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Developing an Institutional Arrangement for a Whole-of-Government and Whole-of-Community Approach to Regional Adaptation to Sea Level Rise: The Hampton Roads Pilot Project

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Developing an Institutional Arrangement for a Whole-of-Government and Whole-of-Community Approach to Regional Adaptation to Sea Level Rise: The Hampton Roads Pilot Project

ABSTRACT

Adaptation to sea level rise (SLR) requires coordination among local, state, and federal entities and collaboration across governments, nonprofits, businesses, and residents. This coordination and collaboration is reflected in institutional arrangements associated with a whole-of-government and whole-of-community approach to regional adaptation. This study analyzes the development of an interlocal agreement (ILA), the Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Planning Pilot Project (the Pilot Project), as an example of such an arrangement. This study assesses how factors throughout three phases of ILA development (initiation, implementation, and execution) influence outcomes and effectiveness. Drawing upon participant observation, document analysis, survey of participants, and interviews with key informants this study identifies factors that facilitate effective regional adaptation to SLR (impetus, agreement) and factors that hamper adaptation efforts (funding, ease of delivery), and offers insight into the complexities of institutional collective action to address contentious and challenging issues such as SLR.

Keywords: Institutional collective action, Hampton Roads, sea level rise, interlocal agreement, whole-of-community, whole-of-government

Introduction

Adaptation to sea level rise (SLR) and climate change present wicked challenges due to lack of consensus on causes and preferences for solutions across a wide range of affected stakeholders (Jentoft & Chuenpagdee, 2009; Kreuter, De Rosa, Howze, & Baldwin, 2004; Lach, Rayner, & Ingram, 2005; Lazarus, 2008; Levin, Cashore, Bernstein, & Auld, 2012; Moser, Jeffress Williams, & Boesch, 2012). The scope and reach of the problem suggests sector failure and that one sector alone cannot solve the problem (Bryson, Crosby, & Stone, 2006). SLR adaptation requires collaborative, multi-sectoral, and multi-jurisdictional approaches that transcend the constraining boundaries of authority (Adger, Hughes, Folke, Carpenter, & Rockström, 2005). Effective adaptation to SLR requires alignment with functional boundaries of ecosystems or watersheds, rather than adherence to political or jurisdictional boundaries. This requires intergovernmental and intragovernmental coordination associated with a *whole-of-government approach*, allowing for communication and coordination across levels of government, policy areas, and functional, legal and geo-political boundaries (Christensen & Lægreid, 2007). Effective adaptation also requires the *whole-of-community approach* inclusive of government, business, non-profit, and civil society (Federal Emergency Management Agency, 2011). In combination, the whole-of-government and whole-of-community approach may include such stakeholders as local, regional, state, and federal governments; non-governmental, faith-based, and non-profit organizations; businesses; education, healthcare, and other institutions; and individuals, families, and communities.

Governance structures do not correspond with ecological systems; this mismatch may result in partial solutions, conflict over authority, duplication, and inefficiencies (Cumming, Cumming, & Redman, 2006) that can result in ineffective adaptation. Institutional arrangements

and governance structures that allow cross-scaling and flexibility and enable a whole-of-government and whole-of-community approach are needed (Borgström, Elmqvist, Angelstam, & Alfsen-Norodom, 2006; Considine, Covi, & Yusuf, 2017), particularly for adaptation at the regional or metropolitan area level.

Central to this study is the question: *What factors contribute to the effectiveness of a regional whole-of-government and whole-of-community institutional approach for adaptation to SLR?* The researchers explore this question using a case study of the Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Planning Pilot Project (the Pilot Project). The Pilot Project is analyzed to identify critical elements that aided, or conversely, impeded its effectiveness as an institutional arrangement for enabling a whole-of-government and whole-of-community approach to regional SLR adaptation. The analysis builds on the literature on interlocal agreements (ILAs) and particularly the ILA success factors identified by Jordan, Brooms, Yusuf, and Mahar (2015). ILAs are governance arrangements that generally involve cooperative agreements among local governments, but the concept is applied in this study to include formal agreement among local, state, and federal governments while ensuring inclusion of non-governmental actors.

