

Policy Entrepreneurship for Transformative Governance

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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 world. 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 and Frantzeskaki 2021; Rijke et al. 2013; Kelemen et al. 2023). 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; Petridou and Mintrom 2020; Mintrom 2019; Arnold 2020; Mintrom and 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 2020; Arnold 2021; Frisch Aviram et al. 2020; Mintrom and 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, alongside other potentially important factors, such as a city’s political and economic capacity and exposure to risk. 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. Entrepreneurism plays a particularly important role in compensating for capacity deficits.

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 and 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; O'Brien 2012; Adger and Jordan 2009). Transformative governance uses collaborative and democratically robust processes to try to break free of maladaptive institutional, cultural and behavioral lock-ins (Hölscher and Frantzeskaki 2021; Feola 2015; 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., Wiczorek 2018; Hansen et al. 2018) and studies of socio-ecological (e.g., Folke et al. 2005; Rijke et al. 2013) and socio-technical systems (e.g., Geels 2005; Loorbach et al. 2012). 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., Hölscher et al. 2019; Kelemen et al. 2023; Behnassi et al. 2021; 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 in order to solve complex problems (see also Hölscher and 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 in order to be willing to bear the present financial and political costs of proactive and learning-focused policymaking, in the hope of future benefits.

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 (Mintrom et al. 2014; Frisch Aviram et al. 2020), and emphasized that policy entrepreneur typically seek major or otherwise path-breaking policy change (Mintrom and Norman 2009; Petridou and Mintrom 2020; Mintrom and Luetjens 2017). 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 and 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 (Bardach 1977; Cairney 2018; Pralle 2003; Arnold 2022; 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 (Gofen et al. 2021; Cairney 2018; 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 and Subirats 2010; Meijerink and Huitema 2010; Roberts and King 1991; Garud et al. 2007; Weissert 1991). They then seek to 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 and 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 (קרוז and Cohen 2012; Cohen and Horev 2017), 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 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; Wood 2018; Frisch Aviram et al. 2020). 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 and Zahariadis 2023; Herweg and Zohlnhöfer 2019; Sheingate 2003; Zohlnhöfer 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 solutions (Petridou 2023; Mintrom and Norman 2009; Brouwer 2015). 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., Hood Cattaneo 2018; Murphy 2020; Aukes et al. 2018; Aviv et al. 2021; Lamb and Vale 2019; Corbett et al. 2020; Sedlačko and Staroňová 2023; O’Neill et al. 2019). 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 2019; Castan Broto et al 2019).

Contributors to Transformative Governance Capacity

Systems in different domains (e.g., education, healthcare, energy) and at all levels (e.g., national, regional, and local) face an array of impending, coupled threats and opportunities. In these moments, there is a crucial role for change agents who have been seeding the path for disruptive innovations. This is particularly true for policy entrepreneurs advocating for preventative innovations, like seawalls or stormwater pumping facilities, whose utility can be undervalued until the occurrence of crises they are designed to avert (see Rogers 2002). Flooding in cities offers a prototypical case. 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 (Wahl et al. 2015; Rosenzweig et al. 2018). City governments are responding with a groundswell of 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). The time is ripe to interrogate the role policy entrepreneurs working in domains related to flooding can play in increasing transformative governance capacities in cities. We develop two propositions toward this end.

a. The importance of accompanying capabilities

Policy entrepreneurs do not act in isolation. A jurisdiction's political and economic capacity also likely influence the extent to which its decision-makers are able to pursue transformative governance and how policy entrepreneurs are able to operate. Political capacity refers to support for governance measures among the voting public, government officials, and key interests. Officials are unlikely to pursue measures opposed by a significant proportion of the electorate, which they personally oppose, or which are opposed by interests with substantial financial or human capital. Economic capacity refers to funding available or able to be committed to governance measures. Cities with less economic capacity will find it more difficult to pursue new policies or policy changes that require financial investment.

An extensive literature on policy innovation and adoption finds that jurisdictions with more political and economic capacity are more likely to adopt innovative policies (e.g., Adua 2021; LaCombe, Tolbert, and Mossberger 2022; Mallinson 2021; Karch et al. 2016; Habans et al. 2019; Gray 1973; Krause 2011; Bassett and Shandas 2010; Shipan and Volden 2008). In parallel, we posit that cities with larger populations and wealthier, more liberal residents have greater capacity for transformative governance. Such cities have larger 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. Since 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), cities with more liberal residents are likely to have greater political capacity to make policies addressing climate change-associated flood hazards; this base of support should help them mitigate political and economic risks related to proactive investments in policy experiments and new or modified infrastructure. These expectations likely generalize to progressive policy matters unrelated to climate change. Thus we posit:

