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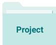

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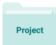

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NGOs, INGOs, and Environmental Policy Reform

NGOs, INGOs, and Environmental Policy Reform, 1970–2010

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We examine the effects of domestic and international environmental nongovernmental organizations (NGOs) on pro-environmental policy adoption using cross-national data. We address three views: (1) a bottom-up perspective, prioritizing the role of domestic NGOs; (2) an interaction imagery, stressing alliances or reinforcing pressures between domestic and international NGOs; (3) a top-down view, emphasizing the part of international NGOs. We use event history analysis to model the cross-national adoption of three major pro-environmental policy reforms between 1970 and 2010: omnibus environmental laws, environmental impact assessment reporting requirements, and national environmental ministries. Results show that international NGOs are strongly associated with pro-environmental reforms, with very large effects. By contrast, domestic NGOs are generally not associated with policy adoption in global analyses. In a subsample of democratic countries, we find smaller effects of domestic NGOs for some outcomes. We find no evidence that international NGOs amplify the effects of domestic ones. While there are compelling historical examples of bottom-up and interaction processes, the broad pattern of environmental policy adoption across the world is better explained by global rather than domestic organizational dynamics.

Introduction

In 2011, Indonesian President Susilo Bambang Yudhoyono signed a two-year moratorium on the deforestation of primary forests and peatland as part of an ambitious commitment to address climate change. The decision followed nearly a decade of protests over illegal logging and the announcement of a $1 billion financial commitment from Norway—the biggest funder of the Reduced Emissions from Deforestation and Forest Degradation (REDD) program, which provides

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financial contributions for verified emissions reductions under the United Nations Framework Convention on Climate Change. At the forefront of the protests were Greenpeace, which established its first Indonesian office in 2005 and staged a number of demonstrations, including one at the site of a presidential debate, and a host of local organizations, such as the Indigenous People's Alliance for the Archipelago, the Indonesian Forum for the Environment, and Sawit Watch (Greenpeace 2013). In 2013, the moratorium was extended for two more years as international and domestic organizations continued to push for a stricter policy with fewer concessions and exemptions, much to the chagrin of powerful timber interests in the country.

The Indonesian deforestation moratorium offers a glimpse into environmental contestation and policymaking. It features both domestic and international nongovernmental organizations, and it suggests interactions between the two.

For starters, it suggests an important role for domestic nongovernmental organizations (NGOs), upset over the loss of biodiversity and threats to livelihoods due to the illegal logging of primary forests for pulp and palm oil. Such organizations can mobilize constituencies and resources, shape public opinions, and take advantage of political openings to bring lawsuits and policies to government agendas. Domestic NGOs loom large in many accounts of the early US environmental movement leading up to the first Earth Day in 1970. Local groups and pressures are thought to have spurred an array of legislative victories, including major amendments to the Clean Air Act in 1970 and the Endangered Species Act in 1973, and promoted the establishment of numerous federal regulatory agencies (Brulle 2000). In light of such evidence, research on bottom-up policy processes has grown dramatically in the past decade and a half (Andrews and Edwards 2004; Amenta et al. 2010; Johnson, Agnone, and McCarthy 2010; see also Soule and King 2006).

Yet, some scholarship questions the primacy of local pro-environmental groups, pointing to the role of elites, bureaucrats, and even international influences in shaping US policy in the 1970s (Hironaka 2014). Earth Day was the brainchild of a senator, and many significant pieces of legislation passed with minimal grassroots agitation. Moreover, even if local groups were critical in the United States, one might question the generalizability of such arguments to Indonesia and elsewhere around the globe. As Watkins, Swidler, and Hannan (2012) describe, NGOs in developing countries operate under great uncertainty. In the context of limited technologies and weak infrastructures, it may be difficult to translate their efforts into clear policy outcomes. Indeed, the Indonesian story raises the possibility that domestic NGOs were only effective given their interactions and alliances with international NGOs. They were at least aided and abetted by Greenpeace's vast network and tactical repertoire. The outcome might even be interpreted as a tidy illustration of Keck and Sikkink's (1998) "boomerang" pattern, whereby domestic organizations, unable to shape policy directly due to a repressive or unresponsive state, appeal to external bodies to pressure policymakers from the outside.

Still another possibility is that it was international nongovernmental organizations (INGOs) themselves that were principally responsible for the policy changes in Indonesia, independent of domestic organizations. International associations

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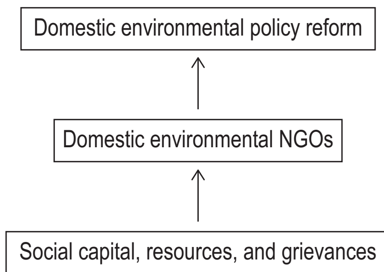
may generally be more effective in generating policy change from the top down, particularly if nation-states adopt policies tailored to global standards. Environmental INGOs predate most domestic NGOs in developing countries (Longhofer and Schofer 2010), and they may play central roles in circulating templates and channeling resources to address climate change in accordance with the Kyoto Protocol, which established emissions reduction targets for wealthier countries that could be met in part by offsetting emissions in developing ones such as Indonesia.