Interlocal Agreements (ILAs)

As voluntary collaborative agreements between local governments, ILAs ensure cooperation and sharing of responsibility for delivery of government goods and services, and provide a mechanism for collectively addressing boundary-spanning problems (Kwon & Feiock, 2010). ILAs have been used to provide a variety of services, allowing governments to jointly solve shared, collective problems while meeting local conditions, needs, and constraints, while

preserving local autonomy (Gerber & Gibson, 2009). The public service landscape has increasingly called for institutional collective action, such as those facilitated by ILAs, that address complex, contentious, and evolving issues. Therefore, in this study, we expand the definition of ILAs as voluntary collaborative agreements between governments at multiple levels to share responsibility for resolving collective problems.

Conceptual model

When parties come together to achieve a mutual or complementary goal, the process and outcome can be synergistic. We use the conceptual model of ILA development by Jordan et al. (2015) to study the Pilot Project, as the model explicitly links the development process to ILA outcomes. Jordan et al. conceptualize ILAs developing along three phases: initiation, implementation, and execution. Key factors throughout these phases play a role in determining ILA effectiveness and outcomes (see Figure 1). We apply this three-phase conceptual model of ILA development to understand the factors that either facilitate or frustrate ILA effectiveness and outcomes.

[Figure 1 here]

As shown in Figure 2, these key factors can be assessed on a six-point rating scale, ranging from one point as the most unfavorable to six points as the most favorable for ILA development and subsequently effectiveness and outcomes. For example, the Agreement factor ranges from the unfavorable 'Informal' to the favorable 'Formal,' and the Service Environment factor ranges from 'Volatile' (one point) to 'Stable' (six points).

The *initiation* phase includes foundation work preceding agreement and addresses three factors: Impetus-Context, Impetus-Purpose, and Function. The Impetus-Context factor ranges from unsupportive to supportive and includes characteristics internal to the institutions and within managerial control, as well as external characteristics that are outside of managerial control. Impetus-Purpose ranges from vague to clear. A clear purpose encourages the initiation of a collaborative relationship because expectations and intentions are explicit. For instance, if the parties involved relinquish sole control and responsibility for achieving economies of scale or enhancing efficiency, then they are more likely to collaborate (Y.-C. Chen & Thurmaier, 2009; Morgan & Hirlinger, 1991). Function is the final factor in the initiation phase and ranges from lifestyle to systems maintenance. Lifestyle functions are more social in nature and include amenities like a dog park, while systems maintenance is more likely to involve infrastructure or basic needs such as health and safety (Williams, 1971). Systems maintenance functions are more conducive for ILAs (LeRoux & Carr, 2010).

The second phase of ILA development is *implementation*, which focuses on the agreement's content and specificity. This phase has four factors: Agreement, Planning, Measurement Ease, and State/Federal Legislation and Mandates. The Agreement factor is the ILA's official formation, establishing roles, responsibilities, and expectations. This may range from informal handshake agreements to formal written agreements that are comprehensive and signed by all parties. More formal agreements contribute to effectiveness by proactively addressing concerns in writing, which may lead to positive outcomes (Y.-C. Chen & Thurmaier, 2009). The Planning factor ranges from unstructured to structured. A structured agreement involves prior consideration and determination of objectives, potential challenges and impacts, and the process for resolution among parties (Berman & Korosec, 2005; Holdsworth, 2006).

Measurement Ease ranges from simple to complex. Measurement ease that is "simple" is more conducive for ILA effectiveness, as performance measurement and expectations are clearly identified for all parties (Carr, LeRoux, & Shrestha, 2009; Feiock, 2007). Similarly, State/Federal Legislation and Mandates, the final factor of the implementation phase, provides clarity regarding the ILA and relevant rules and regulations (Caruson & MacManus, 2012; Vick, 2006). This factor ranges from restrictive to supportive.

