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ORIGINAL ARTICLE

Policy entrepreneurship for transformative governance

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Abstract

Scholarship is growing on societal transitions, describing radical societal change involving multiple sectors and scales, and transformative governance, describing how public, private, and civil society actors use tools of policy to pursue this fundamental change, aiming to build resiliency and sustainability. Much of this literature has a systems-level focus and does not closely examine how governance participants, working individually or collectively, can steer a jurisdiction toward or away from transformativeness. This paper offers a corrective, integrating policy entrepreneurship scholarship with transformative governance research to advance understanding of how human agency underpins societal change. Drawing on accounts from 50 interviewees across eight case studies of US cities grappling with flooding hazards, we show how policy entrepreneurship can boost the political and economic resources that city officials rely upon to help propel radical shifts towards greater social, economic, and environmental equity.

KEYWORDS
flooding, local government, policy entrepreneur, policy entrepreneurship, transformative governance

1 | INTRODUCTION

The successful resolution of many modern social challenges are likely to require wholesale changes in how governments operate, engage the public, and impact the biophysical wiorld. Political and social institutions, as currently structured, have been unable to allay rising income inequality, right-wing nationalism, or ethnic strife, nor have they succeeded in mitigating climate change, the existential threat of our era. Increasingly, scholars and experts are responding by calling for transformative governance, wherein public officials and private and public sector partners collectively pursue "radical, systemic change across multiple dimensions" (Hölscher & Frantzeskaki, 2021; Kelemen et al., 2023; Rijke et al., 2013). Transformative governance disrupts entrenched yet maladaptive practices and patterns, replacing them with sustainable pathways adapted to current threats and adaptable for emergent ones (Castán Broto et al., 2019; Long et al., 2023; Wolfram, 2016). Largely missing from this growing literature, however, is close attention to how governance participants can steer systems toward transformation.

Answers to this question might be found in scholarship on policy entrepreneurship, a term describing persistent efforts by individuals and groups to achieve path-breaking policy change, usually involving investment of significant time, energy, and resources (Kingdon, 1984; Mintrom, 2019; Petridou & Mintrom, 2020; Arnold, 2021b; Mintrom & Norman, 2009). This literature investigates the strategies policy entrepreneurs use to achieve change and the characteristics and tactics of policy entrepreneurs who have more versus less success achieving policy goals (e.g., Arnold et al., 2017; Arnold, 2021a, 2021b; Frisch Aviram et al., 2020; Mintrom & Luetjens, 2017). Yet up until now, few scholars have connected policy entrepreneurship and transformative governance research.

We explore how insights from policy entrepreneurship studies can help us understand the micro-level dynamics underpinning transformative governance, drawing on interviews with 50 governance participants across eight cities in the United States grappling with a common climate change-induced hazard, flooding. These case studies explore how a city's capacity for transformative governance is affected by the extent and nature of policy entrepreneurship. The results suggest that when one or more people in the group of decision-makers shaping a city's approach to flooding practice policy entrepreneurship, the city has greater capacity for transformative governance. Entrepreneurship plays a particularly important role in compensating for resource deficits.

2 | INATTENTION TO AGENCY IN TRANSFORMATIVE GOVERNANCE SCHOLARSHIP

Transformation refers both to the goals of sustainability and resiliency and the processes of trying to achieve them (Rosenzweig & Solecki, 2018). In transformative processes, system-level properties and functions experience fundamental, even radical, modifications (Kates et al., 2012), enabling power shifts favoring social and environmental justice and planetary health (Fedele et al., 2019; Neil Adger & Jordan, 2009; O'Brien, 2012). Transformative governance uses collaborative and democratically robust processes to try to break free of maladaptive institutional, cultural, and behavioral lock-ins (Feola, 2015; Hölscher & Frantzeskaki, 2021; Patterson et al., 2017). Because many of the challenges for which transformative governance offers a solution are dynamic and span long time horizons, scholars are increasingly examining capacity to transform rather than

transformation itself, recognizing that transformation is not a specific endpoint, but rather an ongoing pursuit involving iteration and adaptation.

Scholars investigating transformative capacity have harvested insights from disciplines that focus on systems in transitions, including development studies (e.g., Hansen et al., 2018; Wieczorek, 2018) and studies of socio-ecological (e.g., (Folke et al., 2005; Rijke et al., 2013) and socio-technical systems (e.g., Geels, 2005; Loorback et al. 2021). They have synthesized these strands of literature into diverse conceptual frameworks and models (e.g., Fedele et al., 2019; Wolfram, 2016), proposing conditions that help systems build resilience to disruptions like those caused by climate change (O'Brien and Leichenko, 2000). These frameworks largely focus on macro- and meso- level dynamics, like how communities learn collectively and ways in which pluriform and polycentric governance institutions affect transformative processes. Micro-level relational dynamics tend to be sidelined, aside from general exhortations that processes should actively engage a broad range of stakeholders and require leadership (e.g., Behnassi et al., 2021; Hölscher et al., 2019; Kelemen et al., 2023; Krüger, 2018). Yet people, individually and collectively, are the agents of change who drive transformation, even when they do not play leadership roles. Understanding transformation requires exploring these actors' behaviors and their consequences.

We follow Long et al. (2023) in positing that transformative governance capacity is greater when governance participants act *proactively*, invest in *learning*, and *risk* deviating from conventional practices to solve complex problems (see also Hölscher & Frantzeskaki, 2021; Wolfram, 2016). Proactive policymaking helps governance participants tackle novel dilemmas from a place of preparedness rather than reactivity (Bharosa et al., 2021; Knemeyer et al., 2009). When governance participants pursue continuous learning, they can identify or develop many diverse policy innovations whose utility they can evaluate while iteratively honing their approach for grappling with fast-evolving challenges (Bulkeley, 2006; Chaffin et al., 2016). Finally, governance participants must be risk-accepting to be willing to bear the present financial and political costs of proactive and learning-focused policymaking, in the hope of future benefits.

Transformative governance capacity is bolstered or weakened by the extent of resources present in the decision-making environment. Resources can help buffer economic and political risks associated with path-breaking policymaking. Resources may be economic, enabling funding commitments to selected governance measures. Economic resources may also help a government absorb the financial impacts of failed policy experiments. This is consistent with findings from the extensive literature on policy innovation and adoption, showing that wealthier jurisdictions are more likely to adopt innovative policies (e.g., Adua, 2021; Bassett & Shandas, 2010; Gray, 1973; Habans et al., 2019; Karch et al., 2016; Krause, 2011; LaCombe et al., 2022; Mallinson, 2021; Shipan & Volden, 2008). Economically prosperous cities tend to have tax bases which can support new policies and policy changes. They are better positioned to financially support officials' efforts to learn and share knowledge via trainings, association memberships, or engaging consultants. Conversely, cities with limited economic resources will find it more difficult to pursue policies requiring financial investment, or make up deficits associated with policy risks.