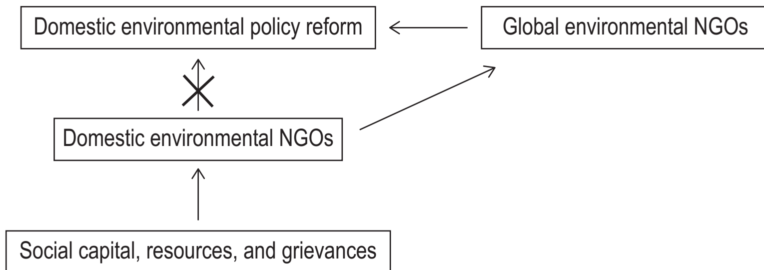
The three imageries—bottom-up, interaction, and top-down—differently depict the policy reform process, diverging especially on the question of whether the key organizations are domestic or international. We illustrate all three imageries in figure 1. From the bottom-up standpoint, policy developments follow from the mobilization of domestic NGOs targeting the state. From the interaction perspective, domestic NGOs mobilize and try to target the state, but they

Figure 1. Three imageries of environmental policy reform

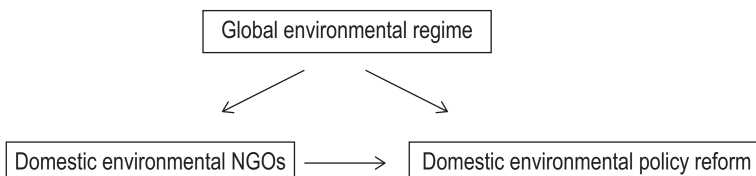
Bottom-up imageries:



Interaction imageries:



Top-down imageries:



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cannot succeed without the aid of international allies. From the top-down perspective, international NGOs are critical, as carriers of the global seeds from which national environmental policies arise. Despite the clear differences among the imageries, few studies have attempted to evaluate their relative strengths with systematic data from a large number of countries across a range of policies within a given domain.

Thus, we explore the roles of domestic and international NGOs in encouraging environmental policy adoption by examining cross-national data on three types of pro-environmental reform: omnibus environmental laws, environmental impact assessment legislation, and environmental ministries. We unpack the three perspectives on environmental policymaking, introduce data and models, and discuss the implications of our findings for the literature.

Three Imageries of Environmental Policymaking

The proliferation of domestic and international nongovernmental organizations over recent decades marked a dramatic reorganization in the global system. Scholars and policymakers have grappled with whether these new private actors represent a panacea for problems associated with development, democracy, and environmental protection (Reimann 2005). Early influential accounts held that domestic and international NGOs promised to "breed new ideas; advocate, protest, and mobilize public support; do legal, scientific, technical, and policy analysis; provide services; shape, implement, monitor, and enforce national and international commitments; and change institutions and norms" (Mathews 1997, 50–66). By the end of the 1990s, $6–8 billion was flowing from the United Nations, bilateral aid agencies, intergovernmental organizations, and private foundations to NGOs each year (Reimann 2006). In the environmental realm, Caldwell (1988, 24) held that NGOs were "absolutely essential to most international environmental action" (see also Princen and Finger 1994). The question here is their impact on policy reform.

Bottom-Up Imageries

A first perspective on the policy process prioritizes the role of domestic environmental NGOs. Much of the pertinent research is set in the United States (e.g., Bullard 1990; Szasz 1994; Andrews and Edwards 2005; Johnson, Agnone, and McCarthy 2010). The idea is that organizations such as the Sierra Club and the Nature Conservancy provide important infrastructure for the US movement and play key roles in pressing the state for reforms. A variety of policy successes are attributed in whole or in part to such organizations: the creation of the Environmental Protection Agency, the establishment of the environmental impact assessment framework, the expansion of industry regulation, and so on.

In the policy process beyond the United States, scholars make similar arguments. For example, they stress the importance of domestic environmental NGOs in spurring Japan to address methyl mercury poisoning in Minamata (Almeida and Stearns 1998; Funabashi 2006) and in pressuring Malaysia to slow the logging of the Penan region (Bryant and Bailey 1997; see also Shandra, Esparza, and

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London 2012). Even at the world level, scholars assign a leading role to domestic environmental NGOs. They portray them as the underlying pillars of transnational mobilization, which in turn catalyze national pro-environmental reforms (Wapner 1996; see also Tarrow and McAdam 2005).

Generally, a cluster of recent studies finds that large social movements—often spearheaded by domestic NGOs—influence the early agenda-setting stages of policymaking (Andrews and Edwards 2004; Johnson, Agnone, and McCarthy 2010; see also Amenta and Caren 2004; Soule and King 2006). At the same time, many scholars suggest that policy successes lag far behind victories in other areas, such as mobilizing resources and constituencies (Amenta et al. 2010). Part of the discord stems from a "Ptolemaic view" of social movements, which envisions social change revolving around movement organizations like the sun around the earth (McAdam and Boudet 2012). The view is inclined to neglect the broader context (see also Walder 2009).

Indeed, the impact of domestic NGOs is often assumed rather than empirically demonstrated, perhaps reflecting the normative appeal of bottom-up political narratives (Frank, Longhofer, and Schofer 2007). Yet, there are reasons to be skeptical. Hironaka (2014) suggests that the policy impact of early pro-environmental groups in the United States is often overstated. For instance, so-called "NIMBY" organizations were typically local in orientation, and while they scored victories against the construction of particular waste facilities, they played little role in the broader process of national policy reform. More generally, research on the policy consequences of social movements is mixed at best, even in the relatively favorable context of Western democracies (Amenta et al. 2010). Many countries are not democratic, and their regimes may not be set up to respond to domestic interest groups. Moreover, in the global South, domestic pro-environmental NGOs are slow to arise and are typically small and poorly funded (Longhofer and Schofer 2010). In the case of China, for example, only nine domestic environmental NGOs existed in 1994 (Yang 2005). Third, existing research shows that environmental policies swept across countries varying greatly in domestic political structures and movements, calling into question the idea that domestic NGO pressures were critical to reform (Frank, Hironaka, and Schofer 2000).

Still, the conventional view retains many adherents and great rhetorical charisma. It suggests that domestic NGOs and associated local movements are important instigators of national policy reforms (e.g., Buttel 2000; Wong 2001; Sonnenfeld 2002; Bryant 2005; Sonnenfeld and Mol 2006).

