resulting from new information or changes in the system context. Limited resources for staffing at HEP stifles substantial progress from within the organization. Partnerships and committees can expand those capacities. A potentially harmful consequence that is deserving of attention is that this structure can lead to confusion regarding roles and responsibilities.

iii. Systems

HEP's management conference establishes its operating system. The conference creates both conditions for decision making with area-specific groups convening in the management committee to submit recommendations to the decision-making policy committee. HEP staff facilitates exchanges throughout levels of the management conference. HEP staff also collects information on the progression of Action Agenda items and coordinates collaborative projects and data gatherings such as Environmental Monitoring (*NY-NJ Harbor & Estuary Environmental Monitoring Sites*, n.d.) and associated interactive map. The focus specific mandate of committees and workgroups provides interdependence and cross-functionality within the organization.

Planning for HEP is done collaboratively with controls on the final planning products approved by HEP leadership and the policy committee. Resource allocations are somewhat out of HEP's control since general funding is allocated federally for the NEPs. By being embedded with HRF, HEP can facilitate greater resources in working with civic partners to identify and communicate needs to both government and non-profit funding mechanisms. Still, interviews indicate that funding remains a challenge for HEP.

The uncertainty of successful outcomes from collaboration remains a barrier to the sustained commitment by both agencies, which may be able to implement projects without engaging with HEP, and for smaller organizations where uncertain outcomes of participation may be too high of a transaction cost for engagement. Interviews indicated that this might be especially true for underrepresented community and environmental justice organizations.

iv. Staffing

HEP has a relatively small staff, given the scope of work it seeks to address. Each of the five staff members is qualified to address their specific competency areas, including water quality, outreach, restoration, and leadership. Interviews consistently revealed that stakeholders valued and trusted the contributions of HEP staff and leadership.

Given the nature of a CGR, it is appropriate to include outside partners as part of the staffing alignment. HEP partners are an essential resource and add significant capacity to HEP's work. For some committees such as management and policy, membership is defined by leadership roles held either within state and city agencies or within HEP's committees. The RWG and STAC are often comprised of invited representatives, experts, and appointed chairs. The CAC has open membership and elected chairs. This structure allows for open participation in some aspect of HEP's decision making.

Interviews highlighted that precise understanding of a committee or workgroup's procedures and expectations were often vague despite resources such as HEP's "Structure and Operating Procedures." For the core HEP staff, there was certainty in their mission but also an acknowledgment of the limitations on the scope of work that could be facilitated based on limited resources.

v. Skills

HEP provides the system context a suite of skills that would not exist without it. These skills provide distinctive competencies supporting HEP's mission. HEP is uniquely situated to be the neutral convener of stakeholders. In the areas of science and technical advising, restoration, and water quality, HEP does exceedingly well. One area consistently identified in interviews where skills were inadequate was community engagement.

HEP has sought to expand its abilities by securing two Urban Watershed Ambassadors (UWA) focused on two tributaries within the watershed, including the Passaic, Harlem, and Bronx Rivers. The UWAs have brought demonstrable cohesion and commitment for their water bodies and have expanded the capacity of the CAC and Citizen Science Subcommittee, including improving representation from their watersheds. The complex and diverse nature of the watershed, however, leaves many communities outside of the UWA scope underserved.

Representation is significantly low for New Jersey groups and the environmental justice community. Participation in the CAC consists of members who are committed but still unrepresentative of many communities within the program's boundary area. HEP's annual conference tends to have higher representation from these stakeholders. However, the opportunity for participation within the conference is limited, and many represented do not attend committee meetings throughout the year. Representation in the policy committee is also problematic, where delegates of decision-making authorities are more often present rather than the decision-makers themselves. Lack of leadership representation in the policy committee challenges HEP's ability to produce more significant collaborative outcomes. Targeted outreach to each of the above-listed groups to better understand their motivations and challenges for participation could improve overall representation in the long term.

vi. Style

HEP's style is that of a neutral convener. Core staff work to coordinate the outcomes of committee and workgroup meetings by facilitating conversations, reaching out to stakeholders, and communicating throughout the organizational matrix. Participants generate new knowledge, discuss pathways forward, and ideally use their capacity to implement outcomes of deliberation and the HEP Action Agenda. The EPA and Policy Committee approve and guide high-level decision making. Aside from advising, the HEP staff provides tracking and follow up on deliberations.