Resources also can be political, in the form of alignment between the focus of a transformative policy, the preferences of the voting public, and the ambitions of the government officials who represent them. When public sentiment favors action to advance sustainability, resiliency, and equity broadly, and specifically supports concrete policies towards these ends (e.g., restoring wetlands to attenuate flooding, providing wrap-around services to unhoused

individuals, subsidizing women and minority-owned businesses), it is more tenable for officials to pursue such policies, including those that risk present financial costs for potential future benefits. However, to the extent the public has different priorities or even opposes aspects of transformative governance—like the 28 percent of Americans who think that government officials should either not address climate change or not make doing so a priority (Pasquini et al., 2023) or the vocal minorities supporting efforts to roll back and prevent further adoption of diversity, equity, and inclusion policies at all levels of U.S. government (Telford et al., 2024)—officials have less incentive or justification for pursuing transformative policy pathways.

Even when a jurisdiction is economically thriving and its residents amenable to a transformative policy agenda, though, transformative governance is not assured. After all, resources do not leverage themselves. This is why we next focus on the human agents who can drive transformative governance forward.

3 | BRINGING POLICY ENTREPRENEURSHIP INTO TRANSFORMATIVE GOVERNANCE

Policy entrepreneurs are agents of change in the policy process. One of the earliest definitions, from Kingdon (1984), considered as entrepreneurs individuals who vigorously pursue a policy goal. Later scholarship expanded the focus to groups of people and organizations (Frisch Aviram et al., 2020; Mintrom et al., 2014), and emphasized that policy entrepreneurs typically seek major or otherwise path-breaking policy change (Mintrom & Luetjens, 2017; Mintrom & Norman, 2009; Petridou & Mintrom, 2020). Although policy entrepreneur motivations are understudied (Arnold et al., 2023), entrepreneurs generally are believed to be driven by tangible or intangible benefits whose potential attainment they consider worth the costs of advocacy (Schneider & Teske, 1992).

Policy entrepreneurs are both persistent and opportunistic. They doggedly pursue desired policy changes across government levels and venues, phases of the policy process, and time, sometimes seeking to create institutional, cultural, or social conditions favorable for change (i.e., "softening the system") before actually seeking a specific policy alteration (Arnold, 2022; Bardach, 1977; Cairney, 2018; Pralle, 2003; Weissert, 1991). They also recognize and try to seize fleeting windows of opportunity for change, wherein political and social conditions are particularly favorable for their aims (Cairney, 2018; Gofen et al., 2021; Sheingate, 2003). Policy entrepreneurs are creative, both in their choice of strategies and in crafting the policies they promote. They develop policy innovations by recombining policies and ideas from different knowledge realms or jurisdictions (Font & Subirats, 2010; Garud et al., 2007; Meijerink & Huitema, 2010; Roberts & King, 1991; Weissert, 1991). They then seek to advance the adoption of these policies by deploying social acuity, framing policy problems and solutions in ways favoring their goals, building supportive teams and leveraging network connections, and "leading by example," pursuing pilot or demonstration projects that can produce evidence for the workability or desirability of their policy proposal (Mintrom & Norman, 2009).

Most policy entrepreneurship studies focus on advocacy promoting specific policies or policy types. Indeed, policy entrepreneurship has been shown to facilitate adoption of policy innovations across a range of government contexts and issue areas, such as city sustainability measures (Krause, 2012), state child abuse prevention laws (Vallett, 2021), national health care reforms (Cohen & Horev, 2017; Cohen, 2012), and international drug policy (Alimi, 2015),

among others. This focus on specific, discrete policies may help explain the lack of conversation between policy entrepreneurship and transformative governance scholarship. Transformative governance is a mode of policymaking, a set of values and practices deployed across domains and over time, rather than a specific policy initiative. It is an empirical question whether policy entrepreneurs have a role in promoting innovative, transformative governance processes.

Theory offers reasons to suspect that policy entrepreneurs can play this role. A key policy entrepreneur function is strategically disseminating and translating information (Anderson et al., 2020; Frisch Aviram et al., 2020; Wood, 2018). Having policy-relevant information is a prerequisite for decision-maker learning, one dimension of transformative governance capacity (TGC). A policy entrepreneur is alert for opportunities to promote their favored policy, as might be created by a crisis, change in media attention or public perception of an issue, or shifting political dynamics (Herweg & Zahariadis, 2023; Herweg & Zohlnhöfer, 2019; Sheingate, 2003; Zohlnhöfer et al., 2015). They constantly scan the environment so they can proactively embrace opportunities for policy change; proactivity is another TGC dimension. Policy entrepreneurs risk their own resources pursuing their policy goal (Mintrom, 2019) and risk potentially unfavorable outcomes when investing in pilot or demonstration projects intended to demonstrate the value of their policy solution (Brouwer, 2015; Mintrom & Norman, 2009; Petridou, 2023). If the policy entrepreneur is a government official, they may risk not only personal resources, but public resources, in such efforts. Thus, policy entrepreneurs model the risk-accepting policymaking that is a key element of TGC, and may themselves introduce risk acceptance to public decision-making. For these reasons, we expect that when a policy entrepreneur is part of a core group of governance participants, the entrepreneur brings policy-relevant learning opportunities, proactivity, and risk acceptance to that group, and encourages the development of these capacities within it.

There are at least two additional reasons why policy entrepreneurs may encourage TGC. First, the processual nature of transformative governance, requiring ongoing effort to steer toward sustainable policy trajectories, aligns with the long time horizons over which policy entrepreneurs typically pursue policy goals. Transformative governance requires persistence (Fedele et al., 2019), and policy entrepreneurs offer it. Second, a number of studies suggest that policy entrepreneurs are motivated to create benefits for the public and improve society (e.g., Aukes et al., 2018; Aviv et al., 2021; Corbett et al., 2020; Hood Cattaneo & York St John University, 2018; Lamb & Vale, 2019; Murphy, 2020; O'Neill et al., 2019; Sedlačko & Staroňová, 2023). This aligns with the focus of transformative governance on creating better-adapted outcomes. Transformative governance, then, is a domain in which we might expect to see policy entrepreneurs striving for positive social change. The presence or absence of such change agents during periods of transition can make the difference between merely coping versus transforming (Wolfram, 2016; Wolfram et al., 2019; Castán Broto et al., 2019). Table 1 summarizes the ways in which we expect policy entrepreneurs to advance TGC.

4 | METHODS AND MEASURES

The empirical analysis examines how U.S. cities grapple with a major climate change-associated hazard, flooding. Coastal cities are confronting sea levels rising even faster than many anticipated (Bush, 2023). Evidence also is mounting that the risk of flooding due to precipitation is growing for cities across the United States, broadening the risk zone beyond the coastal areas (Rosenzweig & McPhillips, Chang, et al., 2018; Wahl et al., 2015). Some city

TABLE 1 How policy entrepreneurs promote TGC.