> Hypothesis 1: Domestic NGOs will have a positive effect on the adoption of national pro-environmental policy reforms.

Interaction Imageries

A second view of policy reform starts with domestic nongovernmental organizations, as above, but it puts them in interaction with international players. For instance, in their influential work on transnational advocacy networks, Keck and Sikkink (1998) stress alliances between national and international nongovernmental

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organizations. They describe a "boomerang pattern," depicted in figure 1 as influence extending from domestic groups to international actors and back again to states.

In the environmental realm, Keck and Sikkink use their framework to explain mobilization against deforestation in the Brazilian Amazon, where local groups appealed to INGOs like Greenpeace and Friends of the Earth to disperse information to local residents and to pressure the World Bank to enforce its own commitments to sustainable development in order to slow deforestation. Similarly, some 300 local NGOs in the La Plata River basin in South America joined forces with INGOs and the Inter-American Development Bank to halt construction of a transnational water superhighway in the 1990s.

Interaction imageries address the most obvious difficulty of extending "bottom-up" arguments to non-democracies, where states have less impetus to tolerate or respond to domestic interest groups. The framework still stresses domestic actors, but it argues that they work with international groups to amplify their voices. Thus, INGOs represent powerful allies that aid domestic groups by pressing states for social change (e.g., Bassano 2014).

Even absent the boomerang pattern, interactions and alliances between domestic nongovernmental organizations and INGOs may help promote policy change. Tsutsui (2006) argues that INGOs can improve domestic political opportunity structures and increase the efficacy of social movements, including their participating NGOs. For example, Tsutsui and Shin (2008) found that human rights movements among resident Koreans in Japan were more successful when they pursued goals consistent with strong global norms and as Japan deepened its ties to the international human rights community.

> Hypothesis 2: INGOs will enhance the impact of domestic nongovernmental organizations on the adoption of national pro-environmental policy reforms.[1]

Interactions and alliances between domestic nongovernmental organizations and INGOs may be most critical in political contexts that exclude local actors from the policy process. For example, the NGO-to-INGO "boomerang" is most likely to be thrown when nondemocratic or repressive regimes sever the "channels between domestic groups and their governments" (Keck and Sikkink 1998, 12). Some scholars contend that INGOs go so far as to target undemocratic states as a "strategic substitute" for hamstrung domestic organizations (Murdie and Urpelainen 2015). Thus, we examine the possibility that INGOs bolster the effects of domestic NGOs especially in non-democratic societies.

> Hypothesis 2a: The impact of INGOs on the effectiveness of domestic nongovernmental organizations in spurring environmental reform will be greater in nondemocratic than in democratic countries.

Of course, the converse is also possible. The interaction of INGOs and NGOs may have stronger effects in democratic settings, as in the case of deforestation (Shandra, Esparza, and London 2012; see also Aklin and Urpelainen 2014). Our models allow us to test both possibilities. Finally, another variation of this general hypothesis suggests that INGOs are most likely to target countries with domestic

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constituencies and support networks already in place.[2] For example, volunteers and financial resources are needed for the establishment of a local INGO chapter and the like. Although prior work finds that environmental INGOs tend to target countries that lack such sources of support (Murdie and Urpelainen 2015), we describe additional tests that try to account for other forms of domestic support that may precede the entry of INGOs.

Top-Down Imageries

Scholars utilizing top-down perspectives—often drawing on the neoinstitutional "world society" tradition—envision domestic policy reform through the prism of global institutions, grounded in international organizations (both intergovernmental and nongovernmental), treaties, conferences, and epistemic communities that create, institutionalize, and disseminate global models (Haas 1990; Meyer et al. 1997b; Berkovitch 1999; Boli and Thomas 1999; Frank, Hironaka, and Schofer 2000; Dobbin, Simmons, and Garrett 2007). The perspective arises from a core empirical observation: Despite striking cross-national differences in economic development or cultural traditions, policies in many domains display remarkable isomorphism across countries. The top-down perspective is quite different from the bottom-up and interaction alternatives. It envisions domestic politics as instantiating legitimated global models, which establish the bedrock features of the nation-state and civil society (Meyer et al. 1997a).

Schofer and Longhofer (2011) argue that domestic nongovernmental organizations—the smoking guns in both previous accounts—are themselves derivative features of world society. Building on Reimann's (2006) depiction of the "pro-NGO" norm that developed in the 1990s, the authors find that ties to world society and world aid are key drivers in the formation of domestic NGOs. This is especially the case in the environmental sector, where international efforts and activities, led by scientists and professionals, play a critical role in socially constructing environmental problems (Frank 1997; Hironaka 2014).

The global roots of domestic NGOs may not always have been strong. From the late nineteenth through the middle twentieth centuries, an eclectic mix of associations concerned with animal welfare, conservation, and pollution (including a few early "NIMBY" organizations) emerged in the United States and several other Western countries. Beginning in the post–World War II period—for example, with the 1948 founding of the International Union for the Conservation of Nature, self-identified as the "world's first global environmental organization"—and building steam in the 1960s—especially in preparation for the United Nations Conference on the Human Environment held in 1972 in Stockholm—the locus of activity shifted into the international sphere, as observed in the rise of a global environmental regime, consisting of treaties, inter-governmental organizations, and INGOs (Haas 1990; Meyer et al. 1997b). Hironaka (2014) argues that the post-Stockholm environmental regime played a primary role in establishing and institutionalizing modern cultural frames for mobilizing around environmental issues—ultimately galvanizing domestic pro-environmental groups in the West and elsewhere around the globe.