The final ILA development phase, *execution*, involves delivering the service, the outcome of the agreement itself. The factors are Funding, Service Environment, and Ease of Delivery. The Funding factor ranges from low or inadequate to complete funding. Inadequate funding is a major barrier to execution (Lackey, Freshwater, & Rupasingha, 2002), and may create tension between parties as well as create a volatile Service Environment. Whether due to internal issues, such as high staff turnover, or external issues, such as lawsuits or elections, volatile service environments are more likely to disrupt service delivery. The Ease of Delivery factor addresses the simplicity of delivering the service. This factor recognizes that some services, like emergency management, are more complex because they require more coordination of resources, parties, and regulations.

[Figure 2 here]

Jordan et al.'s (2015) two case studies suggest that the three phases of ILA development influence the effectiveness of ILA outcomes. However, the post-initiation stages are the most critical, as the clarity of the components of the agreement (during the implementation phase) is crucial for defining expectations and success. A facilitative implementation phase features mutual understanding of roles, contributions, and benefits for each participant, as articulated

through formal agreement and/or structured planning. The execution phase is more supportive of effectiveness and outcomes when the parties of the agreement are able to overcome barriers such as inadequate funding and instability as well as iron out (or routinize) service delivery complexities.

An ILA that is effective at collective problem solving across jurisdictional boundaries should have high ratings across the three phases of ILA development. The effectiveness of the Pilot Project as a regional whole-of-government and whole-of-community institutional approach is expected to reflect the assessment of the factors in each phase. The strengths of the Pilot Project in the development process should reflect higher ratings, and the areas for improvement should reflect lower ratings. We also expect to see strengths throughout the implementation and execution stages to be key factors that facilitate Pilot Project effectiveness and outcomes, while areas for improvement may impede effectiveness and outcomes.

Background of the Pilot Project

The Pilot Project is an ILA located in the southeastern region of coastal Virginia. The region comprises 17 municipal governments including the cities of Chesapeake, Norfolk, Newport News, Virginia Beach and Williamsburg, and the counties of Surry and York. The region features 26 federal facilities such as those affiliated with the Department of Commerce, Department of Defense, Department of Energy, Department of the Interior, Department of Transportation, Department of Veteran Affairs, and National Aeronautics and Space Administration. The region houses several Commonwealth of Virginia facilities and infrastructure, such as state universities and community colleges, state parks, and the Port of Virginia.

Several studies have identified Virginia's coastline, especially the Hampton Roads area, as extremely vulnerable to accelerated SLR (Atkinson, Ezer, & Smith, 2013; Ezer & Atkinson, 2014; Hampton Roads Planning District Commission, 2010, 2012; Kleinosky, Yarnal, & Fisher, 2007; Li, Lin, & Burks-Copes, 2012; McFarlane, 2013). Potential threats include risks to military facilities and operations, transportation and other public infrastructure, ports and logistics, tourism, and wetlands coastal ecosystems (Hampton Roads Planning District Commission, 2010; Pyke et al., 2008; Wu, Najjar, & Siewert, 2009). Like many other areas across the eastern seaboard of the U.S., the region faces an implementation deficit; possible adaptation solutions are often not translated into practice (Yusuf & St. John III, 2017).

The number of jurisdictions, coupled with political and legal factors, have made regional coordination a challenge (Babcock, 2009; Bacon, 2015). Political and cultural influences encourage municipalities to prioritize their individual identity, independence, and autonomy. Despite this fragmentation, Hampton Roads has several regional entities and authorities, although municipalities have been largely reluctant to surrender autonomy.

A November 2013 White House Executive Order (EO 13653: Preparing the United States for the Impact of Climate Change) was a key impetus for the Pilot Project. The Executive Order established a State, Local and Tribal Leaders Task Force on Climate Preparedness and Resilience. The *initiation* phase of the Pilot Project started in March 2014. Old Dominion University (ODU) played a convening role in the Pilot Project, and supported a Steering Committee. The Pilot Project was formally announced on June 3, 2014 as a preparedness pilot, but without federal agency support or federal funding.

The Steering Committee approved the Charter for the Pilot Project in October 2014, beginning the *implementation* phase of the ILA. In December 2014, Pilot Project working groups

and advisory committees met for the first time, with most setting up subsequent monthly meetings, using the Charter to guide their work. In July 2016, the Steering Committee, with significant guidance from the Legal Working Group, adopted a resolution that provided a path toward whole-of-government and whole-of-community SLR planning and implementation, marking the *execution* phase of the ILA.