Proposition 1: Jurisdictions with greater political and economic capacity have greater transformative governance capacity, and vice-versa.

b. The importance of policy entrepreneurship

We anticipate that policy entrepreneurship can increase transformative governance capacity by acting through the same levers as economic and political capacity. Turning first to economic capacity: Jurisdiction wealth and size should predict TGC because greater financial resources can support policy experimentation and investment, and a greater financial security can buffer risks posed by expensive or untried policy innovations. Policy entrepreneurs recruit and collect resources, including financial ones, to help secure adoption of their preferred policy initiatives (Beeson and Stone 2013; Frisch Aviram et al. 2020; Crow 2010; Wampler 2009). For example, policy entrepreneurs can lobby other levels of government or the private sector for grants or other forms of project financing, or propose and advocate for policy measures, like taxes or fees, that a jurisdiction could deploy to obtain needed resources. They can help officials locate public or private-sector collaborators who could share the costs and effort associated with policy innovations.

When policy entrepreneurs invest personal resources in demonstration or pilot projects, they reduce resource burdens imposed on the target jurisdiction. Similarly, if a new policy or program requires resident engagement, policy entrepreneurs can save costs for government by investing their own resources in public education and outreach. When policy entrepreneurs provide decision-makers with information, they offer a substitute for or supplement to information-gathering decision-makers might pursue at trainings or conferences—particularly valuable for resource-limited jurisdictions who cannot afford to send decision-makers to such events.

Turning to political capacity: greater liberalism among a city’s residents may enhance TGC because liberalism is associated with support for progressive policies, including those focused on sustainability, and the goal of transformative governance is to progress toward sustainable, adaptive policy pathways. Policy entrepreneurs can use tools of advocacy to recruit and activate liberal partisans and amplify liberal voices. For example, they can mount public education campaigns to highlight for liberal residents how a proposed policy aligns with their values, encouraging them to support it. Policy entrepreneurs can grow the pool of policy supporters by networking with progressive nonprofits and community groups, encouraging them to catalyze their memberships to back a policy. Policy entrepreneurs operating locally can network vertically, bringing their cause to the attention of state- and national-level progressive organizations or political figures in the hope of obtaining more resources for local political activation.

Policy entrepreneurs can recruit liberal partisans to attend public hearings or meetings where they exhort their elected representatives to support a proposed policy, or organize rallies, letter-writing campaigns, and petition drives toward the same end. They also can seek to de-motivate or blunt the advocacy of conservative partisans who might oppose a policy. Policy entrepreneurs could strategically use framing and narratives to narrow the perceived scope of the policy or its impacts, trying to convince conservative partisans that it does not affect their interests (c.f. Faling et al. 2019). They can encourage policy designs that “bundle” a progressive policy with measures conservatives are likely to support, thereby reducing opposition. They could propose policy instruments that achieve sustainability goals in ways less objectionable to conservative partisans, like choosing financial incentives over regulatory requirements. Thus we posit:

Proposition 2: Policy entrepreneurship helps compensate for capacity deficits, such that jurisdictions with entrepreneurship have greater transformative governance capacity than would be expected by capacity alone.

Table 1. Summary of Propositions			
TGC Element	Proposition 1		Proposition 2
	Economic Capacity	Political Capacity	Policy Entrepreneurship
Learning Orientation	Enables officials to hire external consultants, train staff, pay for association memberships and other learning resources	Encourages officials to be open to receiving information and pivoting on that basis	Entrepreneurs 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	Financial resources provide a buffer against potential losses from innovative policy action, encouraging policy risks	Political support provides a buffer against potential dissatisfaction with innovative policy action, encouraging policy risks	Entrepreneurs 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	Enables officials to build or modify infrastructure or invest in policy experiments	Encourages officials to pursue innovative, experimental practices and invest in preventative innovations	Entrepreneurs 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

Methods and Measures

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 five 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 minutes. 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 in order 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 2 also contains a capacity variable, which considers population size, median income, and liberalism,² and a flood history variable, capturing the magnitude and frequency of flooding experienced by the city, as perceived by interviewees. Although objective measures of flood risk exist, we opted for a perceptual measure because decision-makers process data through cognitive filters shaped by their values and beliefs, and make decisions on these bases (Sabatier and Weible 2019). Experience with flooding likely informs how decision-makers tackle it, but we are uncertain about the direction of this dynamic. Such experience might increase TGC by impressing policymakers of the urgency of addressing flooding, encouraging them to learn about better ways to grapple with it, proactively implement strategies they learn, and take risks to avoid future flood impacts. Conversely, the stress of dealing with past flooding and the urgency of addressing future flooding may cause cities to hew to known standard operating procedures rather than risk experimenting with new and innovative measures.