TGC Element	Entrepreneurs
Learning Orientation	Leverage formal and informal relationships to gather and disseminate information, identify new information and information sources, and convene governance participants to enable deep learning
Risk Acceptance	Model risk-accepting policymaking, frame issues in ways that encourage officials to embrace risk, pursue funding that can provide a buffer for policy risk-taking, and build political support that can buffer dissatisfaction with risk-taking
Proactivity	Proactively identify opportunities for policy innovation and highlight these for officials, help officials secure resources for proactive action, and build public support for proactive policymaking

governments are responding with a groundswell of novel approaches related to land use (e.g., flood mitigation requirements for new development), social practices (e.g., warning the public against building in the floodplain), and technology (e.g., early warning apps). Other cities, though, are continuing business-as-usual approaches to flooding. Policy entrepreneur advocacy may help explain this variation in city transformative governance capacities.

We selected eight case study cities from 386 jurisdictions that responded to a survey fielded in late 2021 and early 2022 concerning city responses to climate change-associated hazards. The survey targeted all U.S. cities with populations greater than 20,000 and 200 randomly selected smaller cities, and was sent to the city staffer who appeared most knowledgeable about or responsible for climate planning and response. We narrowed the pool to 261 cities that identified flooding as having affected their jurisdiction in the previous 5 years. Focusing on flooding, the most common hazard reported in the survey, helps hold some environmental dynamics relatively constant across cases. We then selected as cases eight geographically dispersed mid-sized cities with survey responses indicating variation in transformative governance capacity. Appendix Table A1 presents details about these cities.

To select interviewees, we reached out to the survey respondent in each city, then contacted other individuals they recommended as well as leading officials in their sustainability, environmental, public works, and planning departments, as applicable. We also identified potentially relevant interviewees by analyzing local media and policy documents. We conducted interviews in a city until we had attempted to contact all relevant decision-makers or reached saturation, wherein new interviews offered little new information (Weller et al., 2018). In total we interviewed 50 individuals across 47 interviews. The semi-structured interviews, conducted on Zoom, followed an IRB-exempted script and averaged 45 min. Interviews were recorded and transcribed using Zoom captions or Otter AI. We used the qualitative software analysis program Dedoose to code transcripts deductively (e.g., identifying evidence concerning policy entrepreneurship) and inductively (identifying emergent themes).

Two coders examined each interview to reach coding consensus. Part of the consensus process involved agreeing on ordinal values to assign to cities on variables of interest, facilitating pattern recognition. Table 2 presents the assignment criteria. We used the assigned values to create an interview-based transformative governance capacity (TGC) measure.[1]

Table 3 details criteria we used to examine policy entrepreneurship in a given case. Interviewees were asked, "Of those who are meaningfully involved in shaping your city's actions around flooding preparation, does anyone stand out as a champion who promoted

TABLE 2 Mapping qualitative results to ordinal scales.

	Low (1)	Medium (2)	High (3)
Learning orientation	Limited breadth of information sources consulted by decision-makers when tackling flooding, and/or few or no interviewees discuss decision-makers' interest in learning about new or better approaches for addressing flooding	Standard breadth of information sources and/or some interviewees discuss decision-makers' interest in learning	Large breadth of information sources and/or most interviewees discussion decision-makers' interest in learning
Risk acceptance	Most interviewees discuss political or economic risk as a damper on city efforts to addressing flooding	Some interviewees discuss political or economic risks as a damper on efforts to address flooding, but some offer examples of city decision-makers' willingness to take such risks	Most interviewees mention city decision-makers' willingness to take political or economic risks to address flooding and at least some offer supporting examples
Proactivity	Current efforts addressing flooding characterized as continuing past practices with little or no recognition of coming climate change impacts	Current efforts addressing flooding seek improvement within the general parameters of past practices (e.g, better modeling of storm surges); there may be some recognition of coming climate change impacts	Current efforts addressing flooding explicitly consider coming climate change impacts, and/or substantially deviate from past practices to address contemporary societal priorities like equity or resiliency
Variables capturing patterns across component measures			
Transformative governance capacity (TGC)	All 1 s across learning, risk, and proactivity	No 3 s across learning, risk, and proactivity, AND two 2 s	At least one 3 across learning, risk, and proactivity, AND no values lower than 2

particular courses of action?" From responses to this question, as well as discussion of policy champions in other interview portions, we inductively developed Table 3's categorization scheme. This scheme identifies policy entrepreneurs using a set of theory-rooted thresholds: a policy entrepreneur advocates for policy change, does so persistently (over time or across venues), and may develop (pioneer) the policy innovations they champion.[2]

While original to this paper, this scheme is informed by the literature. When a policy champion is named as such because they are good at doing flood management or preparation tasks assigned to them by their job, they are operators, not entrepreneurs (Boasson & Huitema, 2017). The steward policy entrepreneur category recognizes that the literature is not uniform in arguing that policy entrepreneurs invent policy innovations themselves. A number of studies consider as policy entrepreneurs individuals who advocate for policy designs developed by other experts (e.g., Hood Cattaneo & York St John University, 2018;

TABLE 3 Policy champions: Interviewees described one or more individuals.

Operator	Whose work to address flooding deviates little from past practices and is clearly within their traditional job description. Operators are not policy entrepreneurs.
Steward policy entrepreneur	Whose work to address flooding continues or extends a campaign for policy change begun by someone else.
Minor policy entrepreneur	Who pioneer and persistently advocate for policy changes that are small and/or at the margins of flood management practice, like starting a program using goats to clear drainage ditches.
Major policy entrepreneur	Who pioneer and persistently advocate for policy changes that are large and/or fundamentally change flood management practice, like starting a new flood management agency.

Hudson et al., 2021; Li et al., 2022). Yet this activity appears fundamentally less innovative than championing an original policy innovation, with potential consequences for transformativeness: A steward policy entrepreneur might be less likely to acquire new information to learn about ways to craft better policies or less likely to risk inventing new approaches. Finally, we distinguish between minor policy entrepreneurs and major ones because transforming governance requires changes that are radical, multi-dimensional, and far-reaching (Hölscher & Frantzeskaki, 2021; Kelemen et al., 2023; Rijke et al., 2013; Toffanin & Jezic von Gesseneck, 2021). While both types of policy entrepreneurs promote change, major policy entrepreneurs' efforts appear more likely to advance transformativeness.