METHODOLOGY

The research methodology combines participant observation, content analysis of Pilot Project documents, survey of Pilot Project participants, and interviews with key informants. Four members of the research team were embedded within the Pilot Project in roles that included chairing and serving on advisory committees and working groups. They provided data based on their observation and participation in the Pilot Project.

The content analysis focused on the Pilot Project charter document (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2014) and the Phase 1 and Phase 2 reports of the Pilot Project (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2015, 2016). A web survey of Pilot Project participants was conducted in April and May 2015. E-mail invitations were sent to 203 participants with 115 participants responding (57% response rate).

Five evaluators, relying on results from participant observation, document review, and the survey of Pilot Project participants, individually rated each ILA factor ex-post on the 6-point scale summarized in Figure 2. The evaluators then collectively discussed the ratings and came to consensus on an agreed upon rating for each factor. Of the evaluators, three had been involved in the Pilot Project with varying degrees of involvement.

The researchers also examined Pilot Project outcomes and factors contributing to these outcomes. Interviews were conducted with 12 key informants extensively involved in the Pilot Project, including members of the Steering Committee, working groups, and advisory committees. These interview were conducted in spring 2017 by members of the research team who had little to no involvement in the Pilot Project. The purpose was to obtain perceptions about the Pilot Project's objectives, outcomes, and effectiveness. The structured interviews assessed how factors of ILA development contributed to Pilot Project effectiveness and the significance of these factors for enabling a whole-of-government and whole-of-community approach to regional SLR adaptation. Participants were selected to represent local, regional, state, and federal government agencies, in addition to businesses, nonprofits, academic organizations, and community organizations.

Recognizing that the methodology, with its reliance on participant observation and interviews with key informants, may introduce bias into the analysis and findings, the researchers balanced this potential bias by analyzing formal documents associated with the Pilot Project and using results of a survey of Pilot Project participants conducted by a researcher not associated with the research team. The first-hand experiences of the researchers embedded within the Pilot Project are integral to developing an in-depth assessment of the Pilot Project development process, but the methodology also addresses bias by including other researchers who were not at all or only minimally involved with the Pilot Project.

Assessment of Pilot Project ILA development

The assessment of Pilot Project ILA development through the three phases is conducted by examining factors within the respective phases. The scores or ratings assigned to each factor

is presented along with discussion of the significance of the score. Figure 3 summarizes the scored for all factors across the three phases.

Initiation Phase

Impetus: Context. Covering both internal and external elements, this factor captures the context in which the Pilot Project arose. Characteristics of the Pilot Project as originally conceived, initial guidance from the Steering Committee, and the strengths and expertise of participating organizations were considered. This factor also includes previous cooperative experiences among the participants and the presence of networks of trust and reciprocity.

That the Pilot Project region included 17 localities and numerous federal and state facilities was a key contextual factor leading to a challenging environment. Historically, a whole-of-government and whole-of-community approach in the region has been daunting. The survey of Pilot Project participants identified that there was generally weak collaboration across governments in the region. Only 15% of participants rated the collaboration of federal, state, and local entities in mitigating SLR as "effective" or "very effective." Federal-level support from the White House and the Department of Defense gave additional cachet to the Pilot Project's mandate (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2015, p. 9), creating a more enabling context.

Another important contextual element was that participation in the Pilot Project was voluntary. No participant or participating organization was bound to any action or expenditure (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2014, p. 2). Many participants were already working with one or more regional or statewide organizations; some degree of social capital already existed. Others were part of established

networks or committees such as the All Hazards Committee and the Hampton Roads Adaption Forum. Such history of positive experiences among participants resulting from previous cooperative agreements may temper disagreement among parties to an ILA, making the ILA more likely (Zeemering, 2008).

It was clear to Pilot Project participants that the region was threatened by SLR and that regional assets had to be protected (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2015, p. 6). More than 80% of Pilot Project participants were motivated to participate out of concern for protecting their community.

The Pilot Project was assigned a context score of four, or *somewhat supportive*, for context.