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Prior quantitative studies lend support to the idea that the global environmental regime, prominently including environmental INGOs, has strong effects on nation-states. Countries with stronger ties to environmental INGOs are faster than others to adopt environmental policies and form domestic environmental NGOs and more likely than others to have citizens with strong environmental values (Frank, Hironaka, and Schofer 2000; Longhofer and Schofer 2010; Givens and Jorgenson 2013; see also Jorgenson, Dick, and Shandra 2011). In Asia, participation in environmental INGOs generally preceded and sometimes preempted the formation of domestic NGOs and was ultimately crucial for the adoption of national environmental policies (Frank, Longhofer, and Schofer 2007). For example, Reimann (2003) details how international donors underwrote the formation of the Kiko Forum in Japan, which was created by Japanese NGOs in preparation for the Kyoto climate change conference and modeled after the Kilma Forum in Germany.

Thus, top-down perspectives suggest that the international system will be more consequential for policy adoption than domestic NGOs—certainly in developing countries, but possibly even in more developed countries. In summarizing work in this tradition, Watkins, Swidler, and Hannan (2012, 294) suggest that NGOs "achieve stability by conforming to and reinforcing global understandings of what policy and participation should look like—hence the remarkable isomorphism of these organizations' agendas and strategies across very different societies" (Ghodsee 2006; Frank, Longhofer, and Schofer 2007).

World society theory and related perspectives offer both an explanation for why INGOs should matter and why domestic NGOs might not. The former reflect the institutionalization of environmental protection in the global system and relay models for pursuing such protection, whereas the latter are often unstable and under-resourced or simply derivative of the international system itself. This leads to the following hypothesis:

> Hypothesis 3: INGOs will have a positive effect on the adoption of national pro-environmental policy reforms.

Data and Methods

We now turn to a statistical examination of the arguments laid out above. Bottom-up accounts predict a strong effect of domestic environmental NGOs on policy change, whereas top-down arguments suggest that the principal forces driving environmental reform stem from the global sphere. Interaction arguments suggest that the confluence of domestic and international groups will generate change, particularly in non-democratic countries. To explore the latter, we look at the statistical interaction between domestic and international NGOs, which allows us to discern whether domestic associations are more consequential when they are bolstered by international organizations.[3]

We model the national adoption of environmental reforms using event history analysis in order to explore the domestic and international correlates of policy reform (Tuma and Hannan 1984). Event history models are well suited to the study of discrete events that vary in timing, such as policy adoption. We employ

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a constant rate model, similar to prior studies in the literature (e.g., Frank, Hironaka, and Schofer 2000; Schofer 2003):[4]

$$h(t) = \exp(\beta_0 + \beta_k X_i).$$

In a constant rate model, h(t) represents the hazard rate of an event (in this case, the adoption of a particular environmental reform) occurring in a given year as a function of a baseline rate and time-varying covariates.

Dependent Variables

We analyze the national adoption of three types of reforms.

Omnibus environmental law We coded the year in which countries first created a broad-based national environmental law, giving the state authority to regulate primary forms of environmental degradation (e.g., air pollution, water pollution, and so on). An early example would be the 1969 US National Environmental Policy Act. Omnibus environmental laws were coded from the ECOLEX website (www.ecolex.org), which contains text on environmental legislation for all countries in the world and is maintained by the International Union for the Conservation of Nature, the United Nations Environment Programme, and the Food and Agriculture Organization of the United Nations.

Environmental impact assessment (EIA) law We coded for the presence of a national-level environmental impact assessment law. EIA laws vary both in their formal requirements and in their implementation across societies, but generally they require major construction and development projects to evaluate and report environmental impacts before the projects begin. Hironaka (2000) argues that EIA laws are important because they create workspaces in which pro-environmental groups can challenge development projects and spur mitigation. Data were taken from Hironaka (2000) and updated to 2010 based on a coding of the ECOLEX website (www.ecolex.org).

National environmental ministry We coded the year in which countries established a cabinet-level ministry devoted to environmental protection. A ministry is an enduring bureaucratic structure that represents a broad commitment to addressing environmental issues. The founding of a ministry typically signifies the elevation of national attention and resources devoted to environmental issues. Data on ministries were taken from annual editions of the *Statesman's Yearbook* (Turner 1970–2010).

Independent Variables

We use two key independent variables, alone and in interaction.

Domestic environmental NGOs Data on the number of domestic pro-environmental NGOs in a given country come from the Gale Group's Associations Unlimited database, which contains information on more than 30,000 domestic organizations around the world (Gale 2001, 2012). We used Gale's keywords to identify groups that had an environmental focus, excluding organizations that were branches of international NGOs. Organizational founding dates were used

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to estimate the number in existence in prior years. Our measure reflects the cumulative count of domestic environmental NGOs previously founded, taking the natural log to reduce its skew.[5]

Environmental INGOs The influence of world society is measured in the conventional manner as the number of individual memberships in international nongovernmental organizations (INGOs)—in this case, environmental ones. We used the UIA subject indices to identify the population of environmental INGOs, consulting multiple years of the yearbook to catch any short-lived organizations. We arranged these by founding date. We then sampled every eighth organization, dropping and replacing those that did not focus primarily on the environment (e.g., agricultural organizations) and/or did not list membership data over time. This process yielded a sample of 54 environmental INGOs, for each of which we tallied country memberships on an annual basis. Our final measure represents the yearly count of environmental INGO memberships in a given country out of the sample of 54. For example, a country with individual members of both World Wildlife Fund and Friends of the Earth is considered to have two ties to world society (UIA 1970–2010).[6] We take the natural log of the measure to reduce its skew.