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 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.

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 Capacity is calculated by binning population size, median income, and Democratic partisanship into low (1), medium (2), and high (3) at natural break-points in the data, then summing across these measures for each city and re-binning the resulting sums into an ordinal three-level variable, using natural break-points (scores of 3, 4, or 5 = 1, 6 or 7 = 2, and 8 or 9 = 3).

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 discuss 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 in order to address contemporary societal priorities like equity or resiliency
Flood History	Many interviewees characterized past flooding in the city as minor and did not cite any major past floods	Many interviewees described a moderate flooding history, often citing at least one major flooding event	Many interviewees described a major flooding history, citing more than one major flooding event
<i>Variables Capturing Patterns Across Component Measures</i>			
Transformative Governance Capacity (TGC)	All 1s across learning, risk, and proactivity	No 3s across learning, risk, and proactivity, AND two 2s	At least one 3 across learning, risk, and proactivity, AND no

			values lower than 2
Capacity	At least one 1 across size, wealth, and liberalism, AND no 3s	At least one 3 across size, wealth, and liberalism	At least two 3s across size, wealth, and liberalism, AND no values lower than 2
<i>Note:</i> Appendix Table A1 presents data used to calculate the capacity variable.			

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 and 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., Li et al. 2022; Hood Cattaneo 2018; Hudson et al. 2021). 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 and Frantzeskaki 2021; Rijke et al. 2013; Kelemen et al. 2023; Toffanin and Jezic von Gesseneck 2021). While both types of policy entrepreneurs promote change, major policy entrepreneurs’ efforts appear more likely to advance transformativeness.

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.
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

Table 4 displays values the case study cities take on variables described above. Some patterns begin to emerge from Table 4 that help evaluate this paper’s hypotheses. Namely, there are three high-TGC cities, one of which lacks a policy entrepreneur. Similarly, there are three medium-TGC cities, one without a policy entrepreneur. Finally, there are two low-TGC cities, one lacking a policy entrepreneur. This distribution suggests that policy entrepreneurship is neither a necessary nor

sufficient condition for raising TGC. Before turning to the propositions, we briefly describe each case.

Table 4. Case Study City Scores on Key Variables						
City	Capacity	Flood History	TGC	Leadership (Counts)		
				Operator	Steward or Minor Policy Entrepreneur	Major Policy Entrepreneur
Amaryllis, CA	3	1	3	1	1	0
Begonia, CT	1	3	3	0	2	3
Calla, IL	3	3	3	1	0	0
Dandelion, NE	2	3	2	1	0	0
Eucalyptus, GA	2	3	2	1	2	0
Foxglove, OK	1	1	2	1	1	1
Gardenia, AR	1	2	1	1	1	1
Hyacinth, MO	1	3	1	1	0	0

Note: City names anonymized to protect interviewee confidentiality.

Case Vignettes

Amaryllis, CA

Amaryllis is a relatively large, wealthy West Coast city with the second-highest liberalism score among the eight case studies. It also has less history of flooding than most of the other eight. 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 two 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 the city’s 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 schema, this qualifies him as an operator.

Begonia, CT

Begonia is the second-smallest case study city, with roughly 60,000 residents. This East Coast city has an average median income below the dataset mean and a liberalism level slightly above the mean; both are well within one standard deviation. 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.

Calla, IL

Calla is a large, wealthy Midwestern city with a liberalism score somewhat above the dataset average. 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 collaborate 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 recounting 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.

Dandelion, NE

Dandelion is a large city in the Great Plains. It is moderately wealthy, with a liberalism score somewhat below the dataset average. 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 in order 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.

Eucalyptus, GA

Eucalyptus is a large, southern coastal city with a median income below the dataset average but within one standard deviation. Its liberalism score, the highest in the dataset, is between one and two standard deviations above the mean. Eucalyptus 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.

Foxglove, OK

At roughly 50,000 people and a median income of approximately \$34,000, Foxglove is the smallest, least-resourced city we analyze. This income value is nearly a standard deviation below the dataset average, while liberalism is more than one standard deviation lower. Foxglove's 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 Fred³] 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.

Gardenia, AR

Gardenia, a moderately sized southern city, has the second-lowest liberalism score in the dataset. Its median income is lower than the dataset average, though within one standard deviation. Gardenia’s flood risk is minor, though flash floods may be increasing. Multiple interviewees attributed the flooding issues that do exist to rapid urbanization of the floodplain. City efforts to manage flooding center around stormwater detention and drainage. These efforts 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.