Impetus: Purpose. The purpose of the Pilot Project was to overcome divisions between jurisdictional, federal, and sectoral boundaries that impede cooperation on the regional problem of SLR planning. However, significant barriers exist due to issues of authority, governance, and execution of planning.

Not all Steering Committee members signed the Charter document, suggesting lack of buy-in for the Charter's purpose. Furthermore, there was a lack of clarity regarding how entities were selected for inclusion in the Steering Committee or other parts of the Pilot Project organizational structure. This lack of explicit articulation raised questions about the legitimacy of the Pilot Project's Charter and mission.

Survey participants were asked to rank the planned deliverables of the Pilot Project in order of importance. However, the responses indicated lack of consensus on Pilot Project deliverables. The most important project deliverable, identified by 37% of respondents, was a

whole-of-government template for regional collaboration. None of the other deliverables were identified as being most important by more than 23% of respondents.

The Pilot Project was assigned a score of four, or *somewhat clear*, for purpose.

Function. Function is evaluated on a range from systems maintenance (e.g., community infrastructure, health, and safety) to lifestyle (e.g., social benefits and quality of life benefits). According to the Pilot Project Charter, ensuring the resilience of critical infrastructure (e.g. transportation, electrical distribution, water supplies, telecommunications) was critical (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2014). For example, the Pilot Project's Infrastructure Planning Working Group had a mandate to identify regional infrastructure that required "adaptation planning and formulate recommendations for intergovernmental coordination of that planning" (p. 3).

The Pilot Project's Public Health Working Group was tasked with analyzing public health issues arising from SLR and identifying expertise in emergency preparedness, community outreach, industrial hygiene, epidemiology, and health and environmental risk communication that contribute to SLR preparedness and resilience (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2015). Another example of systems maintenance functionality is the requirement to coordinate resources to minimize service disruption across agencies and organizations (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2015).

With little indication of a lifestyle component, the Pilot Project was assigned a function score of 6, clearly associated with a *high level of systems maintenance*.

Implementation phase

Agreement. The official agreement for the Pilot Project is principally found in its Charter, which is a formal document. Still, we determined that the Pilot Project agreement was more informal than formal. Although there was substantial volunteer time devoted by over 200 individuals, the Charter only generally described responsibilities and accountability for named parties and there were no financial or role commitments made by Steering Committee members. ODU committed to the initial facilitation of the project, but the Steering Committee did not establish a permanent management structure. Tasks and activities were primarily driven by the individual initiative of volunteer working group and advisory committee chairs, several of whom secured independent funding to support Pilot Project activities.

The Pilot Project was assigned a score of two, or *mostly informal*, for the agreement factor.

Planning. Planning includes articulation of goals and objectives, identification of potential challenges, demarcation of the service area, identification of tangible benefits, and measures to resolve barriers (Holdsworth, 2006). A mostly unstructured approach allows for flexibility in identifying ideas to solve emerging challenges. A more structured approach anticipates difficulties.

The Pilot Project had numerous built-in organizational structures (e.g., Steering Committee, working groups, advisory committees) and included several elements that are classic identifiers of planning. For example, the Charter articulated the mission, vision, statement of problem, statement of key issues, scope of planning, timeline and list of deliverables (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2014).

However, while these aspects are clearly articulated, the scale and scope of the initiative called for the advisory committees and working groups to, through an iterative process, develop their activities and efforts in reaction to challenges and barriers that arose as the Pilot Project progressed. By the Pilot Project's end, these groups provided key recommendations such as establishing a definitive set of regional, SLR planning scenarios and standards; using the best practices of civic science to engage all stakeholders in SLR deliberation and decision making from the very start; preparing the next generation of public health professionals to grapple with SLR; and providing a mechanism to address SLR science needs and requirements of regional stakeholders. However, the range of recommendations was inherently broad and flexible due to the localized nature of risks and resources in vulnerable areas. This is evident in the Pilot Project's Phase 2 report which states "the next steps for Hampton Roads *remain with its localities and its citizens*" (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project, 2016).

The Pilot Project was assigned a score of three, or *somewhat unstructured*, for planning.