We control for other factors that may affect environmental policy reform:

Environmental degradation: CO_2 emissions per capita, logged (World Bank 2013) Environmental degradation may lead to changed societal attitudes and/or directly prompt national policy responses (Bocking 2004). Functionalist theories and classic grievance-based social movement theories predict that grave social problems will naturally tend to generate societal movements and policy responses (e.g., Merton 1957).[7] CO_2 is a greenhouse gas that is the byproduct of industrial activity and transportation. Of the various degradation measures available, CO_2 is especially useful for large quantitative studies because it is available for a large sample of countries and over many years, and it tends to be highly correlated with other (typically more visible) forms of pollution and environmental degradation. That said, alternative measures of degradation yield similar results to those presented below.[8] We also address environmental threats indirectly via controls for population and GDP, which are linked to degradation (York, Rosa, and Dietz 2003).

Population, logged Classic theories and models of environmental degradation focus on the size of the human population as a primary source of environmental damage (Stern, Young, and Druckman 1992; York, Rosa, and Dietz 2003). Population pressure and subsequent degradation may prompt greater environmental concern and reform. Moreover, very small countries (in terms of population) may lack state capacity and thus be slower to adopt new environmental policies.

Real gross domestic product (GDP) per capita, logged Ecological modernization theory suggests that economic development will bring resources, technologies, and changing attitudes necessary to address environmental ills (Mol 2001; Mol and Sonnenfeld 2000). Moreover, among poor nations, GDP is associated with basic state capacity to implement reforms. Finally, affluence is associated with consumption, which is a primary source of environmental degradation (York, Rosa, and Dietz 2003), which may prompt reform. Data are taken from the Penn World Tables Version 8.0 (Feenstra, Inklaar, and Timmer 2013).

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Democracy Janicke (1996) argues that open, participatory societies have greater capacity to address environmental problems. We include the Polity IV democracy score to address the possibility that democratic societies will be more responsive to pressures for environmental reform than non-democracies (Marshall, Gurr, and Jaggers 2013).

Secondary-school enrollment Classic theories of political participation argue that education empowers political participation by increasing citizen awareness of problems and providing skills and capacities to mobilize (Almond and Verba 1963). We include a measure of secondary-school enrollment (World Bank 2013). Educated individuals are more likely to be aware of environmental problems and are more likely to mobilize to address them.

For some purposes below, we divide our sample into subgroups of democratic and non-democratic countries and developed and developing countries. Democracies are defined as countries with a Polity IV democracy score of eight or greater, which captures those that are quite thoroughly democratic (though reducing the cutoff yielded similar results). The developed group includes the nation-states of Western Europe, the United States, Canada, Australia, New Zealand, and Japan. The developing group encompasses the remaining countries.

Descriptive statistics for our variables appear in appendix A. Additional controls for foreign direct investment (FDI), trade, conflict, and other world society factors (memberships in intergovernmental environmental organizations, environmental conferences, and environmental treaty ratifications) did not alter the main findings below.

In other analyses, we explored an alternative hypothesis that INGOs may depend on the institutional support and financial assistance of domestic volunteers and constituents to be effective. Moreover, INGOs may target countries based on national campaigns spurred by domestic volunteers and other forms of local assistance. If this were the case, then the effects of domestic pressures may be conflated with international ones in our analyses.[9] Thus, in other models, we also included country averages of individual responses to two questions from the World Values Survey, namely, willingness to pay for environmental protection and voluntary activity in environmental organizations. The variables themselves did not have consistent effects on our outcomes, and their inclusion did not alter our main findings. Adding them slashed our sample size in half, however, and we therefore do not report them, though they are available upon request. We discuss the implications of this hypothesis and other alternate explanations later in the paper.

Results

We begin with descriptive evidence regarding the formation of domestic pro-environmental organizations over time. The conventional bottom-up story holds that domestic mobilization is the primary vector of social change. Scholars have looked to the student movements, the postwar democratic climate, and the emergence of a liberal, highly educated middle class for the domestic wellsprings of modern environmentalism in the United States and Western Europe (Dalton 1993, 1994; Rome 2003). As a first look at the evidence, we compare general historical trends between 1970 and 2010.

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Figures 2 and 3 trace the growth of memberships in international environmental NGOs and the founding of domestic environmental nongovernmental organizations in developed and developing countries. Environmental INGO memberships and domestic NGOs are summed across countries in each figure. We also include the growth of environmental reforms, measured as the total count of policy adoption for all three outcomes analyzed below. The measures do not reflect the full population of domestic or international nongovernmental organizations, so the raw count values are not meaningful unto themselves. But the relative trends over time are informative, and values of the same variable can be directly compared across figures 2 and 3.

Both figures suggest that nongovernmental organizations—domestic and international—preceded policy reforms. At 1970 in both types of countries, there were NGOs of both types but few environmental policies. Both figures also suggest that environmental INGOs grew more than domestic environmental NGOs between 1970 and 2010. The INGO slope is generally steeper. What is different between the two groups of countries is the relative mix of international and domestic nongovernmental organizations. Among the developed countries in figure 2, there is a stronger relative presence of domestic NGOs, especially early on. Among the developing countries in figure 3, there is a stronger relative presence of international NGOs, likewise especially early on. The precedence of INGOs suggested in figure 3 is consistent with patterns found elsewhere: International associations emerge early and statistically predict the later expansion of domestic environmental association in the developing world (Longhofer and Schofer 2010).

