# Climate Cascades: IOs and the Prioritization of Climate Action

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**Abstract**

International organizations (IOs) are increasingly reorienting around climate change. While a large literature suggests that IOs are beholden to powerful principals, U.S.-led institutions like the IMF have pivoted to climate despite the Trump administration's opposition in recent years. When do IOs prioritize climate change? We argue that they do so as a result of staff learning, socialization, and rotation. IO staff perform surveillance and implement programs in target states. When working in climate-vulnerable countries, they come to see climate change as an issue warranting aggressive action. As these staff are rotated and promoted, climate activism diffuses upwards and outwards through the institution in ways that initially escape the notice of powerful principals. To test this theory, we introduce original data tracking IMF attention to climate change and the career paths of key staff. We complement this with interviews of IO bureaucrats. We find support for our theory.

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Climate change is rapidly moving to the fore of the global governance agenda. Beyond the creation of such dedicated climate institutions as the Green Climate Fund and Intergovernmental Panel on Climate Change, international organizations (IOs) established for distinctly non-climate purposes are increasingly focusing their policymaking and rhetoric on questions of climate change. The current director-general of the World Trade Organization has emphasized the "need to harness the power of trade for the environment."[1] The Bank for International Settlements has recently sounded the alarm on climate-induced financial risks (Bolton et al. 2020). The World Bank instituted a plan in the late 2010s to dramatically increase lending for climate-related development projects, with its president declaring that "climate change presents critical challenges to [the Bank's] development efforts."[2] In 2019, then-IMF Managing Director Christine Lagarde labeled climate change "the great existential challenge of our times," calling for the implementation of carbon pricing regimes and removal of fossil fuel subsidies.[3]

These pivots to climate are notable given the struggles to conclude ambitious international climate pacts (Victor 2011). IOs such as the World Bank and IMF are known to be prone to the influence of powerful members, such as the United States, European Union, and China (Kilby 2009; Kaya 2015; Nelson 2017; Clark and Dolan 2021). Yet both institutions accelerated their turns to climate under the administration of Donald Trump, who actively sought to undermine climate institutions, and despite the continued resistance to aggressive climate action elsewhere.[4] The IMF, for example, has called for carbon prices and stricter regulations of climate-related financial risks in large economies.[5] The assent of powerful states is thought to be critical to international climate governance (Nielson and Tierney 2003; Barrett 2005; Graham and Serdaru 2020). If that is the case, why are IOs nonetheless devoting more resources to climate advocacy and policymaking?

We argue that IOs can pursue policies at odds with the preferences of leading stakeholders due to a process of staff learning, socialization, and rotation. Bureaucrats at IOs often perform

[1] WTO, 2021, <bit.ly/3uYixkj>.
[2] World Bank, 2020, <bit.ly/2Tllsp2>.
[3] IMF, 2019, <bit.ly/3xxYhX2>.
[4] Recent media coverage details the specific influence of climate-resistant countries such as Brazil and China over IMF and World Bank leadership. *Bloomberg*, 2021, <bloom.bg/308hQtw>; *FT*, 2021, <on.ft.com/3akRoP3>.
[5] IMF, 2021, <bit.ly/3EEK9yw>; IMF, 2021, <bit.ly/2ZM3Zt8>.

surveillance and implement policies on the ground in target states. For instance, the World Bank deploys staff members in order to oversee infrastructure projects; the International Atomic Energy Agency sends inspectors to member states to observe nuclear facilities; the United Nations deploys peacekeepers; and the IMF sends cohorts of staff to member states to implement and monitor programs, as well as to perform periodic economic surveillance. We contend that when working in countries with highly salient climate vulnerabilities, IO staff come to see climate change as an issue warranting aggressive action. This occurs due to both observation of climate change's physical effects and the persuasive efforts of host country officials, civil society actors, and business groups concerned about physical climate damages. As IO staff are then rotated to other countries and promoted through their institution's professional ranks, climate concerns diffuse horizontally and vertically through the organization in ways that initially escape the notice of powerful principals. This framework explains otherwise puzzling cases where IO policies contradict the interests of powerful member states. It also clarifies how IOs reorient themselves to govern emergent international issues (Jupille, Mattli and Snidal 2013).

To test this theory, we introduce new datasets on the IMF's attentiveness to climate change and the career paths of IMF bureaucrats. These data leverage the Fund's Article IV reports, which summarize findings from routine surveillance operations in member states and identify economic risks to these countries. We code discussions of climate change in these reports, as well as the identities of staff members involved in their drafting, for all IMF member states in the period of 2000–2018. Doing so allows us to document both the IMF's increased focus on climate over time and the movement of climate-conscious staff through the Fund's bureaucracy. We believe these data to be a noteworthy empirical contribution, as we are among the first to systematically track both climate concerns and bureaucrats' career arcs in one of the world's oldest and most influential IOs.

To offer evidence for our theory, we first offer descriptive evidence on the diffusion of climate concerns within the IMF. We then show that bureaucrats are likelier to first become attuned to climate-related economic risks when stationed in a country where such risks are particularly con-

spicuous. Documenting the bureaucrat-led spread of climate concerns, we lastly examine whether bureaucrats who previously discussed climate risks were likelier to continue citing such risks after moving to new countries. We find strong indication that this is the case through both quantitative analyses of IMF policy statements and qualitative interviews with IMF staff.

Our theory and findings contribute to a growing literature on the role of individual bureaucrats in shaping IO policymaking, extending and revising work detailing the autonomy and influence of IO staff. Existing accounts often focus on bureaucracy-level features, obscuring interesting variation across individual bureaucrats at the same institution (Barnett and Finnemore 1999; Clark and Dolan 2021). This paper refocuses on within-IO differences in staff preferences, showing how individual bureaucrats can alter organizational trajectories as they are deployed to member states and move within their institution. In doing so, this paper diverges from scholarship emphasizing the role of powerful member states in setting IO priorities (Stone 2011; Clark and Dolan 2021), including at climate-focused institutions (Graham and Serdaru 2020), by showing how seemingly unimportant bureaucrats stationed in weak states can influence policymaking.

We additionally advance the literature interested in how change occurs in IOs and the international system. Much of this work highlights how watershed events, as part of punctuated equilibria models (Weyland 2007; Schneider 2014), drive change in international politics. We rather suggest that change can occur slowly and endogenously as a result of anodyne organizational management practices, such as the rotation and promotion of low- or mid-level bureaucrats. With our focus on the spread of ideas within IOs, we further add to work on norm cascades and the diffusion of ideas as drivers of political change (Finnemore and Sikkink 1998; Chwieroth 2008; Jones and Zeitz 2019).[6] We also contribute to the literature interested in socialization through IOs, though we diverge from existing approaches by examining how member states can socialize IO staff.[7]

This paper further contributes to the emergent literature on the risks stemming from the potential devaluation of carbon-intensive and climate-vulnerable economic assets (Colgan, Green and

[6] Also see Checkel (2003); Hooghe (2005).

[7] This tradition has mostly examined how IOs socialize states (e.g., Johnston 2008) or how IOs provide a venue for states to socialize each other (e.g., Greenhill 2010).

Hale 2021). There is considerable uncertainty over where, when, and to what extent these climate risks will manifest (Chenet, Ryan-Collins and van Lerven 2021). Under conditions of uncertainty, social cues and interactions may have substantial sway over the perception and management of economic risks (Nelson and Katzenstein 2014). In line with this argument, this paper elucidates how socialization processes may drive the emergence of climate risk concerns within powerful financial policymaking and regulatory bodies. In doing so, the paper offers further evidence of the epistemic, ideational processes that underlie governing bodies' varied attentiveness to environmental issues (cf. Haas 1992; Allan 2017).

# Bureaucratic Theory of Multilateral Climate Concerns

Scholars of international relations have long questioned the extent of IO autonomy. One tradition holds that IOs are largely instruments of powerful states, with powerful principals using formal and informal levers of influence to achieve national policy objectives. Many have described how the U.S. influences policymaking at the IMF and World Bank, granting breaks on loan conditions and speeding disbursements for allied borrowers (Kilby 2009; Copelovitch 2010; Stone 2011). Related work shows how states can expend temporary leverage, such as that granted to rotating members of the United Nations Security Council, to secure better deals from IOs (Dreher, Sturm and Vreeland 2015). In contrast, other scholars contend that IOs are autonomous in important respects, pursuing their own objectives even when they differ from those of powerful stakeholders. Some research suggests that such autonomy originates in the bureaucratic nature of IOs, which allows staff to gradually expand their missions (Barnett and Finnemore 1999; Chwieroth 2013). Other work in this tradition indicates that autonomous IOs may be those best positioned to implement successful development policies (Abbott and Snidal 1998; Winters and Streitfeld 2018; Iannantuoni, Waeiss and Winters 2021).