Measurement ease. This is defined as how readily performance can be measured and the extent to which parties can be held accountable (Carr et al., 2009). For the Pilot Project, this involved determining whether performance indicators were simple and straightforward, or complex. Furthermore, measurement ease can be complicated if there are wide variances in what is to be measured.

The Pilot Project's key goal was to "establish a regional whole of government and whole of community organizational framework and procedures that effectively coordinate SLR preparedness and resilience planning" (Hampton Roads Sea Level Rise Preparedness and

Resilience Intergovernmental Pilot Project, 2015, p. 10). One element of this goal, the establishment of an organizational framework, was measured by identifying participating stakeholders and tracking their activities. However, measuring broader project goals that focused on achieving effective coordination among stakeholders was problematic. While the Pilot Project had metrics for measuring stakeholder inputs through the various committee and working group reports, the project's two-year scope made measurement of these other goals practically untenable.

The Pilot Project was assigned a score of two, or *mostly complex*, for measurement ease.

State/federal legislation and mandates. State and federal legislation, mandates, and regulations appear to restrict Pilot Project implementation. The Charter recognized the legal challenges inherent in the effort's collaborations, establishing the Legal Working Group to address this concern. This group developed a legal primer to address "the myriad legal issues that have been identified as particularly pertinent to the coordination of SLR preparedness and resilience planning across governmental and community lines" (Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project Legal Working Group, 2015). One restriction on cooperation is the Doctrine of Sovereign Immunity and Federal Supremacy, which inhibits, but does not prevent, compliance of federal entities with local codes and policy. The Commonwealth of Virginia is a Dillon Rule state and localities can act only when expressly granted such authority by the state. Additionally, there is no state-level funding (or local funding enabled by the state) associated specifically with planning for and addressing SLR. Each locality plans within its jurisdictional boundaries. There are few higher-level mechanisms that enable or support regional collaboration on infrastructure improvements.

The Pilot Project was assigned a score of two, or *mostly restrictive*, for state/federal legislation and mandates.

Execution phase

Funding. Lack of necessary funding is a major barrier to intergovernmental cooperation (Lackey et al., 2002). Interdependent organizations not contained within a common jurisdictional boundary or that cannot be coordinated by one agency can complicate service production and delivery, as traditional sources of funding are limited.

The Pilot Project was not funded by federal, state, or local governments. Over 200 volunteers donated their time and expertise. ODU provided faculty and staff as convenors, leaders and members of working groups and committees, and hosted Pilot Project events. Some outside funding was received from a philanthropic organization to support selected Pilot Project activities such as hosting a regional meeting, showcasing work done in other regions, and supporting the development of case studies. However, no regional funding mechanism was established for whole-of-government and whole-of-community resilience planning moving forward.

The Pilot Project was assigned a score of one, or *extremely low*, for funding.

Service environment. This factor is concerned with the stability of the service environment. The Hampton Roads region, while extremely vulnerable to disruptions from SLR, does not otherwise exhibit a propensity for volatility. Economically dominant industries like the military and tourism have been major factors in the quality of life for decades, with little indication this will change. Conversely, new industries are slow to develop and younger, creative class individuals

tend to start their careers outside the region. Correspondingly, there are no consistent region-wide movements to advocate for changes and creative measures regarding SLR preparedness. Furthermore, no initiatives from the state appear to be on the horizon that could provoke some instability in the region concerning climate change, SLR, the area's economic makeup, or the quality of life.

The Pilot Project was assigned a score of five for service environment, indicating a *high degree* of stability.

Ease of delivery. This relates to the degree of complexity associated with producing and delivering services or goods. There are multiple influences on this factor, including resource needs, network complexity, and regulations or requirements at various levels of government.

The variety of working groups identified by the Pilot Project Charter gives some indication of the challenges involved in service delivery. Four working groups (legal, infrastructure planning, land use planning, and citizen engagement), along with, at least initially, ten advisory committees, highlight the amount of effort needed for a whole-of-government and whole-of-community approach. This, coupled with the lack of propelling factors within the service environment and funding areas, greatly complicated the Pilot Project's ability to deliver services or goods.