Figure 2. Trends of international environmental NGOs, domestic environmental NGOs, and policy reform in developed countries, 1970–2010

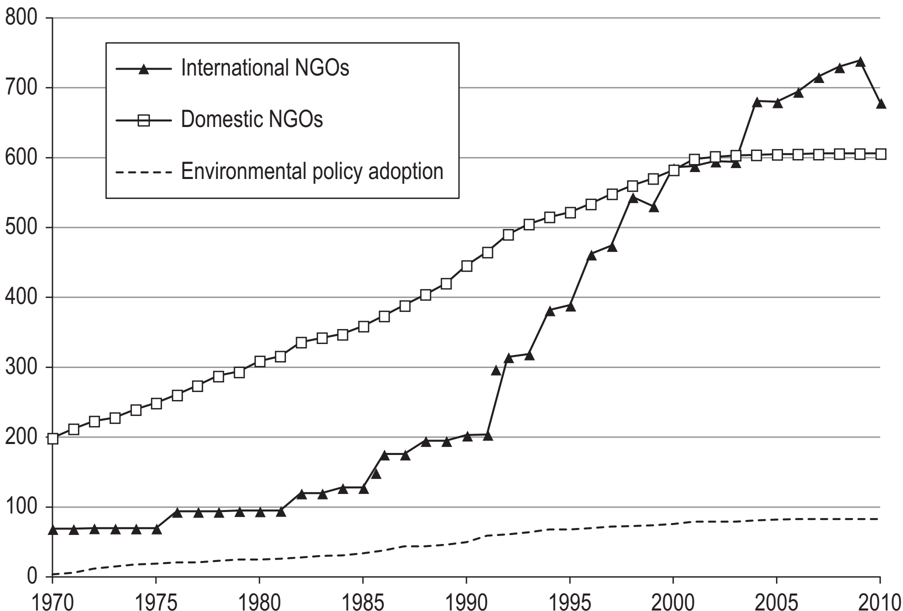

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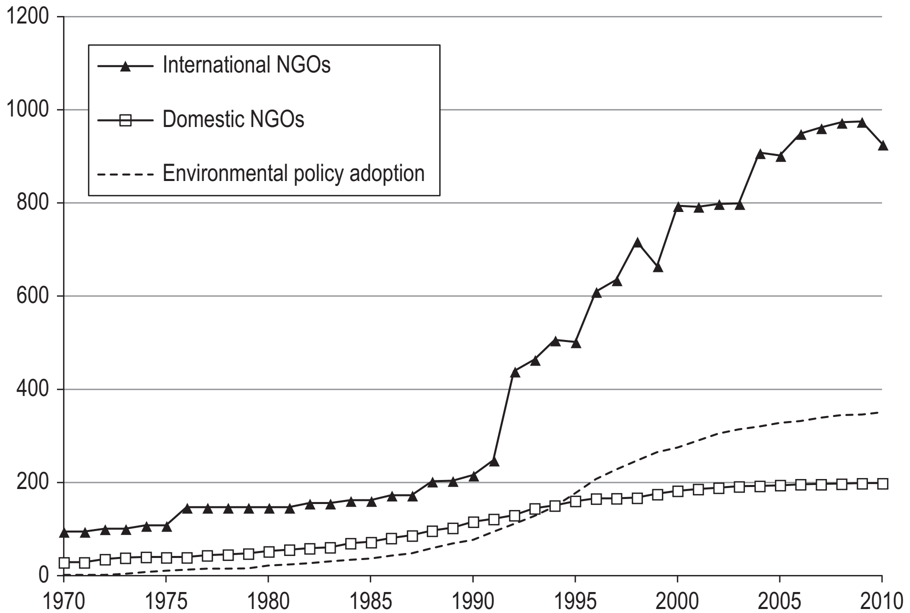
Figure 3. Trends of international environmental NGOs, domestic environmental NGOs, and policy reform in developing countries, 1970–2010



In short, figures 2 and 3 both suggest that nongovernmental organizations precede policy reform, and figure 3 suggests that international nongovernmental organizations precede domestic nongovernmental organizations in the developing world. We now turn to event history models to examine the issues more fully.

Table 1 summarizes the results for all three dependent variables: national adoption of an omnibus environmental law (of comparable breadth and scope to the US National Environmental Policy Act), passage of an environmental impact assessment law, and the creation of a national environmental ministry. We begin with a base model that includes control variables and domestic environmental NGOs (models 1, 4, and 7). As the "bottom-up" argument predicts, domestic NGOs have a positive effect on environmental policy reform. However, the effect is small and not statistically significant. In other words, the density of domestic environmental NGOs is not generally associated with the pace of policy reform.

Next, we add a measure of country chapters of environmental INGOs (models 2, 5, and 8). The variable has a large and statistically significant effect on all types of pro-environmental reform. For example, for every unit increase in logged INGO ties, the hazard rate of EIA reform more than triples (exponentiating the coefficient 1.23 yields a hazard ratio of 3.4). This finding lends support to the top-down model of environmental reform; that is, nation-states generally respond to environmental cues from world society rather than domestic civil society.

Finally, models 3, 6, and 9 in table 1 add an interaction term (domestic * international environmental NGOs). This examines the possibility that international organizations might amplify the effect of domestic groups (or vice versa) and is one operationalization of the "boomerang" argument for quantitative analyses.[10]

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Table 1: Effects of Domestic and International Environmental Nongovernmental Organizations on Policy Reform, 1970–2010