How do member states influence policymaking and agenda-setting in IOs? What role, if any, do IO staff play? We argue that staff often pursue policy objectives that contradict the preferences

of powerful member state principals, doing so in ways that initially escape the attention of such states. Our theoretical mechanism highlights the importance of staff learning and socialization as a result of employees' professional experiences within the IO and their subsequent rotation and promotion to other posts within the institution. Staff are often deployed to one country for a mission and then transferred to other regions or new roles. When they are moved in this way, bureaucrats carry lessons learned from prior country postings with them, socializing others within the institution to these adopted perspectives. In the process, policy preferences developed in less powerful member states — those hosting IO officials — diffuse horizontally and vertically through the institution, even when they are at odds with the interests of more powerful principals.[8] Our theory builds on existing work interested in socialization through IOs, though scholars have mostly examined how IOs can socialize states directly by promoting and locking in policies consistent with certain norms and ideas (Moravcsik 2000; Johnston 2008), or indirectly by providing states a forum for interstate socialization (Pevehouse 2002; Checkel 2003; Bearce and Bondanella 2007; Greenhill 2010). Instead, we focus on how states can socialize IO staff, prompting a process of norm diffusion as staff are rotated and promoted throughout the organization.

In developing this argument, we consider IOs' attentiveness to climate change, an emergent issue subject to considerable contestation between wealthy states in the Global North and poorer, more climate-vulnerable states in the Global South (Ciplet, Roberts and Khan 2013). We contend that when staff are sent to countries with readily observable climate vulnerabilities, such as low-lying island states, those staff become attuned to the political, social, and economic risks generated by climate change. This occurs via *observation* of countries' climate vulnerabilities (learning) and as a result of *persuasion* by local officials (socialization), who themselves may be closely attuned to climate risks. When these bureaucrats are then moved by their institutions to other countries or promoted to more senior posts, they carry these heightened climate concerns with them, applying a climate-focused lens to contexts where climate risks are less conspicuous. The spread of climate consciousness throughout the organization is challenging for powerful states to detect or impede,

[8] See Hooghe (2005) on norm adoption and diffusion.

since field agents operate with high levels of slack and are difficult to monitor (Woods 2007; Honig 2018).

For the IMF, particularly relevant are the risks to financial stability and growth that stem from climate change (Batten, Sowerbutts and Tanaka 2016; Chenet, Ryan-Collins and van Lerven 2021). Financial regulators and policymakers have, in recent years, become more attuned to the economic risks associated with climate change-induced asset revaluations (Colgan, Green and Hale 2021). Efforts to decarbonize the global economy, alongside the growth in clean energy technologies, may erode the value of carbon-intensive, fossil fuel-reliant assets (van der Ploeg and Rezai 2020). The physical impacts of climate change threaten the profitability of climate-vulnerable industries and assets, such as farms in arid regions or houses in wildfire-prone areas (Colgan, Green and Hale 2021). Insurers with broad exposure to such assets may experience major losses, which risks generating instability in financial systems at-large (Batten, Sowerbutts and Tanaka 2016). Central bank officials have taken increasing note of the dangers to financial stability associated with this amalgam of "transition risks," "physical risks," and "liability risks" (Carney 2015), as well as those to general economic output (Brunetti et al. 2021). The IMF refers to regulation of climate risks as a core pillar of their climate strategy, alongside the provision of assistance to "contain and reduce emissions " and "[build] financial and institutional resilience to natural disasters and extreme weather events."[9]

IMF attention to climate has grown despite many of its most powerful member states being intransigent or slow to move on climate change. In the U.S., the largest shareholder at the Fund,[10] the Trump administration actively sought to undermine climate-focused agencies domestically and internationally. Congressional Republicans have explicitly rejected Federal Reserve monitoring of climate risks to the financial system.[11] Dominant voices within the European Union, a powerful bloc at the Fund (Copelovitch 2010), have similarly been wary of taking aggressive steps to manage

[9] IMF, 2021, <bit.ly/2WRJXMf>.

[10] The U.S. controls approximately 16% of votes at the IMF, enough to block alterations to the Articles of Agreement, which require 85% of votes be cast in favor. On U.S. influence, see Stone 2011.

[11] *Washington Post*, 2021, <wapo.st/2WJCIFG>.

climate change.[12] China, whose influence has been rapidly growing (Kaya 2015), remains hesitant to transition its economy away from fossil fuels.[13] The private sectors of such countries also have weak track records on climate (Green et al. 2021).

We argue that the IMF's growing attentiveness to climate originates, in part, from its internal system of staff deployment and rotation. Each year, the Fund sends cohorts of staff members to member states to consult with local stakeholders and conduct routine financial surveillance, identifying macroeconomic risks to member states and making associated policy recommendations to prevent or stem economic crises. After being stationed in a country for a time, staff are rotated to other member states or transferred to other bodies within the IMF. We argue that climate risks become more salient for staff upon deployment to countries in which climate vulnerabilities are particularly stark.

While most countries are vulnerable to the physical effects of climate change (Ricke et al. 2018) or have carbon-intensive industries exposed to decarbonization, the immediate salience of such climate risks varies. We expect the IMF's broader pivot to climate to have been triggered by countries in which climate damages are uniquely apparent and therefore relevant to the Fund's core mandate, which concerns the resolution of short-term macroeconomic imbalances. In countries such as Bangladesh and the Marshall Islands, issues of sea-level rise are clearly observable and central to local political and economic discourse (Paprocki 2018).[14] Due to discussions with local policymakers and observation of these damages, we expect bureaucrats stationed in such countries to become more attuned to climate risks than they previously were. Upon rotation to countries where climate risks have yet to manifest, we anticipate that such bureaucrats will continue to place greater emphasis on climate risks in their analyses of countries' macroeconomic standing. This is because bureaucrats will have begun to think about climate as a macro-critical issue, a divergence from their traditional focus on balance of payments issues such as state ownership, public spending,

[12] While the EU is progressive on climate in comparison to the U.S., its absolute levels of climate ambition remain fairly limited. See Germany on coal (*New York Times*, 2020, <nyti.ms/2WHmzRH>).

[13] Climate Action Tracker, 2021, <bit.ly/3gSGMuz>

[14] Interviews with IMF officials (June 7, 2021 and July 28, 2021).

trade, and inflation.[15]

Bureaucrats may become focused on climate change via both passive and active mechanisms. First, bureaucrats may learn about climate risks via passive *observation* of climate damages in a host country. As a result, they may come to view climate as a macro-critical issue given its salience and immediate economic implications for growth and stability. For example, interviews with two IMF officials previously hosted by climate-vulnerable states confirmed that working in areas prone to sea-level rise, with insufficient flood protections, raised concerns about the economic impacts of climate change.[16] This resonates with findings that experiences of climate damages affect individuals' concern about climate change and prompt greater investments in climate action (Bergquist and Warshaw 2019; Hazlett and Mildenberger 2020).

Second, IMF bureaucrats may be socialized, or *persuaded*, as to the significance of climate risks through interactions with local officials, business leaders, and civil society actors.[17] Local actors who themselves are concerned about climate risks may convey those views to IMF bureaucrats, encouraging them to prioritize climate in their economic analyses and programs.[18] Bureaucrats may be particularly receptive to the persuasive efforts of local actors due to the deep uncertainties that mark climate change and its potential economic effects (Chenet, Ryan-Collins and van Lerven 2021).[19] Over time, bureaucrats may additionally *mimic* the rhetoric and behaviors of local actors focused on climate change.[20] As Risse (2000, 23) posits, actors are especially likely to engage in "truth-seeking behavior [...] if [they] are uncertain about their own identities, interests, and views of the world." This mechanism aligns with literature highlighting how the views of even politically sophisticated agents may be molded by credible information sources (Alt, Marshall and Lassen 2016), potentially including the local actors with whom IMF officials consult. It addi-

[15] See Kentikelenis, Stubbs and King (2016) for an overview of IMF conditions.

[16] Interviews with IMF officials (June 7, 2021 and July 28, 2021).

[17] Per Greenhill (2010, 129), "socialization effects refer to behavioral changes that [...] arise through the process of interaction with other states, whereby states copy, or learn from, the forms of behavior exhibited by others."

[18] IMF bureaucrats may also interact with other international bureaucrats while on assignment. However, our focus here is on socialization by domestic actors; inter-IO social interactions, while a promising direction for future work, are outside the scope of this paper.

[19] See Nelson and Katzenstein (2014) on uncertainty and the influence of political cues.

[20] Alongside persuasion, Johnston (2008) discusses mimicry as a form of socialization within IOs.

tionally corresponds with work identifying the specific prevalence of persuasive argumentation in climate policy fora (Dimitrov 2016; Torney and Cross 2018).[21]

We expect these mechanisms of learning and socialization to operate in countries with realized climate risks. This should leave an enduring mark on bureaucrats' policy preferences and attentiveness to climate. Because climate risks are present throughout most of the world, bureaucrats stationed in countries where climate risks have already materialized should continue to emphasize such risks upon transferring to countries where they have yet to manifest. Observation of climate damages and persuasion by climate-proactive officials should buttress bureaucrats' attention to *global* climate risks, not merely those present in a single country.