The Pilot Project was assigned a score of one on ease of delivery, indicating *extreme complexity.*

[Figure 3 here]

Pilot Project effectiveness

As an ILA is intended to "benefit a region in some way" (Holdsworth, 2006, p. 8), it is important to assess ILAs in terms of benefits and improvements to the participating communities and the region (Andrew, 2009). An ILA should also be judged by its participants against their expectations and the imperatives and constraints of their organizations (Nunn & Rosentraub, 1997). For example, effectiveness can be defined as the perception that the ILA achieved its intended outcome, worked smoothly, and was reasonably productive (C.-A. Chen, 2009).

We assessed the Pilot Project's effectiveness from the involved parties' perspective using data from the survey of participants and interviews with key stakeholders. Survey results indicate that most participants wanted to be involved in the initiative because it emphasized regional preparedness and resilience. Almost half (49%) of respondents said the mission of the Pilot Project was their primary reason for participating. However, as noted in the discussion of the Impetus–Purpose factor there was no consensus on the Pilot Project's mission and purpose.

When they were surveyed during the implementation phase, Pilot Project participants were optimistic about expected outcomes – 92% agreed that the Pilot Project will have a positive impact on the region's resilience to SLR. However, responses were varied when asked what could be expected of Pilot Project implementation. Three broad themes emerged from responses to the open-ended question about the end state of the Pilot Project: (a) intergovernmental coordination, cooperation and/or collaboration; (b) creation of a regional or community-wide structure; and (c) data, tools, products and solutions for addressing flooding and SLR.

In terms of *intergovernmental coordination, cooperation and/or collaboration*, survey responses included anticipated outcomes such as "improved communication throughout the region;" "a collaborative process for joint actions by communities, business, and military;" and

"a sustained, intergovernmental strategic planning process for the region." This first theme is intertwined with the second theme of *creating a regional or community-wide structure.* Illustrative survey responses included: "consensus on how the community will deal with SLR - how the municipalities will work together and how to address priority issues," "beginnings of a regional model for addressing SLR," and "a framework for a regional entity to deal with SLR." However, Pilot Project participants also expected tangible deliverables such as *data, tools, solutions or products.* Survey responses included "projected SLR impacts to the region," "a usable toolkit to justify infrastructure improvements," "tools to mitigate flooding events," and "best practices to analyze and evaluate risks."

In terms of Pilot Project effectiveness, stakeholders gave mixed reviews during the interviews. Interviewees stated that the Pilot Project was "very effective in starting conversations" and "bringing some partners to the table." In this sense, the Pilot Project "was extremely effective at creating a network of contacts across all levels of government and complementary organizations that are impacted by SLR." One interviewee noted the value of the Pilot Project in getting "consensus of thought from regional leadership about the need to address these issues, and it provided a common point of reference from which any future action could be taken."

Interviewees were less positive about the Pilot Project delivering a whole-of-government and whole-of-community organizational framework. They attributed this to lack of regular communication with critical stakeholders and lack of representation from municipalities. One interviewee noted that, even with the Pilot Project, "nobody is looking out for the region. 'Everybody looking out for themselves' is a common attitude."

Significantly, funding and staffing were mentioned as limitations affecting Pilot Project outcomes. Some interviewees noted that the Pilot Project was not funded and pointed to a lack of administrative staff. Participation in the Pilot Project required time and many meetings. One interviewee said, "volunteers showed great commitment and concern for two years," and ODU was credited with providing "intellectual capital" and serving as a neutral convener.

Finally, while the Pilot Project was effective in bringing multiple actors together, it did not identify, establish, or create a coalition leader or champion who would take ownership. A common concern was that there was not the identification of organizations with "the capacity to effect whole-of-community initiatives" (Yusuf et al., 2018, p. 57).

Conclusions

Analysis of the Pilot Project through the ILA development lens highlights the complexity of regional cooperation. Findings related to the *initiation* phase point to the importance maintaining and protecting infrastructure, safety, and commerce within the region. While there was a general understanding of, and support for, a regional solution, there was low participation among local governments in the region and lack of clarity regarding the specific purpose of the Pilot Project. Actors agreed that the SLR problem is real and a threat to life, property, and the economy; they also agreed that response is beyond the capacity of one actor or organization.