	Omnibus environmental law			Environmental impact assessment			Environmental ministry		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
GDP per capita (log)	–0.23	–0.44*	–0.38+	0.20	–0.03	0.01	–0.25	–0.43*	–0.37*
	(0.195)	(0.198)	(0.204)	(0.236)	(0.252)	(0.257)	(0.181)	(0.183)	(0.187)
Population (log)	0.34+	0.39*	0.32	–0.09	–0.16	–0.21	0.22	0.21	0.13
	(0.191)	(0.195)	(0.202)	(0.229)	(0.240)	(0.247)	(0.178)	(0.177)	(0.183)
CO_2 emissions per capita (log)	–0.02	0.12	0.06	–0.28+	–0.09	–0.13	–0.14	–0.05	–0.10
	(0.127)	(0.135)	(0.140)	(0.145)	(0.161)	(0.165)	(0.122)	(0.125)	(0.128)
Democracy	0.05**	0.05**	0.04**	0.05*	0.03	0.03	0.05***	0.04**	0.03*
	(0.016)	(0.016)	(0.017)	(0.019)	(0.020)	(0.021)	(0.015)	(0.015)	(0.015)
Secondary enrollment	1.18*	0.31	0.39	1.82**	0.19	0.23	2.19***	1.49**	1.44*
	(0.578)	(0.620)	(0.630)	(0.618)	(0.669)	(0.682)	(0.545)	(0.571)	(0.583)
Environmental NGOs (Domestic)	0.04	–0.03	0.50	0.09	–0.00	0.61+	0.05	0.00	0.81*
	(0.138)	(0.146)	(0.314)	(0.129)	(0.127)	(0.344)	(0.140)	(0.143)	(0.320)
Environmental INGOs (International)		0.70***	0.92***		1.23***	1.45***		0.67***	0.96***
		(0.178)	(0.215)		(0.204)	(0.239)		(0.181)	(0.213)
Environmental NGOs × INGOs interaction			–0.29+			–0.25+			–0.38*
			(0.161)			(0.138)			(0.152)
Constant	–3.71***	–2.29*	–2.70**	–6.26***	–4.31***	–4.70***	–3.15***	–1.69*	–2.08*
	(0.864)	(0.913)	(0.952)	(1.053)	(1.142)	(1.181)	(0.813)	(0.860)	(0.877)
Observations	2,799	2,707	2,707	3,711	3,624	3,624	2,709	2,614	2,614
Countries	134	133	133	141	140	140	136	121	121
Events	115	114	114	91	90	90	121	135	135

Unstandardized coefficients, errors in parentheses
$^{***}p < .001$ $^{**}p < .01$ $^{*}p < .05$ $^{+}p < .10$, two-tailed test

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The interaction term is negative and marginally significant for all three outcomes. The idea that international organizations amplify the effects of domestic NGOs is not supported, at least at the aggregate level. On the contrary, the interaction is negative, suggesting that each type of organization is more important when the other type is absent. This makes sense intuitively: There is, after all, some functional equivalence between the two types of NGOs. Also, research suggests that only a handful of NGOs in the developing world attract transnational backing (Bob 2001). At the same time, the interaction does not change the main story: International environmental organizations remain the primary predictor of domestic environmental reform.

Table 2 splits the sample into democratic and non-democratic subgroups, as the boomerang argument originally focused on repressive governments, which limited the access of local movements to the state. Among democratic countries, we find evidence that domestic NGOs matter for EIA laws (model 12) and ministry foundings (model 14). Their effect on the formation of omnibus environmental laws in democratic countries is positive but not statistically significant. As one would expect, environmental NGOs have smaller effects on policy reform in non-democracies, and the effect is never statistically significant. International environmental organizations, by contrast, have a positive and significant effect on all kinds of policy reforms in both democratic and non-democratic nation-states (models 10–15). Predictably, the coefficients are larger for the democratic subsample, but the relationship holds across the board.[11] Again, the interaction between domestic and international NGOs is negative and mostly non-significant, suggesting that each type of organization compensates for the absence of the other rather than amplifying its presence.

Appendix B presents side-by-side models of developed and developing nation-states. Based on figures 2 and 3 as well as on historical accounts of the early environmental movement, one might expect stronger effects of domestic groups in developed countries. This is not what we observe at the aggregate level. We find no significant effects of domestic association on environmental policy reform among the developed or developing countries (though sample sizes are small, rendering estimates imprecise).[12] By contrast, the effects of environmental INGOs are positive and significant in four of the six equations—vis-à-vis impact assessment laws in developed countries and vis-à-vis all three outcomes in developing countries.

Discussion

Conventional accounts of the environmental movement anticipate strong effects of domestic NGOs on environmental policy reform—certainly in developed and democratic Western countries, and presumably in other parts of the globe. However, at the aggregate level, we find only weak statistical evidence to support this hypothesis. The effects of domestic environmental NGOs tend to be positive but non-significant in the global sample, and they remain so even in the developed subsample. Only when we restrict the sample to democratic countries, and even then only for two of the three policy outcomes, do we observe positive and significant effects of domestic NGOs. This fits with the recent literature on movement

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Table 2: Effects of Domestic and International Environmental Organizations on Policy Reform: Democracies vs. Non-Democracies

	Omnibus law		Impact assessment		Ministry	
	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
	Democ.	*Non-dem.*	*Democ.*	*Non-dem.*	*Democ.*	*Non-dem.*
GDP per capita (log)	–0.89+	0.11	0.29	0.15	–0.48	–0.35
	(0.468)	(0.266)	(0.488)	(0.340)	(0.495)	(0.219)
Population (log)	0.74	–0.11	–0.81+	–0.20	0.15	0.16
	(0.455)	(0.269)	(0.483)	(0.349)	(0.455)	(0.227)
CO_2 emissions per capita (log)	0.27	–0.12	–0.25	–0.14	0.18	–0.15
	(0.310)	(0.170)	(0.310)	(0.208)	(0.328)	(0.143)
Democracy	0.18	0.08***	–0.41	0.06*	–0.07	0.05*
	(0.307)	(0.021)	(0.287)	(0.028)	(0.214)	(0.021)
Secondary enrollment	0.07	0.75	–0.78	0.46	1.10	1.60*
	(1.227)	(0.728)	(1.021)	(0.886)	(1.110)	(0.688)
Environmental NGOs (Domestic)	0.63	0.19	1.34**	0.83	1.16*	0.30
	(0.476)	(0.584)	(0.483)	(0.705)	(0.487)	(0.591)
Environmental INGOs (International)	1.13*	0.88**	2.13***	1.30***	1.23**	0.98**
	(0.455)	(0.280)	(0.413)	(0.349)	(0.416)	(0.299)
Environmental NGOs × INGOs interaction	–0.26	–0.13	–0.42*	–0.54	–0.51*	–0.28
	(0.236)	(0.349)	(0.176)	(0.365)	(0.219)	(0.356)
Constant	–1.85	–4.52***	–0.78	–5.89***	–0.73	–2.35*
	(2.865)	(1.202)	(2.992)	(1.506)	(2.599)	(1.031)
Observations	714	1,993	1,044	2,580	677	1,937
Countries	54	106	68	111	58	107
Events	40	74	43	47	49	72