HEP can host meetings using photo/video conferencing as well as in their office conference room located centrally in downtown Manhattan near significant transportation hubs, overlooking the harbor. Staff provides consistent follow up from meetings by distributing minutes and following up on actionable outcomes. The staff attends meetings, leads meetings in the field, and remains accessible via phone or email. While the staff is consummately

professional, they also maintain a friendly rapport with the program's partners. Participants are generally polite and open to insights from others, including representatives from organizations who have historically conflicted with each other. These conditions lay the foundation for collaborative alignment.

vii. Shared Values

HEP establishes its values most clearly through its CCMP and in the Action Agenda. Although explicit values do not exist, determining implicit ones through the planning and day to day operations of HEP is possible. HEP's procedures clearly emphasize the role of collaboration in determining nearly every step of its operations. Clarity of mission and direction is explicitly stated in the Action Agenda and through the legislative framework creating the NEP. Within various committees, interviews illustrate that their mission is, at times, unclear.

Interviewees noted several drivers for participation, including understanding where other organizations are working and how to link efforts, responding to calls for information or analysis. Conflict resolution did not come up as a benefit of collaboration. However, multiple interviewees highlighted the value of gained understanding from hearing directly from agencies and actors where conflicts with stakeholders have historically originated.

These values, however, have not fully contributed to increased participation, particularly from underrepresented stakeholders and decision-makers and actors themselves within key agencies and sectors. A potential cause of this is that tangible benefits from the expenditure of transaction costs are not fully understood or realized. There are many potential reasons for this, including uncertainty in operating procedures, lack of awareness of the role and potential benefits for engagement, prior failures, or continued unresolved issues of trust among stakeholders.

VII. Discussion

This study evaluated the effectiveness of HEP based on established frameworks and synthesis for essential components of successful CGRs. HEP essentially has all the components of a successful collaborative organization based on Emerson's framework. This program evaluation establishes that fact. The evaluation further seeks to provide insight into areas where the CGR is most effective and focuses on opportunities for improvement.

HEP has already considered many of the components and recommendations provided here. For some, it has identified the concerns and already has processes in place to improve the conditions. The added value of this evaluation is to refine and contextualize the underlying conditions justifying the recommended strategic actions to strengthen HEP's program into three critical recommendations of increased partnerships, improved convenings, and enhancing communication.

The program evaluation uses participant insight, established frameworks, and supporting documents to gauge the effectiveness of the structures and processes of a collaborative governance organization. Analysis of the CGR's effectiveness, including areas for improvement and recommended strategies for addressing areas of potential concern, were identified using established frameworks for evaluation and strategic planning.

The analysis of a CGR is an inherently fraught process. Given the individual and local nature of such programs, the most beneficial elements of the CGR may not clearly be understood or easily identified. Similarly, weaknesses or challenges facing the CGR may also not be apparent or openly identified. Qualitative interviews are innately subjective, representing the views, insights, and experiences of individuals who make up only parts of the whole. The very nature of a dynamic collaboration is one of constant change.

Other lenses can be useful to view HEP's CGR. The conclusions here represent alignment considerations within the chosen frameworks. The analysis could benefit from several additions. Further areas for research could include more comprehensive analysis from select disciplines, more extensive surveying of partners and potential stakeholders not captured in the qualitative interviews, comparative studies of similar organizations, and deeper embeddedness in the day-to-day operations and conversations within HEP.

Given the incredibly diverse and far-ranging composition of stakeholders affected by HEP, it is likely that no amount of surveying could capture the full breadth of opinions or experiences. Failure to capture the breadth of insight is especially true of potential stakeholders who have yet to be identified. Although the core HEP staff and interviewees were exceptionally generous with their time and resources, there are nuances in considerations, planning, and decision making that could not be captured without being entrenched in all the proceedings that take place.

VIII. Conclusion

HEP, as an organization, does a remarkable job of creating conditions for and reinforcing dynamics necessary to create a successful CGR. The unique and localized dynamics and structures of a CGR mean that there are very few truly successful examples, and those CGRs that achieve success are difficult to replicate in another system context. This study contends that final outputs of a CGR are not the most crucial consideration in measuring success. It is the participatory dynamics themselves that can drive change and innovation and, therefore, should be the focus on evaluation for CGRs. It is especially notable given the challenging external environment and limited resources available to HEP.

Managing a CGR requires constant effort in not only working towards its goals but in facilitating the adaptations and refinements necessary to maintain engagement with the effort. HEP is highly successful in defining the challenges facing the estuary and mapping of potential pathways to addressing its clearly defined goals. Within HEP's regime, there are areas for improvement to strengthen its processes for long-term success, such as the recommended focus strategies of increasing partnerships, improving convening opportunities, and enhancing communication pathways. These improvements are not imperative for the survival of the organization but rather represent opportunities for refining the organization's processes to support the long-term success of both the collaboration and in advancing the program's goals.

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