³ Pseudonyms

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).

Hyacinth, MO

Hyacinth is a moderately sized Midwestern city with median income and liberalism values below the dataset average, though within one standard deviation. Hyacinth 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% 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.

Results

Proposition 1, concerning the role of political and economic capacity in facilitating or discouraging transformative governance, is partially supported. Cities with high political and economic capacity, like Amaryllis and Calla, also have high TGC. 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). Helpfully, “the various city councils have in general been supportive” (ibid.).

Dandelion and Eucalyptus have medium political and economic capacity and medium TGC. In both, deficits of political capacity limit action on flooding. A Dandelion official noted, “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). 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).

Gardenia and Hyacinth have low political and economic capacity and low TGC. Gardenia offers evidence of political and economic incapacity limiting action: “Money is the biggest obstacle. It’s so expensive. And a lot of people don’t see why it’s important. And so they don’t see the value of spending this money ... the leadership group takes a more conservative approach” (I042). Some similar dynamics appear in Hyacinth, where, “money is probably the biggest issue” (I046). In conservative Hyacinth, political incapacity is not cited by interviewees as an obstacle to transformative action on flooding; there seems to be little recognition that the city could do anything other than hew to its traditional, limited approach. We take this as evidence that there is no political capacity available for more sustainable trajectories.

Interestingly, political and economic capacity map to TGC even when flood history varies: Amaryllis has minimal past flooding and Calla substantial; Gardenia has moderate past flooding and Hyacinth has extensive flood experience.

In two cases, Begonia and Foxglove, we observe higher levels of TGC than anticipated by political and economic capacity alone. This variation occurs across different levels of flood experience. Our exploration of Proposition 2 helps shed light on this dynamic.

Proposition 2 anticipates that policy entrepreneurship helps compensate for capacity deficits, such that jurisdictions with entrepreneurship have greater transformative governance capacity than would be expected by capacity alone. By extension, we expect that policy entrepreneurship is not a key driver of TGC in places that already have high political and economic capacity.

The case studies show substantial, but not complete, support for Proposition 2. High-capacity Calla does not have a policy entrepreneur concerned with flood mitigation and preparation, but this is not an obstacle to the city achieving high TGC. Well-resourced government staff, supported by the public and elected leaders, appear to learn, take some proactive measures, and take calculated risks as part of their day-to-day work. High-capacity Amaryllis achieves high TGC with a steward policy entrepreneur and an operator combination, individuals largely pursuing progressivity in the course of their jobs. Entrepreneurship may be unnecessary to overcome barriers to learning-oriented, proactive, and risk-accepting policymaking because, in Amaryllis, “we haven’t had that adversity ... we [haven’t] had to really overcome hurdles that way” (I037).

The biggest impact from entrepreneurship or lack thereof appears in low-capacity Begonia, Foxglove, and Hyacinth, and medium-capacity Dandelion. Two of these accounts center around absence. In Hyacinth, there is no policy entrepreneur of any type to try to compensate for the city’s low financial and political capacity. Accordingly, city decision-makers exhibit low TGC. Dandelion, too, lacks a policy entrepreneur, and manifests a medium level of transformative governance that matches its medium political and economic capacity.

Begonia stands in contrast. Its levels of flood risk (high) and capacity (low) parallel Hyacinth, but despite these obstacles, Begonia manifests high TGC. Extensive policy entrepreneurship in Begonia, from three major policy entrepreneurs and two steward policy entrepreneurs, appears to drive this difference.

Begonia’s policy entrepreneurs have long been committed to obtaining resources for the city’s innovative watershed-based flood control effort, compensating for the city’s lack of financial

capacity. 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 political 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.”* One 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). 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 policy entrepreneurs battled and overcame lack of political support for the flood control program they championed: *“The mayor was not in favor of this 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). 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.

Fundamentally, Begonia’s case underscores the importance of policy entrepreneur persistence in tackling political and 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). *“If the first guy says no, well, then you go talk to the second guy. The second guy says no, you talk to the third guy. You talk to enough people [and] eventually you find somebody who’s going to say, ‘yeah, that’s a good idea”* (I011). 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).

Foxglove is another low-capacity case where policy entrepreneurship appears to help make up some capacity deficits. Unlike in Begonia and Hyacinth, flood risk in Foxglove is low. A major policy entrepreneur, minor policy entrepreneur, and an operator push against economic and political resistance to try to create more sustainable trajectories.

The minor policy entrepreneur highlighted the importance of pursuing financial resources, 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”* (ibid.). 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, 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).