This leads to two testable hypotheses. First, IMF officials should be likelier to reference climate change in economic analyses when stationed in countries where climate risks have been realized, or where climate vulnerabilities are highly salient and easily observable.

**Hypothesis 1.** *Bureaucrats should be likelier to cite climate concerns when stationed in a country with readily apparent climate vulnerabilities (realized climate risks).*

Second, such IMF officials should *continue* to place greater emphasis on climate in their economic analyses after being rotated to another country, even one without readily observable climate vulnerabilities.

**Hypothesis 2.** *Bureaucrats should be likelier to cite climate concerns when they previously cited such concerns in a prior country posting.*

# Measuring IMF Attention to Climate

To test this theory, we introduce original data measuring (*a*) IMF attention to climate change, and (*b*) the movement of individual bureaucrats between IMF member states. To construct these

[21] Other scholars have argued that IOs socialize domestic bureaucrats via persuasion or deliberation (Johnston 2008; Checkel 2003). But we are among the first to consider the reverse process: how officials in weaker, seemingly less influential countries shape the views of IO staff (though see Woods 2007). When scholars have studied this type of socialization, the focus has overwhelmingly been on powerful stakeholders like the U.S. (Clark and Dolan 2021).

datasets, we first hand-code the number of mentions of "climate" (checked to be relevant to climate change) in Article IV reports for all IMF member states covering the period of 2000–2018. We utilize archival documents from the IMF's online archive to do so. Article IV reports are the product of routine, typically annual surveillance consultations undertaken by IMF staff. These reports exemplify the IMF's role and influence as a source of economic expertise (Clemens and Kremer 2016), which borrower states often lack.[22] There is evidence that such reports ultimately guide policy choices in surveilled states (Goes and Chapman 2021).[23] The Article IV surveillance process is as follows:

> "During an Article IV consultation, an IMF team of economists visits a country to assess economic and financial developments and discuss the country's economic and financial policies with government and central bank officials. IMF staff missions also often meet with parliamentarians and representatives of business, labor unions, and civil society. The team reports its findings to IMF management and then presents them for discussion to the Executive Board."[24]

A senior IMF official confirmed in an interview with the authors that Article IV reports are the appropriate place to look for shifts in the Fund's climate attention. Climate rarely pertains to short-term balance-of-payments deficits and consequently is rarely mentioned in the Fund's conditional stand-by arrangements.[25] That said, for some countries that are particularly vulnerable to climate change, climate is cited specifically as a "macro-critical issue."[26] More commonly, staff cite climate risks in surveillance reports because they pose a threat to economic stability over the medium-to-long term, as well as in staff working papers assessing future economic threats.[27] For example, Vietnam's 2020 Article IV report notes, "Vietnam is increasingly exposed to climate change [...] a high proportion of the country's population and economic assets are located in coastal lowlands [...] Climate change impacts all sectors of the economy and threatens to stall or reverse

[22]The IMF's informational value prompted its establishment in the first place (Keohane 1984; Mosley 2003).

[23]In our data, countries are surveyed around every 1.5 years on average. Delays can occur as a result of unstable political or security situations. See, e.g., IMF, 2018, <bit.ly/37gy302>, for the 2018 list of delayed countries with justifications for each delay.

[24]IMF, <hbit.ly/38ml65h>.

[25]Interview with IMF official (June 7, 2021).

[26]E.g., Kiribati 2016 Article IV report. *IMF*. Country Report No. 16/292.

[27]Interview with IMF official (June 7, 2021).

progress on growth and poverty reduction."[28] But climate mentions are not limited to particularly climate-vulnerable states. For instance, the 2015 Article IV report for the U.S. advocated for a carbon tax to help the U.S. meet its pledges under the Paris Agreement: "a substantial carbon tax would result in domestic environmental benefits from less fossil fuel use [...] the U.S. could provide a leadership role [on climate]."[29] Similarly, the IMF's report on the Netherlands in 2018 recommended that "public spending increase by 1 percent of GDP in the area of climate change mitigation."[30] Such mentions of climate are consequential because they often shape policymaking in the surveyed country, either by raising awareness of climate issues or more directly through explicit policy recommendations.[31] Additionally, the staff views expressed in reports may set the agenda in IMF Board meetings where institutional reforms and loan agreements are also debated.

For each Article IV report mentioning climate, we then identify the IMF "resident representative" associated with that report.[32] Resident representatives offer technical assistance to host countries, generally related to the IMF's own financial or exchange stabilization programs, and typically assist or take active part in Article IV missions sent by the IMF. Originally, resident representatives were only deployed to countries undertaking stand-by arrangements, or conditional loans.[33] But countries often requested that a representative be assigned in anticipation of a future program or that they remain after a program concluded. Many member states have thus continuously hosted a resident representative; this is the case for most countries in the period under study (2000–2018). Resident representatives live and work in their assigned country and accordingly are likely candidates for learning and socialization.

Resident representatives, like the broader IMF bureaucracy, have largely Western backgrounds. As of 2019, 18.4% of upper-level staff members are American, 27.9% European, and 11.7% citi-

[28] Vietnam 2020 Article IV report. *IMF*. Country Report No. 21/42.

[29] U.S. 2015 Article IV report. *IMF*. Country Report No. 15/168.

[30] Netherlands 2018 Article IV report. *IMF*. Country Report No. 18/130.

[31] Such expert recommendations are particularly valuable to lower-capacity governments; see e.g., Clemens and Kremer (2016) on the importance of IO expertise.

[32] We focus on bureaucrats who mentioned climate because we are interested in (*a*) the timing of when IMF bureaucrats became attuned to climate and (*b*) whether Article IV reports' focus on climate is a function of resident representatives' prior climate attentiveness.

[33] Shrikrishna Pandit, IMF, 1973, <bit.ly/3oQrYPZ> (PDF).

zens of other Western states.[34] These staff are predominantly Western-educated, with most having received doctoral degrees (typically in economics) from American or British institutions, and are of similar ages.[35] This staff makeup underscores the formal and informal influence of the U.S. and Europe at the Fund (Stone 2011; Nelson 2017).

Resident representatives are typically stationed in a country for only a few years before being rotated elsewhere or given a new position within the Fund. In our data, the median length of stay for IMF bureaucrats in a single country is two years.[36] This is consistent with the IMF's own documentation on how long resident representatives remain in place.[37] Tracking resident representatives is empirically advantageous because reassignment occurs independently of the salience of climate issues in a given country. The main threat to inference in our study is the possibility that representatives who previously mentioned climate are reassigned primarily to countries for which the local salience of climate issues has increased in recent years. Our analyses of patterns of rotation, reading of IMF documents, and interviews with IMF staff suggest this is not the case. While staff are sometimes reassigned to geographically proximate countries, reassignment is "plausibly exogenous" with respect to the local salience of climate (cf. Conley, Hansen and Rossi 2012). Resident representatives are able to indicate preferences for their future country postings, but the IMF typically rotates bureaucrats between regions (e.g., from Asia to Europe) as opposed to circulating single bureaucrats across nearby countries with similar climate vulnerabilities.[38] Furthermore, because we include country fixed effects in all analyses, climate vulnerability is largely held constant in our study; we additionally include year fixed effects in our statistical tests to account for the general increase in the salience of climate change over time.[39]

We identify 73 unique resident representatives associated with Article IV reports mentioning

[34] IMF, 2019, <bit.ly/3jqjmhK>.
[35] Ibid.
[36] Our sample only covers resident representatives who mention climate at least once over the course of their careers.
[37] Shrikrishna Pandit, IMF, 1973, <bit.ly/3oQrYPZ> (PDF).
[38] Conversations with individuals knowledgeable of IMF bureaucrat rotation.
[39] Additionally, we test whether prior climate mentions predict future exposure to climate risks, which would be expected if climate-attuned bureaucrats select into more climate-vulnerable regions. We find that this is not the case. We regress the count of climate-related disasters in a current country posting on mentions of climate in prior postings; results are substantively small and statistically insignificant ($\beta = -0.017$, $p = 0.24$). Model estimated via OLS with resident representative and year fixed effects, with robust standard errors clustered by resident representative.

climate, covering all resident representatives associated with Article IV reports discussing climate.[40] We then utilize LinkedIn profiles and the IMF's publicly available online resources to trace the career paths of individual resident representatives within the IMF over time. Because nearly all senior IMF officials have a LinkedIn page or information on the Fund website, we are able to reliably track these staff members. We code all countries in which each individual worked, either as resident representative or in another IMF position, to generate data at the bureaucrat-country-year level. These data enable tests of whether the likelihood of a country's Article IV report mentioning climate varies with the career path of the associated resident representative, as we theorize.