The case study cities have different levels of fiscal base and political alignment vis-à-vis transformative governance goals; together, these variables form a baseline for a city's ability to pursue transformative governance. Fiscal base is an index of the city's population size and median per capita income. To create the index, we sorted the full set of survey-responding cities into tertiles on each variable. Cities with population sizes 20,020–32,262 are considered small and take a (1), those 32,696-67,985 are medium (2), and those 68,079-4,000,000 are large (3). Cities with median per capita income $27,025-53,669 are considered low income (1), those $53,690–76,015 are medium (2), and those $76,118–171,917 are high (3). Cities with the highest level of fiscal base (3) take 3 s across both economic measures. Cities with medium economic well-being (2) take 2 s across both measures, or 3 and 1. Those with low economic well-being (1) take a 2 and 1.[3]

Political alignment is operationalized here as liberalism, measured as the percentage of city residents voting for the Democratic presidential candidate in 2016; see Table A1. The optimal operationalization of alignment is issue and location dependent. Liberals in the United States are more likely than conservatives to believe that anthropogenic climate change exists and public policy should address it (Leiserowitz et al., 2023). In this context, we expect cities with more liberal residents to be more likely to pursue policies addressing climate change-associated flood hazards. Conversely, if we were examining state abortion bans in the United States, political alignment might be appropriately proxied by state resident political conservatism. For a less politicized issue or setting, alignment between policy and polity may be less consequential for TGC, or may require examining how resident worldviews (e.g., grid-group placement; see Swedlow, 2014) or personality traits (e.g., Big Five; see Vecchione et al., 2011) map to policy preferences. The present analysis sorts the survey-responding cities into tertiles to assign

TABLE 4 Case study city scores on key variables.

City	City resources		Entrepreneurship		TGC
	Fiscal base	Political alignment	Steward or minor policy entrepreneur(s)	Major policy entrepreneur(s)	
Amaryllis, CA	3	2	1	0	3
Begonia, CT	2	2	1	1	3
Calla, IL	3	2	0	0	3
Dandelion, NE	2	2	0	0	2
Eucalyptus, GA	2	3	1	0	2
Foxglove, OK	1	1	1	1	2
Gardenia, AR	2	1	1	1	1
Hyacinth, MO	2	1	0	0	1

Note: City names anonymized to protect interviewee confidentiality. City resource variables range from 1 to 3. Entrepreneur variables are binary. Appendix Table A1 presents data used to calculate the fiscal base and political alignment variables.

scores of 1 to 3, representing increasing political alignment between local political leanings and climate action. Cities with 13.84–42.72 percent of voters supporting the Democratic candidate have low alignment (1), 43.02–59.98 have medium alignment, and 60.13-91.39 have high alignment.[4] Table 4 displays values the case study cities take on variables described above.

5 | CASE VIGNETTES

5.1 | Overview

There are three high-TGC cities, three medium, and two low. In each group, one city lacks a policy entrepreneur, suggesting that policy entrepreneurship is neither necessary nor sufficient for raising TGC. The variables we use to capture city baselines for pursuing transformative governance have the anticipated effect (higher baseline values associated with higher TGC) in some but not all cases. Spearman's correlations between fiscal base and TGC, and political alignment and TGC, find that neither relationship is statistically significant ($p \leq .05$).[5] Conversely, the Spearman's correlation between TGC and an ordinal variable describing whether a city has one or more minor/steward policy entrepreneurs, major policy entrepreneurs, or both, is statistically significant ($p \leq .00$). Taken together, these results suggest that policy entrepreneurship may in fact raise TGC and may be a more consequential driver than a jurisdiction's fiscal base or alignment between public preferences and the policy at issue. Next, we use qualitative data to explore these patterns.

5.2 | Amaryllis, CA

Amaryllis is an economically advantaged, moderately liberal West Coast city with less history of flooding than most of the other eight cases. The city's approach to flooding focuses on

stormwater management and incident response. Amaryllis is increasing the comprehensiveness of their stormwater management plan and recently developed a resilience plan. Interviewees cited a number of innovations in flood mitigation and preparation, such as a new stream monitoring initiative, using goats to clear brush from channels, and a funding mechanism that helps stormwater fees keep up with inflation.

City decision-makers involved in flood mitigation and preparation demonstrate notable learning orientation, particularly valuing learning from peers in other jurisdictions and from diverse sources within city government. Most interviewees characterized decision-makers as highly proactive. One official noted: *"Climate change has accelerated much more quickly than anybody thought it would, even 2 years ago. And so we're already sort of looking at our planning documents to say, 'Okay, where can we move some of these strategies, or some of these new actions that we might need to do to be sooner to account for that?'... The resilience plan was something that was, I think, a little bit more unique. And so that really has allowed us to be a bit more proactive"* (Interview [I] 047). Proactivity is evidenced by city resilience planning that includes equity considerations and stormwater management planning that considers future impacts of development and climate change. Some interviewees offered an example of a flood management project where political or economic risks created resistance, but also indicated that the city's approach to flooding generally receives a lot of support from elected officials.

Interviewees nominated as a policy champion an engineer leading the stormwater plan revisioning, helping make the plan more comprehensive. This individual also advanced action on a project, previously written into the master plan, to install stream gauges for monitoring. Both activities qualify him as a steward policy entrepreneur. The other individual nominated as a policy champion, the deputy director of public works, has helped the city secure funding to address flooding. In our leadership schema, this qualifies him as an operator.

5.3 | Begonia, CT

Begonia is an East Coast city with medium levels of economic well-being and liberalism. The city has a severe flooding history dating to the 1860s, including 6-7 major floods in the last 100 years. In the early 2000s, the city created a flood control agency to tackle the problem, followed by the adoption of a holistic, watershed-based, restoration-focused master plan and initiation of a $120 million flood control project involving bridge replacements, in-stream storage, channel improvements, and taking properties out of the floodplain and creating urban greenspace. This project employs a unique permitting strategy that has enabled constant progress towards its goals.

City decision-makers involved in flood mitigation and preparation work closely with a consulting group that provides them up-to-date information, and also draw information from conventional sources such as professional associations. Interviewees characterize officials as learning oriented. Begonia's proactivity is evidenced by watershed-scale planning, use of green infrastructure that produces co-benefits (e.g, a sensory garden for people with autism), pursuit of diverse funding sources, and a novel sequential permitting process. Political and economic risk-acceptance appears high: decision-makers have pursued an expensive project in an *"economically depressed"* community (I014), even though, *"constantly the whole thing gets pushback. Residents don't like change. No one likes the city to be spending that much money. ... [but] nothing's stopped it [the project]"* (I012). The project's co-benefits appear to reassure decision-makers that it is worth the political and economic risk.

Interviewees nominated a number of policy champions, including three qualifying as major policy entrepreneurs. The former city engineer and public works director took the flood control project on as his *"personal responsibility,"* deploying an innovative permitting approach that ensures project continuity (I013). A former city councilor made flood control the centerpiece of his political platform and helped create the local flood control agency. The CEO of a major local company also helped start the flood control agency, leveraging personal connections to get key people onboard. A former city manager qualifies as a steward policy entrepreneur because he kept the flood control team motivated and advocated for the project to state and federal agencies. The current city engineer acts in the same capacity, supporting the project and garnering support from the community.