The *implementation* phase identified even greater challenges. While there was a Charter, it was not specific about roles, responsibilities, or resources. This lack of specificity was heightened by fragmentation due to the many committees and working groups. This fragmented approach contributed to varying ideas of measuring success. One interviewee stated, "when embarking on these kinds of endeavors, the end game is likely to be more successful if there is a

good plan for what happens at the conclusion of the project." But achieving a sense of planning toward a unified end was complicated by at least two factors: (a) the tendency towards autonomy of the various jurisdictions, and (b) the lack of supportive state or federal legislation that mandates, funds, or incentivizes regional efforts.

In the *execution* phase, because of limited funding, the greatest resource for the Pilot Project was its volunteers. The task was to bring together the many actors in a whole-of-government and whole-of-community approach. However, some interviewees critiqued the Pilot Project for insufficient citizen engagement, while others were impressed by the contribution of the legal experts participating in the Pilot Project. The failure to draw in many of the local governments limited the ability to address the issues within local governments' responsibility (e.g., zoning and land use). Further, regional fragmentation hampered the ability to produce substantive deliverables.

This case study reaffirms the need for a coordinated regional approach in adapting to SLR and its potential impacts. It is clear that the scope of the problem necessitates coordination and collaboration with the return being the protection of the region's economic, ecological, and social vitality. However, this work also demonstrates the all-too-familiar chasm between theory and practice. In theory, the geographic extent of SLR and the many ways in which it affects the citizens across sectors and jurisdictions necessarily suggests the efficiency to be gained through coordinated response. In practice, the mechanics of cooperation between actors embedded in localized accountability and decentralized budgets present real challenges.

Yusuf et al. (2018) concluded that addressing wicked problems such as environmental policies needs a regional approach. Specifically, there must be vertical relationships across multiple levels of government, and horizontal relationships between local governments. Similar

to the conclusion from Jordan et al. (2015), the most challenged stages of the Pilot Project were the post-initiation stages of implementation and execution. Still, the complexity and contentiousness of the problem of SLR may have exacerbated the Pilot Project's challenges. The high number of actors engaged in the effort and the variation in the category of actors paled in comparison to the number of prospective actors *not* participating (i.e., citizens, businesses, and most of the region's local governments). This complicated achieving consensus regarding roles, responsibilities, desired outcomes, and needed funding, which, in turn, diminished effectiveness. This is undeniably reflected by the Pilot Project's rating at the highest level of complexity for service delivery.

In summary, ILAs are intended as a mechanism for collective problem solving across jurisdictions; however, simply initiating the agreement is not sufficient. The assessment of the Pilot Project illustrates the specific areas of weakness that impede effectiveness, especially in the implementation and execution phases. Addressing weaknesses in the implementation and execution phases is necessary to achieve the outcome of collective problem resolution for adaptation to SLR. For instance, the Pilot Project's lack of effectiveness is particularly revealing in that it stems from not having a structure that represents the diverse stakeholders across the region, the absence of strong leadership, and the lack of dedicated funding for regional adaptation. Complicating these three issues was the absence of a common vision or shared end-in-mind for establishing a governance structure that would support adaptation and resilience across the region. For example, stakeholders identified three critical needs for adaptation; recognizing and formally acknowledging these different needs and expectations early in the Pilot Project development process (i.e., initiation phase) could have been useful in redefining the agreement, structuring planning aspects, and clarifying performance goals and indicators, while

working within the federal and state legal landscape. While these refinements to the Pilot Project implementation phase may not completely address key aspects of the execution phase, such as funding and ease of service delivery, they could facilitate more positive outcomes and improved effectiveness.

The lessons learned from the Pilot Project show that, while the ILA development model conceptualized by Jordan et al. (2015) was intended for ILAs between local governments, it can also be used to analyze intergovernmental and multi-sectoral agreements so as to provide insights about strengths and challenges of such arrangements. Although the single case study approach does not allow for generalizability of results, the approach renders a holistic investigation of a complex phenomenon. The insights it provides will help to shape the future research on the factors that contribute to effectiveness of ILA projects.

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