## Describing the Diffusion of Climate Concerns

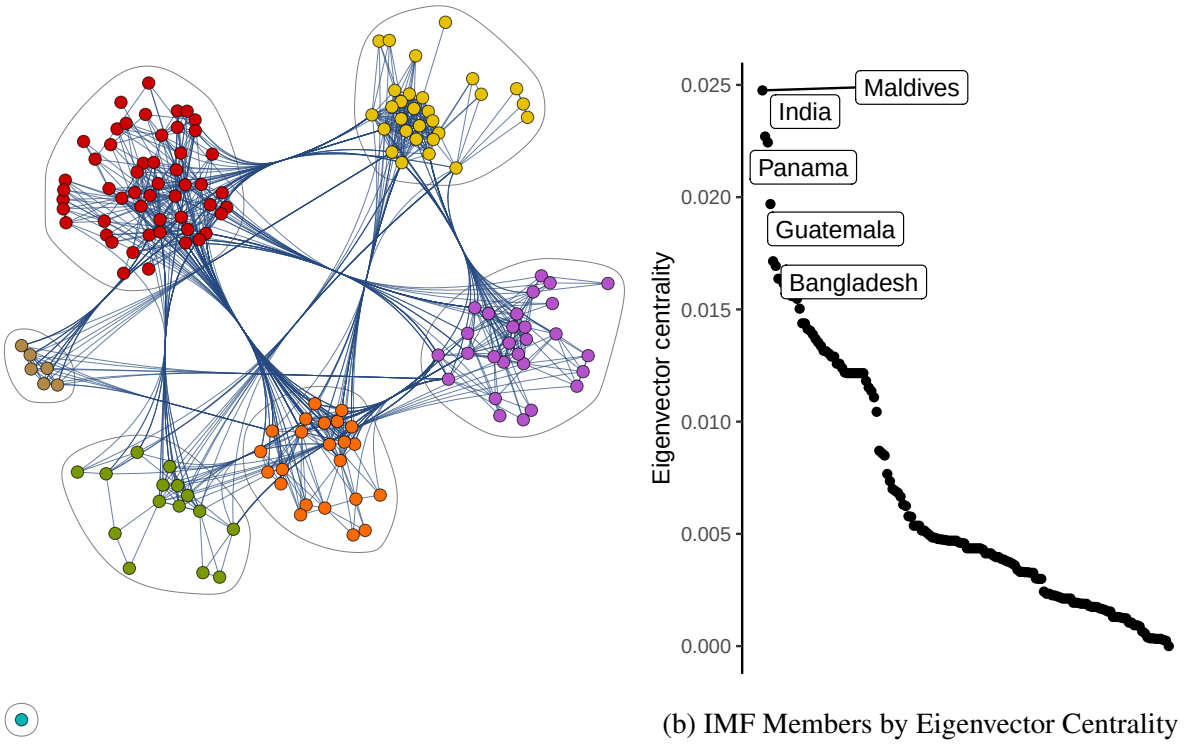
For illustrative purposes, panel (*a*) of Figure 1 contains a network plot of IMF member states; connections indicate the movement of resident representatives between states.[41] This depicts the nature of staff rotation within the IMF. The "communities" of countries depicted in the plot (circled node groups) capture the tendency of bureaucrats to rotate between certain sets of countries. While these communities indicate that bureaucrats tend to move among certain countries more than others, they notably do not do so in ways that cleanly map onto regions of the world or other geographic characteristics (see Appendix 2 for details). Given their frequent contact with local officials and stakeholders, as well as their cross-country rotation, resident representatives are appropriate subjects of our analysis.[42]

Panel (*b*) of Figure 1 lists IMF member states with climate mentions by eigenvector centrality, a measure of node influence in networks (connections to other high-connectivity nodes). These

[40] We utilize the Article IV Scanner found on the IMF Monitor website as well as our own reading of Article IV documents from the IMF online archives to complete this coding. See Kentikelenis, Stubbs and King (2016) and <imfmonitor.org>.

[41] This figure specifically tracks resident representatives associated, at some point, with an Article IV report discussing climate.

[42] Shrikrishna Pandit, IMF, 1973, <bit.ly/3oQrYPZ> (PDF). Countries sometimes do not have resident representatives, especially if they have never taken an IMF loan. In these cases, we instead code the head of the Article IV mission. This actor plays a similarly important role shaping content in the absence of a resident representative, and they similarly live and work in the target country while on assignment.




(a) Network Plot of IMF Members

(b) IMF Members by Eigenvector Centrality

Figure 1: **Inter-Member State Connections, By Resident Representative Movement.** *Left:* network plot of IMF member states with climate mentions, grouped into communities by the frequency of bureaucrat movement between states (makeup of communties is listed in Appendix 2). Dyads formed by resident representative rotating between two countries. *Right:* plot of IMF member states with climate mentions by eigenvector centrality, in descending order.

centralities were calculated according to the movement of climate-attuned resident representative within country dyads. Accordingly, this suggests which countries may be important with respect to the acquisition and diffusion of climate concerns. The plot illustrates that the most central countries are highly climate-vulnerable and often relatively small states. The Maldives and Bangladesh are particularly susceptible to rising sea levels; India, Panama, and Guatemala to drought and intensified storms. Notably, the most powerful member states in the IMF have low centrality scores despite their importance to global climate governance (Barrett 2005). The U.S. ranks 45th, China 43rd, and the U.K. 107th. This suggests that, due to patterns of staff rotation within the Fund, the diffusion of climate concerns largely originated in countries with limited formal influence at the IMF.

An initial review of the data lends support to our contentions. To start, we select an illustrative bureaucrat from our data and trace her mentions of climate in Article IV reports across space and time as she is reassigned to different countries. This bureaucrat first mentioned climate when on assignment in Tonga, a particularly climate-vulnerable country given its exposure to rising sea levels. In prior postings in Mongolia and China, this bureaucrat did not raise the issue of climate change in Article IV reports, perhaps because she was less likely to observe the physical climate impacts or be persuaded by local officials in these countries. After mentioning climate in Tonga, the bureaucrat was reassigned to the U.S., a country for which the IMF had not previously cited climate change in Article IV reports, and subsequently discussed climate as an economic risk in its Article IV report. After her tenure in the U.S. ended, she continued to emphasize climate concerns in reports for Argentina and Panama. Because the bureaucrat likely learned or was socialized to prioritize climate in Tonga and consequently discussed climate for countries with less salient climate risks, this career path offers anecdotal support for our argument.

To examine whether the spread of climate-conscious attitudes is consistent with a diffusion model, we plot over-time variation in the number of unique countries with climate mentions in Article IV reports and the frequency of climate mentions in IMF documentation. Panel (*a*) of Figure 2 shows that Article IV reports began mentioning climate in the late 2000s, though only for a small number of countries. The breadth of the Fund's attentiveness to climate rapidly grew in the 2010s; between 2010 and 2018, the number of countries with climate-mentioning Article IV reports nearly quintupled. Parallel patterns are observed when tracing the cumulative sum of climate mentions across all Article IV reports (panel *b*), which similarly surged around the mid-2010s, as well as when examining the frequency of "climate" or "carbon" mentions in IMF working papers composed by staff (panels *c* and *d*). These trends are reminiscent of diffusion or cascade models (e.g., Finnemore and Sikkink 1998), with changes in climate attentiveness roughly matching exponential growth trends, particularly in the case of Article IV reports. Moreover, as illustrated in panel (*e*), the spread of climate concerns appears to largely originate in small, highly climate-vulnerable countries, as anticipated. Low-lying countries such as Bangladesh and small

island developing states like Kiribati feature prominently in early Article IV reports with climate mentions. By the mid-2010s, climate is being discussed for a broader range of countries, including in such states as Canada and New Zealand where climate risks are less pronounced. While purely descriptive, this does indicate that the spread of climate concerns at the IMF largely occurred in the manner that our theory predicts.

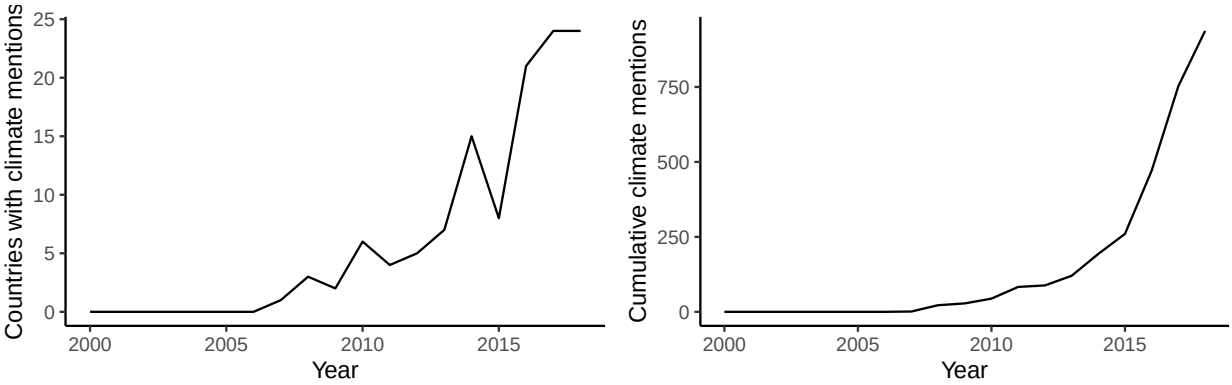
# Results

We offer three sets of evidence in testing the above theory. First, we examine where climate concerns initially originate, testing whether bureaucrats are likelier to first refer to climate change when stationed in countries with readily apparent climate vulnerabilities. Second, we evaluate whether there is evidence of climate concerns diffusing across IMF member states. We estimate a series of models establishing a link between bureaucrats' prior climate attentiveness and future mentions of climate in Article IV reports to which they contribute. Third, we complement these quantitative analyses with qualitative evidence from a series of semi-structured interviews with individual IMF staff.