5.4 | Calla, IL

Calla is a well-resourced, moderately liberal Midwestern city. It experienced major riverine flooding in 1996 and 2008 and has experienced an increase in high-intensity storms that can cause flooding. The city collaborates with its overlaying counties to plan for hazard mitigation and model rain events. City departments work together to plan for rain events, respond to them, and then assess performance and ways to improve.

Officials involved in flood preparation and mitigation appear reasonably receptive to learning about ways to increase resiliency, gaining information from standard sources such as conferences, county officials, peers within government, and peer cities. Calla's decision-makers are moderately proactive in the flood domain, particularly emphasizing that, *"we're really proactive in letting people know you can't put a basement there [in the floodplain]*," but also highlighting areas for improvement: "*I think we're going to see a point in time where we have to be flexible in [stormwater] releases and come up with a better system*" (I035). City staff appear receptive to political and economic risk in the service of improving flood management; one official recounted advising his staff, "*If you fail at a project, that means you're trying something new ... as engineers, we don't like to make mistakes or be wrong. I tell my staff often, 'You know what, you'll make a mistake.' [And] I'm like, 'Okay, that's fine, let's not make that one again.' And they're like, 'Aren't you going to get upset?' I'm like ... 'The only people that never made mistakes for me, never did any work'*" (I035). City elected officials may be more reticent about financial risks, but interviewees also offered examples of situations in which elected officials approved projects despite such risks.

No policy entrepreneurs were evident from interviewee comments. The director of public works sometimes brings new flood management ideas to city staff, acting as an operator.

5.5 | Dandelion, NE

Dandelion is an economically advantaged Great Plains city with a moderate degree of liberalism. The city experienced major floods in 2011 and 2019. The metro area adopted a watershed plan in 2009 that provides for construction of detention facilities. The primary way Dandelion prepares for flooding is by participating in hazard mitigation planning coordinated by a regional natural resources district. The city also participates in FEMA's Community Rating System (CRS) and uses zoning to restrict floodplain development.

Officials involved in flood preparation and mitigation appear moderately receptive to learning, gaining information from standard sources like consultants, federal agencies like FEMA, and state officials. Said one official, "*I guess, like anybody does, I take training courses. I'm involved with the Association of State Floodplain Managers, so I attend conferences and meetings quite often, learning from peers*" (I037). Proactivity around flood management appears rather low; one interviewee noted that development is increasing but, "*nobody is looking too hard at that, as far as what that could do in like 5 years, 10 years … we are putting ourselves in a situation that could potentially be not good later on*" (I030). Decision-makers seem moderately willing to accept political and fiscal risks. Multiple interviewees noted that developers and community members sometimes oppose flood management measures perceived as costly or infringing on property rights. The city tries to incorporate this feedback into its plans to build support.

There is no evidence of a policy entrepreneur advocating for flood mitigation or preparation in Dandelion. Officials at the regional natural resources district were nominated as policy champions, but were not linked to specific policies other than the regional hazard mitigation plan. The city floodplain manager, who shares information with other staffers and mandates "*minimum requirements*" for floodplain development (I033), is an operator in our leadership schema.

5.6 | Eucalyptus, GA

Eucalyptus is a liberal southern city with moderate economic well-being. The city has focused since the 1990s on engineering structural solutions to the moderate flooding it has experienced and the potentially catastrophic flooding it could experience from hurricanes. It extensively invests in capital improvement projects to increase drainage and move water away from development as quickly as possible. Some interviewees characterized the city's approach as *"ad hoc," "disjointed,"* and *"opportunistic,"* based on available grants (I004, I005); grants have funded *"a majority"* of these infrastructure projects (I028). Eucalyptus has used FEMA funds to purchase some repetitive loss properties, converting them into green space. The city participates in CRS and county hazard mitigation planning. It clears and maintains water conveyances, operates pumping stations, and provides emergency response during flooding. Staff do public education and perform sea level and water basin modeling to better understand flood risk.

The breadth of information sources consulted by city decision-makers appears standard, including professional associations, peers within the city or other city governments, and FEMA. An innovative coastal sensor collaboration between NOAA, multiple universities, a range of community groups, and the city stands to be a future source of detailed information about sea level rise, but this potential isn't realized yet. Proactivity is low, evidenced by Eucalyptus hewing to hard structural approaches to managing flooding rather than embracing more innovative measures with co-benefits. A representative of a local environmental group commented, *"we would really love to see, instead of just more civil engineering solutions … more green infrastructure, more green space requirements, prohibition on wetland filling and things like that … [but] everything else just kind of gets lip service"* (I006). A key city official noted, *"You never want to be the first one to try something out"* (I028). Rather than getting out in front of environmental impacts, Eucalyptus, *"can't keep up because of all the extreme amount of development going on. … they're behind the curve"* (I008). Interviewees nearly universally characterized

decision-makers as politically and financially risk-averse, prioritizing economic development. Multiple interviewees commented on lack of political will for investing in flood management, even when there is community interest. A few interviewees noted that the city's tone has shifted in recent years concerning climate change and equity, becoming more receptive to these issues; this may signal a shift toward greater risk acceptance.

We observe two minor policy entrepreneurs and an operator involved in flood mitigation and preparation in Eucalyptus. The former head of the city's Office of Sustainability was roundly described as entrepreneurial in encouraging cultural and institutional change across city government, pushing resiliency and climate change onto the agenda. His entrepreneurship with specific respect to flood management, though, appears marginal: he promoted policies to improve energy efficiency in pumping stations, represented the city in the above-noted coastal sensor initiative, and encouraged officials to heed disadvantaged community voices. Another minor policy entrepreneur, an emergency manager for the county who works closely with the city, introduced the use of a social vulnerability assessment tool during joint hazard planning. Finally, the city's stormwater manager was nominated as a policy champion by some based on his reputation for expertise and competence; we consider him an operator.

5.7 | Foxglove, OK

Foxglove is a politically conservative, poorly resourced Great Plains city. Its flooding risk is low overall, with a few locations that flood during storms. The city implements a hazard mitigation plan, including projects meant to reduce flooding or its impacts, like purchasing repetitive loss properties. Foxglove operates a flash flood monitoring program; participates in the FEMA CRS; implements and updates stormwater, drainage, and floodplain regulations; educates the public about flooding; and maintains relevant infrastructure.