All three policy champions try to overcome political incapacity. Interviewees noted the minor policy entrepreneur’s skill in framing issues in ways that help overcome opposition to flood management: *“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). The operator also has skills in this area: *"he can talk with them [stakeholders, leaders, permittees] and really have them not only understanding, but becoming involved and engaged in wanting to do something right"* (I018). 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).

The difference in TGC between Foxglove (medium) and Begonia (high) may be due to the more extensive policy entrepreneurship in Begonia doing more to make up for deficits of political and financial capacity. Or it might be related to flood risk: Begonia's flooding situation was characterized as dire, with *"two catastrophic floods over the past 20 years that have basically shut down downtown"* (I011), whereas in Foxglove, *"we haven't really had anything big happen that has caused us to do or implement major changes"* (I016). The urgency of Begonia's need might have pushed policy entrepreneurs toward a transformative response, whereas in Foxglove, *"we're really kind of fine-tuning and tweaking small things there and there to try to help alleviate specific problems"* (I016).

The cases of Eucalyptus and Gardenia challenge Proposition 2. Eucalyptus has medium levels of political and economic capacity and medium TGC, yet features two minor policy entrepreneurs who presumably could help elevate TGC. Similarly, Gardenia has both a minor and major policy entrepreneur, but their activities do not push the city's low TGC above what would be expected by its low political and economic capacity.

The foci of the policy entrepreneurs in these cases may explain these results. The largest policy innovation linked to Gardenia's major policy entrepreneur, an educational initiative involving collaboration with non-governmental partners, provides front-end training to developers whose activities might adversely affect flooding. It is possible that, frustrated by political and economic barriers within city government, this policy entrepreneur abandoned efforts to shore up city capacity and instead sought to build up capacity for reducing flooding impacts in a largely separate realm. In Eucalyptus, neither minor policy entrepreneur works directly in city flood mitigation and preparation; one works for the county and engages with the city through joint hazard planning, and the other worked in the city's Office of Sustainability and engaged with flood management officials in that capacity. Their entrepreneurship may have focused more on building capacity in county emergency management and the city sustainability office, respectively, rather than in the city's approach to flooding. Both officials also had substantial leadership roles in a federal, state, university, and local collaboration to improve equity and resilience in city policymaking generally, but not flooding particularly. The policy entrepreneurs in Gardenia and Eucalyptus may not have been less effective than those in other cities, but rather had different priorities.

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 cities with greater wealth, liberalism, and population size are better positioned for transformative governance, but even cities lacking in these dimensions can demonstrate transformative governance processes when entrepreneurial actores 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 issue and problem framing to recruit supporters, and persistently advocate for change.

On a practical level, these findings raise questions about how to foster transformative governance capacity. Individuals or groups pursuing this goal are unlikely to be able to shift a jurisdiction's wealth or population size, and perhaps to a lesser degree, the political preferences of residents. Policy entrepreneurship may be a more movable lever. Can policy entrepreneurship be fostered? What explains why policy entrepreneurs emerge in some places but not others?

Some research suggests a positive answer to the first question. Frisch-Aviram and coauthors (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 and Lucciarini 2021), multi-level governance structures (Henderson 2019), and innovation-focused institutions (Jarvis and He 2020; Henderson 2019). 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 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: capacity, flood history, and policy entrepreneurship. For example, we are not able to tease out—in comparing Begonia versus Foxglove—whether Begonia's greater TGC is caused by more extensive policy entrepreneurship, greater flood risk, or both. A study maximizing variation on the independent variables would offer a useful complement. The generalizability of our conclusions also should be assessed in research at other levels of government and in other policy domains.

Future research also could 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 versus slow-onset), and predictability of governance dilemmas may affect a jurisdiction's transformative governance capacity directly or indirectly, by mediating the effects of capacity and policy entrepreneurship.

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Appendix Table A1. Case Study Cities				
City	Population Size	Median Income	Percent Democrat	Interviews (Interviewees)
Amaryllis, CA	174,775	93,780	59.31	4 (5)

Begonia, CT	59,395	58,843	54.49	7 (7)
Calla, IL	148,449	125,926	55.76	3 (4)
Dandelion, NE	478,192	60,092	45.67	5 (5)
Eucalyptus, GA	144,464	43,307	72.38	11 (12)
Foxglove, OK	81,125	50,343	34.43	6 (6)
Gardenia, AR	74,875	48,197	35.95	4 (4)
Hyacinth, MO	50,299	34,309	40.53	7 (7)
			Total	47 (50)

Notes: Size (population) and wealth (median income) are from the American Community Survey in 2019. Percent Democrat is the estimated proportion voting for the Democratic presidential candidate in 2016 at the city level (see Krause et al 2023).