## Acquisition of Climate Concerns

We theorize that IMF bureaucrats will learn and be socialized to emphasize climate when stationed in countries with readily observable, materialized climate risks. To identify such climate risks, we use the EM-DAT International Disaster Database to identify climate-related natural disasters. We aggregate disasters defined as climatological, "caused by long-lived, meso- to macro-scale atmospheric processes ranging from intra-seasonal to multi-decadal climate variability" (e.g., drought, wildfires), with those defined as meteorological, "caused by short-lived, micro- to meso-scale extreme weather and atmospheric conditions that last from minutes to days" (e.g., storms, extreme temperatures).

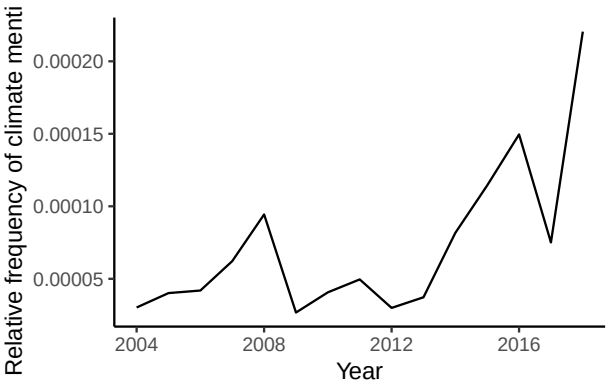
In tests at the resident representative-year level, we regress a binary variable indicating whether



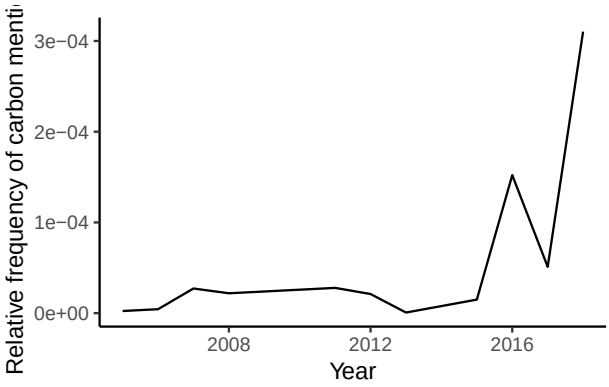

(a) Countries with Article IV Climate Mentions



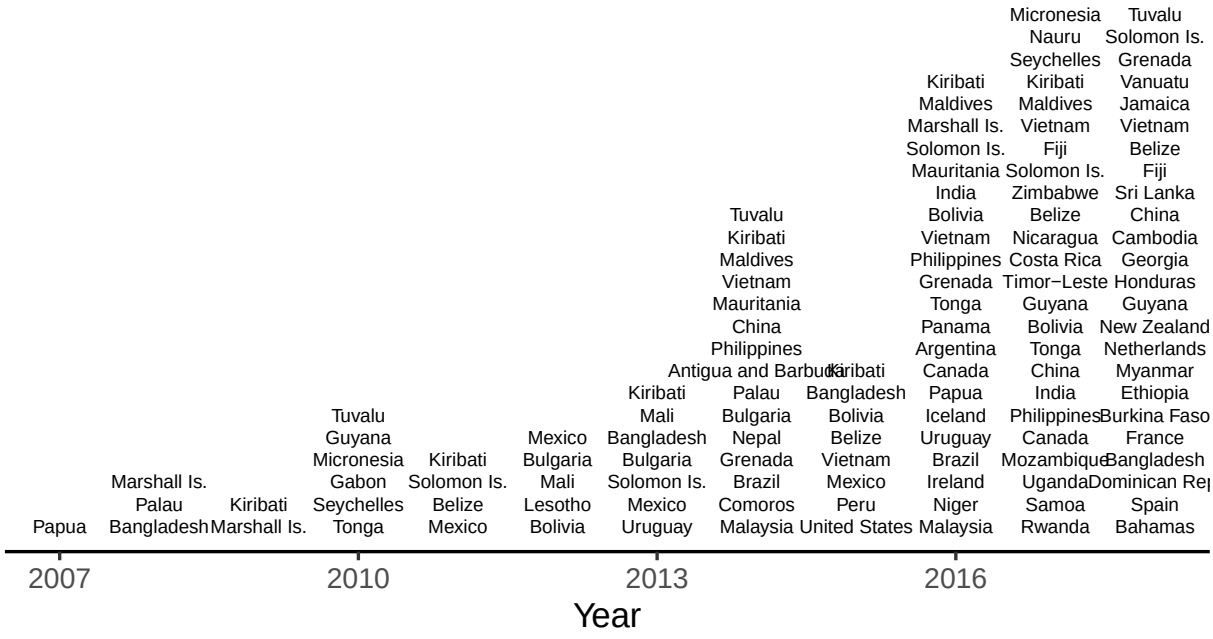

(b) Climate Mentions in Article IV Reports




(c) "Climate" Mentions in Staff Reports




(d) "Carbon" Mentions in Staff Reports




(e) Countries with Article IV Climate Mentions by Year

Figure 2: **Diffusion of Climate Concerns.** Mentions in Article IV reports (top row) and IMF working papers (middle). Relative frequency is calculated as number of mentions over all words. Bottom panel lists countries with climate mentions in Article IV reports by year.

a resident representative has ever mentioned climate in an Article IV report on the cumulative number of climate-related disasters that the bureaucrat encountered in their current country posting (prior to the current year). Because we limit our analyses to resident representatives who do at some point mention climate, this test gauges the *timing* of when bureaucrats become "climate attuned" — first mentioning climate in an Article IV report.[43] We expect this to occur when they witness local climate damages.

Table 1 reports the regression results. These results indicate that IMF bureaucrats are likelier to become attuned to climate risks after experiencing climate-related disasters in their host country, in line with our theoretical mechanism. The results for Model 1, a parsimonious bivariate specification, indicate that each additional climate-related disaster increases the probability of a resident representative first becoming climate-attuned by 0.4 percentage points. A standard deviation increase in climate-related disasters (s.d. = 8.2) corresponds to about a three-point increase in the likelihood of first mentioning climate.

Similar results are found when conditioning on covariates (Model 2). We control for Polity2 regime scores, GDP per capita, whether the country is currently participating in an IMF program, and UN voting ideal point distance from the U.S.[44] Democracies may be uniquely attentive to climate change (Battig and Bernauer 2009), which may lead local officials to more aggressively lobby IMF officials on the issue. Wealthier countries may also be likelier to prioritize climate issues and devote greater resources to climate policies. Countries that have an ongoing IMF program may be more attuned to climate as a result of the Fund's new attention to the issue. Governments that are more politically proximate to the U.S. may be more climate conscious, though we primarily include UN proximity given its well-known importance in other areas of IMF policymaking (Stone 2011). All independent variables are lagged by one year. These results indicate, as expected, that the contemporaneous observation of local climate damages induces IMF bureaucrats to devote greater attention to climate change in their economic analyses.

[43] Officials receive a "0" if they had never mentioned climate; they receive a "1" if they had mentioned climate at least once in a current or previous posting.

[44] See appendix 1 for data sources.

| | Climate Attuned | |
|---|---|---|
| | **Model 1** | **Model 2** |
| Climate-related disasters in current country | 0.004*** | 0.006** |
| | (0.001) | (0.003) |
| Polity2 | | −0.009** |
| | | (0.005) |
| GDP per capita (ln) | | −0.022 |
| | | (0.028) |
| In IMF program | | 0.017 |
| | | (0.061) |
| UN ideal point distance | | −0.093 |
| | | (0.059) |
| N | 549 | 266 |
| Adj. R-squared | 0.695 | 0.663 |

***p < .01; **p < .05; *p < .1

Table 1: **Initial Acquisition of Climate Concerns.** OLS regressions of binary indicator for whether resident representative ever mentioned climate in an Article IV report on the cumulative number of climate-related disasters in a current country posting (measuring realized climate risks). Test conducted at resident-country-year level. Includes resident and year fixed effects. Robust standard errors clustered by country posting.