Officials in Foxglove learn from a fairly standard array of sources, including colleagues within the city and in other cities, trainings and conferences, and consultants. Because of recent turnover, many staff are on a sharp learning curve with respect to city operations. Two officials, discussed as policy entrepreneurs below, are particularly characterized as oriented towards learning: "*[Fei and Fred[6]] are in the camp of wanting to learn about new stuff that's coming out and innovate, not be stuck doing something a certain way just because that's the way they've always done it*" (I019). Multiple interviewees characterized these individuals and some of their counterparts as proactive with respect to climate change and planning. Other assessments of proactivity were more mixed, with some indicators of low proactivity (e.g., Foxglove does not require flood mitigation to be constructed before or alongside the project for which it mitigates) and other examples of high (e.g., decision-makers characterized as constantly scanning for ways to improve practices). Decision-makers appear adverse to political risks: *"sometimes they simply don't want to deal with it [a project], because of the political fallout that is taking place. And they'll just throw it on somebody else, or each other"* (I015). Financial risk is also not well-tolerated: *"It's an uphill battle against public perceptions, because of course, anything that we do that's more strict, more stringent, is probably going to cost more money"* (I016). Multiple interviewees discussed financial constraints as an obstacle, and most interviewees could recall instances wherein city decision-makers modified or dropped projects because of political or economic pushback—though more than one cited one specific project that advanced despite resistance.

The city's former development services director, Fei, qualifies as a major policy entrepreneur. She successfully championed the above-noted major, controversial, multi-million

dollar flood management project, which was innovative in both its scope and methods. She also advanced a host of smaller policy innovations, like introducing the use of goats for vegetation management, helping develop an award-winning climate hazard planning tool, engaging officials across government in an innovative hazard management game, and helping form a regional workgroup on hazard preparation. Fei collaborated on some of the smaller innovations with Fred, the city's current emergency manager, whose entrepreneurship is less stark and less widely noted; one interviewee commented that he is *"less extroverted"* than Fei (I019). Fred, who also has sought funds to support flood mitigation efforts, appears to be a steward policy entrepreneur.

5.8 | Gardenia, AR

Gardenia is a moderately well-resourced, politically conservative southern city. Its flood risk is minor, though flash floods may be increasing. Multiple interviewees attributed the city's flooding issues to rapid urbanization of the floodplain. City efforts to manage flooding center around stormwater detention and drainage. These include a 2018 ordinance requiring new development to mitigate flood potential on-site, encouraging low-impact development, updating drainage criteria, and offering more regional detention options. The city participates in FEMA's CRS and works with the county on hazard mitigation planning.

The information sources consulted by Gardenia's decision-makers involved in flood mitigation and preparation seem standard, such as peers within government, a regional professional association, and training and conferences. Interviewees offered fewer details about information sources than in some other cases. Some Gardenia officials appear interested in learning new flood management information, while others are content to let others do this: *"engineering probably does most of the thinking"* (I041). Most interviewees described decision-makers as having low proactivity in addressing flooding, like the official who noted, *"I would like to see more proactive approaches. I feel like a lot of times, our region is really reactive. We wait until we have a flood or a really bad storm to go back and try to fix things that happened"* (I042). An exception may be found in a major policy entrepreneur's education efforts, described below. Multiple interviewees provided compelling evidence of political and financial risk aversion; this is particularly a trait of elected officials, reflecting public opinion.

Gardenia's flood mitigation and preparation efforts involve an operator, steward policy entrepreneur, and major policy entrepreneur. The city's stormwater manager and floodplain administrator serves in the first role; she is described as knowledgeable and good at explaining issues. The minor policy entrepreneur worked on the 2018 ordinance change and, nearly two decades ago, led an effort to change Gardenia's "freeboard" requirements (the height buildings must be elevated above predicted flood elevation). The change itself was relatively moderate: *"two cities north of us went three feet above, the city just south of us was one foot above, and we kind of went with the happy medium [of two feet]"* (I041). The city's major policy entrepreneur, who directs Gardenia's department of planning and community development, has nearly 30 years of experience at the city. She also worked on the ordinance change and advanced a major project developing stormwater detention facilities, which appears innovative in scale, although not necessarily in its methods. Particularly notably, she partnered with a local university, the area metropolitan planning organization, and other partners to develop an education program for developers and city staff focusing on stormwater management and mitigation best practices—though she does not fully claim the achievement: *"I was given credit for*

dreaming all this up myself, when we started this. It didn't really happen that way. But I had to be very forward at the front end" (I044).

5.9 | Hyacinth, MO

Hyacinth is a moderately resourced, politically conservative Midwestern city. It is exposed to a major river system and has had a number of significant floods in the past. The city's preparation for flooding almost exclusively relies on levees: *"our levee system is our lifeline here,"* noted one interviewee (I046). During floods, Hyacinth deploys sandbags and takes other responsive actions, with a strong community volunteer element. In 2016, residents voted in favor of a ¼ cent county sales tax to fund levee upgrades and raising.

City decision-makers concerned with flood mitigation and preparation do not appear to invest substantially in learning or seeking new information sources. They primarily rely on the Army Corps of Engineers for relevant information, since the Corps plays a crucial role in levee construction and maintenance. Sometimes officials get information from FEMA, residents, or trainings. Proactive policymaking appears limited, given that Hyacinth focuses almost exclusively on flood fighting. Additional evidence may be found in the slow progress of a levee raising project, wherein the city is partnering with the Corps and the county. Observed an official, *"if we're going to be reactive, it's easier to get things done. But if we're proactive, then it's harder for people to see that raising that levee is going to be beneficial for you"* (I046). Policymakers' receptivity to risk was harder to assess in this case, relative to others, but we infer that risk acceptance is low because of the limited scope and traditional methods Gardenia uses for flood management. Low risk tolerance also might also be inferred from 70 percent of voters supporting the recent tax increase to fund levee raising, where the public is *"usually not as accepting … to pass new taxes"* (I048); the city's primary flood-fighting tactic has widespread approval and thus low political risk.

No policy entrepreneurship is evident in Hyacinth. Some interviewees nominated as a policy champion an official who has led emergency response to floods. This individual's actions suggest he is an operator.

6 | RESULTS AND DISCUSSION

The case vignettes illustrate the pathways by which policy entrepreneurship helps increase transformative governance capacity. Policy entrepreneurs appear to help compensate for baseline deficits of a city's fiscal base or lack of alignment between public preferences and an entrepreneur's preferred policies. Turning first to a city's fiscal base: Theory suggests that policy entrepreneurs recruit and collect resources, including financial ones, to help secure adoption of their preferred policy initiatives (Beeson & Stone, 2013; Crow, 2010; Frisch Aviram et al., 2020; Wampler, 2009). And indeed, we see policy entrepreneurs taking economic compensatory action in Begonia and Foxglove, the two cases where a TGC was higher than anticipated by the city's fiscal base. Begonia's policy entrepreneurship comes from three major policy entrepreneurs and two steward policy entrepreneurs long committed to obtaining resources for the city's innovative watershed-based flood control effort, addressing the city's lack of financial resources. One recounted saying, *"I'm going to get permits for this, and we're going to get this thing started. I don't know how I'm going to do it, but I'm going to do it"* (I014). Policy

entrepreneurs leveraged connections to secure project funding: *"They're also very active politically. When a big project is moving forward, it always needs state money. And so you have to be connected with the state folks so that you can call up somebody in the right office and get [for example] a $5 million bond for your next project. So they are well-connected"* (I012). The same interviewee characterized the policy entrepreneurs' strategy as, *"You are just a bulldog. You don't give up, honestly ... you set up meetings to get the right players in the room and you fail on your funding 15 times so that you can get it on the 16th."* Creativity and persistence in seeking resources is key, noted an interviewee describing another policy entrepreneur: *"He doesn't back down. He keeps going with the project, even if he gets shut down for money. He's looking for other sources"* (I023).

Begonia's case underscores the importance of policy entrepreneur persistence in tackling financial obstacles. The strategy is, *"Talk to every single person you can about it [the project], and then talk to everyone about it again, and you talk to people you think don't care about it ... it's literally just pushing and pushing and never giving up"* (I012). Ultimately, *"you have to have those individuals that are going to champion the cause. And they're going to champion the cause long-term ... even if they get pushed back or they don't get funding. They're going to stay the course and move forward"* (I023).

We see similar dynamics in Foxglove, where a major and minor policy entrepreneur sought to reduce financial shortfalls to create more sustainable trajectories. The minor policy entrepreneur highlighted the importance of pursuing funding, explaining a strategy of, *"thinking outside the box, [like] maybe we don't get federal funds for this, [so] maybe we go after state funds"* (I015). He noted that having connections to state officials can be important in this regard, so that they can say, *"'hey, you need to be ready to go, you need to be Johnny-on-the-spot on this [grant opportunity] and make this happen'"* (I015). The major policy entrepreneur, Fei, echoed this sentiment, saying that she and the minor policy entrepreneur, *"both know that we can't do it alone; we've got to reach out and broaden who all is brought in"* (I018). Another interviewee noted how, *"Fei was ... just really good at making connections"* (I019). However, some financial obstacles persist despite the entrepreneurs' efforts: *"We don't have the funds, and we have so many other priorities .... We don't get to focus a lot on that problem [of flooding] ... [and] when we don't have the money, period, stormwater is the first thing to get cut"* (I017).

Policy entrepreneurs in Begonia and Foxglove also attempted to increase support for flood management and mitigation policymaking among government officials and the public, trying to make up for lack of alignment between the moderate and high levels of political conservatism (respectively) in the cities and the need for innovative environmental policymaking to grapple with the consequences of climate change. In Begonia, *"The mayor was not in favor of this [flood control project] because it wasn't his idea, and he was holding back on it. But this thing just kind of took over on its own volition, and he finally went along with it"* (I013). Although the policy entrepreneur credited the mayor's charge of heart to the broader advocacy effort (*"this thing"*) rather than his engagement, this anecdote demonstrates the entrepreneurial strategy of seeking to de-motivate or blunt the advocacy of those opposing a policy, using framing and narratives to narrow the policy's perceived scope or impacts or trying to convince those opposed that it does not threaten their interests (cf. Faling et al., 2019). As one policy entrepreneur observed, *"in government ... the easiest thing for you to do is to say no. Nobody's ever going to fight you for saying no. If you say yes, there could be pushback ... you have to be able to talk to people and basically get them to see your point of view. It's a skill [and] not everybody has it"* (I011)—but Begonia's policy entrepreneurs did have this skill, and used it. One Begonia policy entrepreneur, a local elected official, was particularly valuable in this respect because, *"he knows*

everybody and he's got good contacts with a lot of different people ... he's very good at getting people to do what he wants them to do" (I013). Another policy entrepreneur, a local CEO, leveraged his social status to support the effort: "*[He] was a corporate icon in town, and he was behind us ... he was a bigger-than-life guy [and] he took it on as his personal thing to be part of this"* (I013).

The Foxglove experience is similar. Both policy entrepreneurs there tried to overcome political resistance. The minor policy entrepreneur's social acuity and framing skills helped overcome some opposition to flood management: *"Not only is he a respected person within the people that work for the city, but he's been around this community long enough. He's been so involved with so many different aspects of hazard mitigation that the people of the community really trust him, and they believe that what he's doing is the right thing to do ... He knows how to appropriately interact with various groups. Every group takes a different strategy [and] sometimes they receive responses in different ways ... he knows exactly how to respond and when to respond and what other groups he needs to pull in"* (I016). Similarly, the major policy entrepreneur, *"was the ringleader and just really good at making connections ... trying to bring everyone together toward a common goal of addressing their flood-related issues"* (I019). Despite this, actions policy entrepreneurs have promoted are *"not always doable"* (I015). *"Since they [the policy entrepreneurs] weren't at the top of the [political] chain, necessarily, I don't know exactly how successful they were in their efforts"* (I019).

This paper's central proposition is also supported by evidence that lack of financial base or political support makes it difficult for cities lacking policy entrepreneurs (Dandelion, Hyacinth) or only possessing minor/steward policy entrepreneurs (Eucalyptus) to achieve greater transformative governance capacity for addressing flooding. Dandelion officials were, *"hesitant about making a big change in policy, and that was a direct result of developers being wary of how much money it would end up costing them in the long run"* (I029). When asked about factors driving city-level resistance or hesitance to more policy action around flooding, a Hyacinth official said, "*Money is always going to be an issue... probably the biggest issue"* (I046). A Dandelion official described greater policy ambitiousness being hampered by a lack of community support of the type that a policy entrepreneur might invest in fostering: *"I think it's going to [have to be] something that the community, the residents, need to prioritize, and that will give the city the ability then to say, okay, now we can do something"* (I030). Similarly, a Eucalyptus official, talking about stormwater management reform, said, "*[in] 15 years we have not been able to get it ... And that usually comes back to the elected officials. That particular group of city council [members] just aren't ready for it*" (I008). More extensive policy entrepreneurship among key governance participants might have enabled these cities to overcome more of these obstacles.

Two more interesting points arise from the analysis. First, the cases of Amaryllis and Calla demonstrate that it is possible to achieve high TGC without major policy entrepreneurship, a result we did not anticipate. However, it appears plausible given the compensatory role for entrepreneurship that emerged from the cases. Both cities score high on fiscal base and moderate on political alignment. Well-resourced jurisdictions may already pursue policy learning, make strategically risky policy choices, and proactively scan their environments to respond to emergent challenges. The training, expertise, and financial cushion available to officials in these jurisdictions may allow transformative governance processes to be standard practice rather than novel activities to which they must be heroically pushed by policy entrepreneurs. As a Calla official noted, "*we do have a system for knowing that this is a time to capture information and figure out ways to increase resiliency"* (I035). In Amaryllis, *"we're a very nimble city ... and we're quick to make decisions. We don't do a lot of paralysis by analysis."* (I047).