These results hold in several robustness checks, all of which appear in the appendix. First, we substitute managing director fixed effects for year fixed effects. It may be that managing directors vary in their concern for climate change; some may explicitly ask management and staff to center climate risks in their economic analyses (Table A2).[45] Second, we utilize a logit specification in place of a linear probability model (Table A5).

## Staff Rotation and the Spread of Climate Concerns

Do we observe climate concerns being carried by IMF bureaucrats between countries? To test this, we ask whether Article IV missions become likelier to discuss climate when they involve

[45]Multiple interviewees suggested as much, citing Christine Lagarde and Kristalina Georgieva's climate focus. This corresponds with recent work highlighting the importance of managing directors in guiding IMF behavior (Copelovitch and Rickard 2021). However, it is important to note that the upper echelons of the IMF have not been fully committed to more aggressive climate action. For example, Georgieva deemphasized climate risk in Brazil's Article IV assessment under pressure from the Brazilian government (*Bloomberg*, 2021, bloom.bg/308hQtw). This move notably drew substantial criticism from lower levels of the IMF hierarchy (*Bloomberg*, 2021, bloom.bg/3GCyjXw).

| | # Climate Mentions | | Any Climate Mention | |
|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Prior bureaucrat climate mentions | 1.430** | 0.793** | 0.097** | 0.125*** |
| | (0.619) | (0.329) | (0.039) | (0.044) |
| Polity2 | | −0.026 | | −0.005 |
| | | (0.027) | | (0.004) |
| GDP per capita (ln) | | −0.157 | | 0.046 |
| | | (0.474) | | (0.051) |
| Climate-related disaster | | 0.096 | | 0.015*** |
| | | (0.067) | | (0.006) |
| In IMF program | | 0.346 | | 0.015 |
| | | (0.229) | | (0.024) |
| UN ideal point distance | | 0.084 | | 0.005 |
| | | (0.269) | | (0.040) |
| N | 1474 | 1151 | 1474 | 1151 |
| Adj. R-squared | 0.148 | 0.157 | 0.171 | 0.176 |

***p < .01; **p < .05; *p < .1

Table 2: **Rotation and Climate Mentions.** OLS regressions of the number of mentions of climate (columns 1-2) or binary indicator of any mention of climate (columns 3-4) in a country's Article IV report on a binary measure of prior climate mention by that country's resident representative. Includes country and year fixed effects. Robust standard errors clustered at country-level.

resident representatives who *previously* referenced climate. In these tests, the dependent variable is a count of climate mentions in a country's Article IV report for a given year; we additionally estimate models with a binary outcome (any mention of climate). Our primary explanatory variable is a binary measure of whether that country's resident representative mentioned climate at any prior point. We believe this to capture a resident representative's attentiveness to climate. All models include country and year fixed effects to account for any country- or time-specific factors that may prompt bureaucrats to cite climate issues. Notably, country fixed effects — testing changes in climate attention *within* countries — help account for the possibility that the IMF intentionally shifts climate-conscious bureaucrats to more climate-vulnerable countries.[46]

Table 2 reports regression results with and without covariates included. Across all models, prior mentions of climate by a country's resident representative is the strongest predictor of climate dis-

[46] As noted above, there is little evidence to suggest that this is the case.

cussions in Article IV reports. The magnitude of these results are substantively meaningful. A prior mention of climate is associated with an increase of around 13 percentage points in the likelihood of an Article IV report discussing climate. We generally find null results for the covariates, though there is some sign that climate-related disasters are positively associated with climate references.

In a second set of tests, we replicate the above models but exclude *same-country* mentions of climate by each resident representative. For example, if a resident representative is stationed in Bangladesh at times $t$ and $t-1$, we exclude mentions of climate at time $t-1$ when measuring that bureaucrat's prior attention to the issue. This allows us to look exclusively at how a representative's previous discussions of climate shift mentions of climate *after* reassignment to a new country — whether, as expected, bureaucrats carry climate concerns with them as they move between countries. Results listed in Table 3 indicate Article IV missions staffed by bureaucrats who previously discussed climate include 1.5–2.5 additional climate mentions and are roughly 10–14 percentage points likelier to include any climate mention. This offers strong support for the claim that bureaucrats' attentiveness to climate is sticky; officials who previously acquired climate concerns remain attuned to the issue independent of conditions in the country in which they are presently stationed. Regardless of the severity of climate damages in a given country, bureaucrats are likelier to mention climate risks when they previously did so in a prior country assignment.

We perform several robustness checks to increase confidence in our findings. First, to account for potential temporal dependence in climate mentions, we estimate a series of models including lagged dependent variables (Table A1). Second, we again substitute managing director fixed effects for year fixed effects (Table A3). Third, we utilize a Poisson specification to predict the count of climate mentions and a binomial logit specification for the binary climate mention outcome (Tables A4–A6). Fourth, while we believe our main analysis avoids significant threats to inference, largely by comparing Article IV reports within countries, we take additional steps to alleviate concerns in this regard. In particular, we instrument for the climate attentiveness of resident representatives with bureaucrats' cumulative exposure to climate-related disasters in prior country assignments (Table A7).

| | # Climate Mentions | | Any Climate Mention | |
|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Prior bureaucrat climate mentions (other countries) | 2.574*** | 1.480** | 0.096** | 0.135** |
| | (0.866) | (0.617) | (0.047) | (0.060) |
| Polity2 | | −0.028 | | −0.005 |
| | | (0.028) | | (0.004) |
| GDP per capita (ln) | | −0.128 | | 0.059 |
| | | (0.460) | | (0.053) |
| Climate-related disaster | | 0.088 | | 0.015** |
| | | (0.067) | | (0.006) |
| In IMF program | | 0.320 | | 0.016 |
| | | (0.200) | | (0.023) |
| UN ideal point distance | | −0.063 | | −0.002 |
| | | (0.268) | | (0.040) |
| N | 1474 | 1151 | 1474 | 1151 |
| Adj. R-squared | 0.165 | 0.180 | 0.169 | 0.172 |

***p < .01; **p < .05; *p < .1

Table 3: **Rotation and Climate Mentions (without same-country mentions).** OLS regressions of the number of mentions of climate (columns 1-2) or binary indicator of any mention of climate (columns 3-4) in a country's Article IV report on a binary measure of prior climate mention by that country's resident representative excluding prior same-country mentions. Includes country and year fixed effects. Robust standard errors clustered at country-level.

## Interview Evidence

We conduct a series of semi-structured interviews with IMF staff members to complement these quantitative analyses. Interviewed staff include current and former officials deployed to small island nations, where the theorized learning and socialization mechanisms were likely to have been operative, as well as several officials working specifically on climate at the Fund. We contacted these officials given their likely exposure to climate damages and professional responsibilities; they constitute a convenience sample. The interviewees are listed in Table 4.

We asked officials to describe why they believe the IMF has become more concerned about climate issues in recent years despite, for example, the resistance of the Trump administration to multilateral climate initiatives. At the conclusion of the interview, we presented interviewees with our theoretical expectations and empirical observations and asked whether the officials' professional experiences matched these findings. Multiple officials indicated the theorized mechanisms resonated: these interviewees initially became cognizant of climate risks when assigned to particu-

larly climate-vulnerable states and then carried these climate concerns to future postings in larger, less climate-vulnerable countries. When officials were promoted within the IMF, they remained committed to advancing climate-friendly policies. This attests to the strength of the learning and socialization mechanisms that we propose; attentiveness to climate persists long after staff depart highly climate-vulnerable countries.

| **Interviewee** | **Date** |
|---|---|
| Senior official and former mission chief to small island state | June 7, 2021 |
| Former senior official | June 8, 2021 |
| Official, Monetary and Capital Markets Department | July 28, 2021 |
| Official, Monetary and Capital Markets Department | July 28, 2021 |
| Official, Monetary and Capital Markets Department | July 28, 2021 |

Table 4: Summary of interviews with IMF staff. All interviews conducted via video conference.

The first mentions of climate in Article IV reports came from IMF missions to small island countries during the mid-2000s. A current senior official at the Fund explicitly recounted his acquisition of climate concerns while serving as a mission chief to a small island country in 2001. He recalled standing on a bridge over water, being told by a financial regulator that the bridge was the highest point on the island despite being merely a few feet above sea level. In this country, he considered climate to be a "macro-critical issue" and therefore within the IMF's remit. He became one of the first IMF staff members to include a section on climate risks in a staff report. After rotating out of the island country, he remained attuned to climate risks and has noticed that "financial regulators are increasingly raising climate risk in dialogue with the Fund." As this official explained, "trends are increasingly making [climate] a macro-critical issue, and not just for small island countries. Grenada and the Dominican Republic for now, but others over the medium-to-long term. The IMF then helps members to develop policies that ensure the financial sector is sustainable, and climate policy may be a major part of it."[47] Now in a senior role at the Fund, the official indicated that he plays an active part in deliberations over the development of an IMF lending facility to help small island countries bolster their climate resilience. Such efforts illustrate

[47]Interview with IMF official (June 7, 2021).

the enduring policy impact of the official's tenure in a particularly climate-vulnerable country.