Public support for innovative environmental policymaking may widely incentivize officials to pursue transformative policy pathways. Respondents in these cities may not have offered examples of major or minor policy entrepreneurs in response to our interview queries because many governance participants in these contexts act in entrepreneurial ways, such that respondents could not easily nominate specific policy champions. In short, when the primary function of policy entrepreneurs is trying to compensate for fiscal shortfalls or political misalignment, there may be less impetus for them to act in resource-rich environments.

Finally, the case of Gardenia, where transformative government capacity appeared low despite activity of a minor and major policy entrepreneur, underscores the importance of scholars attending to entrepreneurial focus. Policy entrepreneurs may be a common feature of policy processes (Brouwer & Huitema, 2018), but they do not necessarily seek to solve problems in the same ways. The largest policy innovation linked to Gardenia's major policy entrepreneur, an educational initiative involving collaboration with nongovernmental partners, provides front-end training to developers whose activities might adversely affect flooding. Given barriers to path-breaking flooding mitigation policy within city government, this policy entrepreneur may have decided that, rather than investing in shoring up city fiscal base or political support for city action, the goal of reducing flooding would be best served by targeting a largely separate realm. The policy entrepreneurs in Gardenia may not have been less effective than those in other cities, but may have had different priorities.

7 | CONCLUSION

Using a lens of city responses to flooding hazards associated with climate change, this paper explores the role of policy entrepreneurship in advancing transformative governance capacity. Rather than a specific endpoint, transformative governance capacity refers to processes pursued by governance participants that are likely to lead to sustainable approaches to managing complex, emergent challenges. We posited that when members of the core group of actors involved in governance in a given domain have a learning orientation and are willing to be proactive and take risks in policymaking, transformative governance capacity is greater. Many studies of transformative governance focus on systems-level properties rather than individual agency; we offer a corrective, demonstrating how individuals' actions or inactions can influence transformative trajectories.

Our analysis suggests that well-resourced cities where public sentiment is aligned with policy goals may be better positioned for transformative governance, but even cities lacking in these dimensions can demonstrate transformative governance processes when entrepreneurial actors devote their own resources to boosting political support or financial capital. Policy entrepreneurs network to obtain resources, bear personal risks to encourage policy risk-taking, deploy social acuity and strategic problem framing to recruit supporters, and persistently advocate for change.

The fact that policy entrepreneurship may have more influence over transformative governance capacity (TGC) than jurisdictional fiscal base or political support is good news for people interested in fostering TGC. But can policy entrepreneurship itself be strategically developed and deployed? What explains why policy entrepreneurs emerge in some places but not others?

Research by Frisch-Aviram et al. (2021) found that street-level bureaucrats trained in policy entrepreneurship exhibit more entrepreneurial behaviors. Other literature points to contextual conditions that help policy entrepreneurship flourish, such as organizational support (Rizza & Lucciarini, 2021), multi-level governance structures (Henderson, 2019), and innovation-focused institutions (Henderson, 2019; Jarvis & He, 2020). There is irony, though, in finding that policy

entrepreneurs are well-positioned to advocate for policy innovation when their jurisdiction or organization is already innovative. What about the places that need policy entrepreneurs to drive innovation? Research suggests people can be catalyzed to policy entrepreneurship when someone else champions a policy that a would-be entrepreneur perceives as a threat to their values or beliefs (Arnold, 2022), when resources they need for their jobs are threatened (Arnold, 2015), when a crisis demonstrates that existing practices are maladaptive and demands innovative problem-solving (Becker et al., 2024; Petridou et al., 2024), or when there are opportunities for career advancement (Teodoro, 2009, 2011). Scholars should investigate whether these or other factors spur policy entrepreneurship that advances transformative governance, and whether some factors are more catalyzing than others.

The results of this research likely generalize to mid-sized American cities confronting flooding challenges, since this is the population from which the case studies were selected. However, cities were only eligible for selection if they first responded to a survey concerning city responses to environmental hazards. To the extent that poorly resourced jurisdictions lacked capacity to respond to the survey, the results may not generalize to their perspectives and experiences. To the extent that politically conservative jurisdictions chose not to respond to a survey from a university, a type of institution viewed with increasing suspicion by conservative partisans in the United States, the results may not generalize to deeply conservative polities. A related point, touched on above, is that the manner in which we operationalized political alignment may be specific to the American context, where any policymaking around climate change is politically polarized. In less politically charged environments or around less politically charged issues, alignment between policy and polity may be less consequential or may take a different form. The generalizability of our conclusions also should be assessed in research at other levels of government, in other countries, and in other policy domains.

The limitations of this study highlight future avenues for scholarship. The case studies were selected to maximize variation on a survey-based measure of transformative governance capacity. While maximizing dependent variable variation helps explore pathways toward TGC, this approach did not yield a mix of cases covering all possible combinations of key independent variables: city fiscal base, political alignment, and policy entrepreneurship. A study maximizing variation across these variables, necessarily involving a larger sample, would offer a useful complement. Using a larger sample would also help tease out whether the independent variables or TGC are affected by a jurisdiction's past experiences with flooding. Research suggests that experience plays a role in policy learning, calculating and taking risks, and spurring preparatory action. However, across these eight cases, we could not detect any systematic relationship between flood history, the independent variables, or TGC. More generally, future research should dig into how the nature of a hazard affects TGC and policy entrepreneurship. Floods, other climate change-induced hazards, and other systemic shocks likely vary in ways that affect the choices of decision-makers and policy entrepreneurs and the outcomes they realize. The public salience, technical complexity, scope, temporality (e.g., fast vs. slow-onset), and predictability of governance dilemmas may affect a jurisdiction's transformative governance capacity directly or indirectly, by mediating influences from city attributes or policy entrepreneurship.

IRB

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ENDNOTES

[1] Transformative governance capacity (TGC) is calculated by summing three three-level ordinal variables capturing learning orientation, risk acceptance, and proactivity of key decision-makers involved in flood preparation and mitigation, and then re-binning (scores of 3 = 1, 4 or 5 = 2, and 6-9 = 3).

[2] Theory offers numerous additional criteria which could be used to further nuance this categorization, like whether there is evidence of an actor opportunistically seizing windows of opportunity (Petridou, 2023) or whether an actor lacks resources to accomplish their policy goal and must pursue advocacy to attain resources (Frisch-Aviram et al., 2018). Policy entrepreneurship scholarship lacks a widely agreed-upon standard for identifying these actors, particularly in empirical work (Arnold et al., 2023). The thresholds we employ offer a useful set of minimum standards.

[3] We would also assign a 1 to cities taking a 1 on both economic measures, but this does not occur in our data.

[4] We also considered whether a city's flooding history, as described by interviewees and by the U.S. Federal Emergency Management Agency, appears to map to TGC, independently or in conjunction with other variables. We observed no clear pattern and so, for parsimony, do not present flood history data.

[5] Also statistically insignificant is the Spearman's correlation between TGC and a city baseline index created by summing the fiscal base and political alignment variables.

[6] Pseudonyms.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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