This account was corroborated in interviews with other IMF staff.[48] Officials confirmed that the Fund's attention to climate originated in small, highly climate-vulnerable countries before transforming into more centralized, institutionalized initiatives treating climate as a broad macro-critical issue. "We have been looking into climate issues for many years," one senior official noted, "but not in an organized way until recently."[49] This official added that the Fund's new emphasis on climate did not come from its governing Board, which is still "converging" to the view that climate should be a priority. Rather, mid-level officials working on climate are actively communicating findings on climate to "colleagues on the board."[50] Further, interviewees expressed confidence as to the Fund's place in the climate space. One official described the IMF as leading the climate "analytical agenda," describing the Fund as uniquely well-positioned to "provide intellectual leadership" on climate due to its employment of "the best economists, financial sector experts." Officials also argued that the increased focus on climate in Article IV reports and working papers reflects the Fund's shift towards intellectual leadership in the area.[51] The IMF's growing climate agenda suggests that bureaucratic learning, socialization, and rotation can prompt substantial institutional change over time.

Officials also noted that the IMF's attention to climate issues has grown despite resistance from powerful member states and some senior officials at the Fund itself. One senior official argued that climate is beyond the IMF's formal mandate, indicating that the Fund should limit its climate activities to better attend to short-term macroeconomic issues. "While these new issues are very important, they are outside of the IMF's mandate," this official explained. "The next economic crisis is totally independent of how these issues are handled."[52] Others suggested that the IMF might try to raise the profile of climate issues through press releases and statements by the Managing Director, but should keep its policies and surveillance attuned to balance-of-payments problems.[53]

[48] Interviews with IMF officials (July 28, 2021).
[49] Ibid.
[50] Ibid.
[51] Ibid.
[52] Interview with former IMF official (June 8, 2021).
[53] Interview with IMF official (June 7, 2021).

Wariness of the IMF's climate initiatives among high-level officials supports our contention that the Fund's climate turn began with shifts in the preferences of mid- and low-level staff.

# Conclusion

Staff learning, socialization, and rotation are important predictors of the IMF's turn to climate. Our theory and findings complement top-down accounts of IO reform and policymaking, which have to date been the predominant theories in the literature (Nielson and Tierney 2003; Copelovitch 2010; Stone 2011). We refocus on lower-ranking staff members, whose experiences in small, seemingly less powerful countries can prompt IOs to expand their focus on emergent governance issues.[54] Because new ideas originate in the lower ranks of an organization, these ideational shifts can initially escape the notice of powerful principals, potentially making it difficult for such states to sanction staff or intercede to prevent institutional change.

This argument builds on work describing how IO staff members operate under the watch of powerful principal states, highlighting the importance of bureaucrats working below the highest ranks of their institution (Barnett and Finnemore 1999; Clark and Dolan 2021). It further advances nascent scholarship on climate risks (Colgan, Green and Hale 2021), as well as the burgeoning literature on global climate governance (Keohane and Victor 2011; Bechtel and Scheve 2013; Graham and Serdaru 2020). This work has largely focused on the role played by IOs whose formal mandates encompass climate change. We rather consider how IOs established for non-climate purposes are retrofitting themselves for an era of climate dislocation. In doing so, we build on research interested in institutional change and adaptation in world politics (Jupille, Mattli and Snidal 2013), shifting from models of punctuated equilibria to ones of gradual, endogenous change within organizations.

We develop and test our theory in reference to the IMF, but anticipate that it will generalize to other IOs. For example, the World Bank has similarly devoted greater attention to climate in

[54] Also see Chwieroth (2008, 2013).

recent years despite the climate inaction of powerful member states. We expect the basic theoretical intuition to apply to any formal, bureaucratic IO that deploys and rotates staff across member countries.[55] Existing work highlights how IOs adapt to novel governance challenges (Jupille, Mattli and Snidal 2013) and serve as forums for state socialization (Greenhill 2010). While we focus on how states socialize staff to care about climate-induced economic risks as one emerging issue, future work might consider how staff deployment and rotation affects IOs' engagement with other emergent issues, such as climate migration and the COVID-19 pandemic. The speed with which IOs pivot to such issues may be a function of their systems of staff deployment and rotation.

The IMF may be a hard case for a theory of staff learning and socialization. There are relatively few staff on the ground, especially compared to IOs such as the World Bank that deploy thousands of employees to member states. This suggests that there are relatively few opportunities for information about climate change to filter upward through the institution. Additionally, many staff remain doubtful of whether the IMF should expand its role in global climate governance, as noted above. Nonetheless, we identify a diffusion of climate concerns spurred by staff learning, socialization, and rotation.

Our research has important implications for policymakers and scholars of international organization. It highlights, in particular, how staff members can drive incremental change in an IO's operations, potentially even producing mission creep (Barnett and Finnemore 1999). Such change may cause IOs to encroach on others' mandates, producing higher levels of institutional overlap and regime complexity. These redundancies can be inefficient and prompt turf wars and shopping between institutions by member states (Clark 2021). The downstream, macro-level consequences of the bottom-up processes we identify here is a promising area for future work.

This paper, lastly, suggests novel directions for work on global climate governance. We document an important pathway by which IOs can incorporate climate change into their operations. Researchers might next explore differences among IOs in the occurrence, speed, and breadth of these mandate expansions. Why might some institutions more nimbly redirect their attention to climate

[55] Bureaucratic IOs encompass institutions with standalone decision-making structures, management, and staff.

than others? Researchers might also delve into these institutional changes from the perspectives of developing countries, where we suggest the IMF's climate attentiveness began. Scholarship has described the efforts of developing countries in formal, interstate climate negotiations (e.g., Sengupta 2011). Our findings suggest that consultations with international bureaucrats may be an alternative means by which these states can advance their interests in the climate domain. Subsequent work might consider how climate-vulnerable states strategically approach these IO interactions. Alongside high-profile international negotiations, the commonplace operations of established IOs may be meaningfully shifting the trajectory of global climate governance.

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# Climate Cascades: IOs and the Prioritization of Climate Action

Online Appendices

## Contents



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# 1 Variable Sources

In addition to our original data, we drew on the following sources for additional variables:

- Polity2: Keith Jaggers and Ted Robert Gurr. 1995. "Tracking Democracy's Third Wave with the Polity III Data." *Journal of Peace Research* 32(4):469–482.
- GDP per capita: World Development Indicators.
- IMF program participation: Alexander E. Kentikelenis, Thomas H. Stubbs and Lawrence P. King. 2016. "IMF Conditionality and Development Policy Space, 1985–2014." *Review of International Political Economy* 23(4):543–582.
- UN ideal point distance: Michael A. Bailey, Anton Strezhnev and Erik Voeten. 2017. "Estimating Dynamic State Preferences from United Nations Voting Data." *Journal of Conflict Resolution* 61(2):430–456.

# 2 Network Communities

Communities identified in Figure 1, using the FindGraphCommunities function and "Modularity" (modularity maximization) method within Mathematica:

1. Argentina, West Bank and Gaza, Belize, Barbados, Guatemala, El Salvador, Costa Rica, Honduras, Nicaragua, Haiti, Morocco, Guyana, Tunisia, Djibouti, Algeria, United States, Chile, Canada, Hungary, Lithuania, Colombia, Gabon, Peru, Brazil, The Bahamas, Bulgaria, Romania, Armenia, China, Dominican Republic, Comoros, Mexico, Egypt, Burundi, Democratic Republic of the Congo, Ghana, Hong Kong, Samoa, Uruguay, Qatar, Lebanon, Syria, Jordan, Panama, Malaysia, Mongolia, Ecuador, Suriname, Paraguay, Austria, Cape Verde
2. Bangladesh, Sri Lanka, Maldives, Bhutan, Mozambique, Vietnam, Georgia, Russia, Pakistan, Senegal, Luxembourg, India, Kyrgyzstan, Zimbabwe, Azerbaijan, Nigeria, Fiji, Tajikistan, Laos, Nepal, Moldova, Cyprus, Latvia, Finland, Estonia, Afghanistan, Kazakhstan, Turkmenistan, Uzbekistan
3. Rwanda, Solomon Islands, Malawi, Tanzania, Cambodia, Micronesia, Netherlands, Singapore, Indonesia, Tonga, Tuvalu, Kiribati, Papua New Guinea, Vanuatu, Myanmar, Philippines, Japan, Marshall Islands, Timor-Leste, New Zealand, Australia, Palau, Republic of Congo, Sudan, Korea, Nauru
4. Grenada, Kenya, The Gambia, Ethiopia, Spain, Malta, United Kingdom, Albania, France, Slovenia, Poland, Iceland, Italy, Greece, Ukraine, Serbia, Ireland, Uganda, Belarus, Swaziland, Trinidad and Tobago, Thailand, Norway
5. Burkina Faso, Jamaica, Bolivia, Zambia, Sweden, Belgium, Gambia, Guinea, Liberia, Cameroon, Seychelles, Mauritania, Ivory Coast, Lesotho, Togo

6. St. Vincent and the Grenadines, St. Lucia, St. Kitts and Nevis, Dominica, Antigua and Barbuda, Anguilla

7. Niger

# 3 Robustness Checks and Supporting Statistical Information

| | # Mentions | Any Mention | # Mentions | Any Mention |
|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Prior bureaucrat climate mentions | 0.630** | 0.127*** | | |
| | (0.279) | (0.044) | | |
| Prior bureaucrat climate mentions (other countries) | | | 1.356** | 0.132** |
| | | | (0.564) | (0.062) |
| Lagged DV (continuous) | 0.164* | | 0.159** | |
| | (0.084) | | (0.077) | |
| Lagged DV (binary) | | −0.017 | | 0.018 |
| | | (0.068) | | (0.070) |
| Polity2 | −0.021 | −0.005 | −0.025 | −0.005 |
| | (0.026) | (0.005) | (0.027) | (0.005) |
| GDP per capita (ln) | −0.056 | 0.062 | −0.064 | 0.076 |
| | (0.441) | (0.055) | (0.423) | (0.056) |
| Climate-related disaster | 0.097 | 0.015*** | 0.088 | 0.015** |
| | (0.068) | (0.006) | (0.068) | (0.006) |
| In IMF program | 0.367 | 0.018 | 0.338 | 0.019 |
| | (0.242) | (0.025) | (0.211) | (0.024) |
| UN ideal point distance | 0.039 | 0.007 | −0.126 | −0.003 |
| | (0.261) | (0.044) | (0.258) | (0.043) |
| N | 1093 | 1093 | 1093 | 1093 |
| Adj. R-squared | 0.176 | 0.173 | 0.198 | 0.170 |

***p < .01; **p < .05; *p < .1

Table A1: **Lagged DVs.** Included lagged dependent variables (within-country lag by one year).

| | Climate Attuned | |
|---|---|---|
| | **Model 1** | **Model 2** |
| Climate-related disasters in current country | 0.005*** | 0.004** |
| | (0.001) | (0.002) |
| Polity2 | | 0.001 |
| | | (0.005) |
| GDP per capita (ln) | | −0.014 |
| | | (0.035) |
| In IMF program | | 0.017 |
| | | (0.069) |
| UN ideal point distance | | 0.033 |
| | | (0.057) |
| N | 570 | 416 |
| Adj. R-squared | 0.484 | 0.433 |

***p < .01; **p < .05; *p < .1

Table A2: **Managing Director Fixed Effects Robustness Check (Socialization).** Replication of socialization models, with country and managing director fixed effects.

| | # Mentions | Any Mention | # Mentions | Any Mention |
|---|---|---|---|---|
| | **Model 1** | **Model 2** | **Model 3** | **Model 4** |
| Prior bureaucrat climate mentions | 0.956** | 0.148*** | | |
| | (0.385) | (0.046) | | |
| Prior bureaucrat climate mentions (other countries) | | | 1.557** | 0.149** |
| | | | (0.660) | (0.065) |
| Polity2 | −0.019 | −0.004 | −0.021 | −0.004 |
| | (0.028) | (0.004) | (0.030) | (0.004) |
| GDP per capita (ln) | 0.246 | 0.106* | 0.347 | 0.132** |
| | (0.420) | (0.056) | (0.410) | (0.060) |
| Climate-related disaster | 0.093 | 0.014*** | 0.086 | 0.014** |
| | (0.065) | (0.005) | (0.066) | (0.006) |
| In IMF program | 0.245 | −0.001 | 0.222 | −0.001 |
| | (0.204) | (0.023) | (0.179) | (0.022) |
| UN ideal point distance | 0.114 | 0.004 | 0.002 | −0.001 |
| | (0.243) | (0.035) | (0.239) | (0.036) |
| N | 1151 | 1151 | 1151 | 1151 |
| Adj. R-squared | 0.141 | 0.150 | 0.160 | 0.142 |

***p $<$ .01; **p $<$ .05; *p $<$ .1

Table A3: **Managing Director Fixed Effects Robustness Check (Rotation).** Replication of climate concern spread models, with country and managing director fixed effects.

| | # Climate Mentions | |
|---|---|---|
| | **Model 1** | **Model 2** |
| Prior bureaucrat climate mentions | 2.313*** | 1.485*** |
| | (0.092) | (0.181) |
| Polity2 | | 0.028 |
| | | (0.044) |
| GDP per capita (ln) | | 7.115*** |
| | | (0.708) |
| Climate-related disaster | | 0.343*** |
| | | (0.056) |
| In IMF program | | −0.028 |
| | | (0.179) |
| UN ideal point distance | | −0.058 |
| | | (0.295) |
| Constant | −2.924*** | −68.389*** |
| | (0.709) | (6.686) |
| N | 1474 | 1151 |

***p < .01; **p < .05; *p < .1

Table A4: **Poisson Robustness Check.** Replication of rotation model, estimated via a poisson regression. We exclude year fixed effects from this specification because we experience issues with convergence and NA coefficients for several year dummies. Country fixed effects remain.

| | Climate Attuned | |
|---|---|---|
| | **Model 1** | **Model 2** |
| Climate-related disasters in previous country | 0.396*** | 0.226* |
| | (0.111) | (0.121) |
| Polity2 | | 0.116 |
| | | (0.180) |
| GDP per capita (ln) | | −3.499 |
| | | (2.609) |
| In IMF program | | 42.043 |
| | | (7625.738) |
| UN ideal point distance | | −4.359 |
| | | (3.993) |
| Constant | −137.769 | −227.122 |
| | (80138.750) | (134039.900) |
| N | 467 | 329 |

***p < .01; **p < .05; *p < .1

Table A5: **Logit Robustness Check (Socialization).** Replication of socialization model, estimated via a binomial logistic regression.

| | Any Climate Mention | |
|---|---|---|
| | **Model 1** | **Model 2** |
| Prior bureaucrat climate mentions | 2.201*** | 1.145*** |
| | (0.253) | (0.375) |
| Polity2 | | 0.077 |
| | | (0.107) |
| GDP per capita (ln) | | 10.638*** |
| | | (1.776) |
| Climate-related disaster | | 0.248* |
| | | (0.143) |
| In IMF program | | 0.161 |
| | | (0.486) |
| UN ideal point distance | | −0.591 |
| | | (0.682) |
| Constant | −3.414*** | −100.240*** |
| | (1.072) | (16.441) |
| N | 1474 | 1151 |

***p < .01; **p < .05; *p < .1

Table A6: **Logit Robustness Check (Rotation).** Replication of climate concern spread model, estimated via a binomial logistic regression. We exclude year fixed effects from this specification because we experience issues with convergence and NA coefficients for several year dummies. Country fixed effects remain.

| | # Climate Mentions |
|---|---|
| Cumulative climate mentions | 0.564*** |
| | (0.099) |
| Polity2 | −0.018 |
| | (0.023) |
| GDP per capita (ln) | −0.151 |
| | (0.364) |
| Climatological disaster | 0.090 |
| | (0.102) |
| In IMF program | 0.240* |
| | (0.139) |
| UN ideal point distance | −0.012 |
| | (0.230) |
| Constant | 1.238 |
| | (3.369) |
| N | 1151 |
| Adj. R-squared | 0.192 |

***p < .01; **p < .05; *p < .1

Table A7: **Instrumental Variables Robustness Check.** We utilize 2SLS and instrument for cumulative climate mentions (ln) for each bureaucrat with cumulative climate-related disasters (ln) that affected each bureaucrat in previous postings. Because climate-related disasters are quasi-random, we believe this to be a reasonable instrument for prior mentions of climate concerns. The instrument passes a weak instrument test ($p = 0.00$). We then regress current climate mentions on cumulative previous climate mentions, finding strong results. The model includes country and year fixed effects. Robust standard errors are clustered at country-level.

# 4 Research Ethics

This research conforms to all principles contained within the APSA *Principles and Guidance for Human Subjects Research*. Human subjects research was exclusively conducted with public officials at the International Monetary Fund; we did not engage with low-power or vulnerable populations, and our contact with these officials did not put these populations at risk indirectly. We obtained voluntary informed consent from all officials via email, transparently communicating our affiliations, the purposes of our research, and other information about the study. We employed no deception — we principally asked subjects for oral histories of their past experiences and the development of climate concerns within the Fund. No harm or trauma was expected or identified. All subjects were informed of and ensured confidentiality. As the content of these interviews were the acquisition of oral histories, we did not anticipate or observe any impact on political processes. Approval for interviews with institution staff was granted by the Institutional Review Board at [[institution redacted]].

Our data on bureaucrat career paths, which initially included individuals' names, has been anonymized (names replaced with unique identifiers) to protect privacy. All such data were acquired from public sources, including bureaucrats' publication of their own information on LinkedIn. No information on individual bureaucrats was collected outside their country postings within the IMF and the years of those postings.