***$p < .001$ **$p < .01$ *$p < .05$ +$p < .10$, two-tailed test
Unstandardized coefficients, errors in parentheses.
Note: Democracy defined as a Polity 4 "polity" score of 8 or greater. Countries may change in democracy status over time, so the same country may appear in both the "Democracy" and "Non-democracy" models at different points in time.

outcomes (Amenta et al. 2010), which observes that social movement effects tend to be modest and conditional on context and historical circumstance.

By contrast, country ties to world society—measured by chapters of environmental INGOs—have a positive effect on all measures of national policy reform. The effects are large and highly significant for the global sample and across both democratic and non-democratic subsamples. Only when we restrict the set to 26 or 27 developed countries does the effect lose significance for two of the three

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outcomes. The overall strength and durability of the impact of international environmental groups are striking, especially in contrast to the evanescent and consistently smaller effect of domestic NGOs.

We find no evidence to support interaction imageries. Specifically, there is no indication that the effect of domestic groups is amplified when international organizations are prevalent. If "boomerang dynamics" were operating consistently across the population of NGOs, then the effects on policy reform should be greatest where domestic NGOs coincide with large numbers of transnational links. Yet, quantitative analyses suggest the opposite: The effect of domestic groups (which is already non-significant) tends to shrink where international pro-environmental organizations are more prevalent.

It is important to note that our findings regarding aggregate organizational measures reflect broad statistical relationships that may not be observed in every country case study. Thus, our findings do not necessarily conflict with the prior case-study literature. Particular domestic NGOs (either alone or when aided by transnational groups) may play pivotal roles in some cases of policy reform. That said, our study could help direct future case-oriented work, by highlighting the general importance of INGOs specifically and global institutions generally. Also, future case research is critical to unpacking the mechanisms and alternative pathways through which high densities of environmental INGOs translate into policy reforms.

Do the big statistical effects we find on policy mean that environmental INGOs such as Greenpeace are true power brokers, or that their various tactics and naming/shaming campaigns are incredibly effective? We think not. Boli and Thomas's (1999) foundational work argues that INGOs are organizational embodiments of global culture. It is new cultural understandings of the world—increasingly institutionalized in world society and conveyed by many mechanisms, including INGOs—that pave the way for large-scale social change (Frank 1997). Environmental INGOs may have real effects, but they are almost certainly embedded in broader processes of institutional change, single bees amid the swarm (Hironaka 2014).

In the face of this support for top-down arguments, the question arises: Why is the bottom-up narrative so persuasive? We contend that its charisma stems from a set of cultural assumptions that privileges and legitimates various forms of participatory democracy. The idea that regular citizens come together to form natural assemblies to address local environmental grievances is normatively enticing and plays on a tendency to valorize social movements in the United States and Western Europe (and to generalize those patterns to the rest of the world). Elsewhere, the bottom-up narrative has been referred to as the "theater of democracy" (Frank, Longhofer, and Schofer 2007). However, most of the domestic NGOs in the developing world are weak, poorly funded, and hardly autonomous catalysts of social change. Even in prosperous and democratic Japan, a ministerial survey of 386 environmental NGOs found that nearly half the respondents did not have a paid full-time staff person.[13]

What does the future hold? Our findings suggest that domestic environmental NGOs are not the primary source of global policy reform over the 1970–2010 period. However, there are several reasons to expect that domestic NGOs may

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become more consequential in the future. It is not surprising that newly founded organizations in the global South are ineffective—but that may change as they continue to grow in number and membership over time. In the past two decades, the international community has increasingly shifted its attention and efforts toward domestic NGOs, heaping them with resources and legitimacy (Schofer and Longhofer 2011). NGOs have become a preferred panacea, and a favorite of development banks and international donors. A panoply of international players—from the Worldwide Fund for Nature to the World Bank—now routinely devote resources and energies to the "empowerment" of domestic NGOs. And intergovernmental organizations and treaties increasingly call for NGO participation—in some cases pressuring states to give domestic nongovernmental organizations a "seat at the table."

The same social forces may increasingly catalyze and elevate the standing of grassroots environmental social movements, beyond domestic NGOs. For example, the current movement for climate justice highlights the disproportionate impact of climate change on marginalized populations, and it helped mobilize more than 100,000 people to protest outside the 2009 United Nations Framework Convention on Climate Change meetings in Copenhagen (Smith 2014). The movement consists of not only international and domestic NGOs, but also everyday individual protesters from areas in the global South most affected by climate change. Of course, transnational organizing on climate change began in the 1980s, but it grew progressively more grassroots oriented during the 2000s, as it incorporated themes of environmental and social justice (Hadden 2014, 2015). The justice frame endows the marginalized with utmost significance, and its rise marks a new chapter of the old book on the power of the people.

All of this suggests that the "theater of democracy" is becoming institutionalized in policy and practices, rendering domestic NGOs increasingly consequential. Ultimately, they may serve as intermediaries or receptor sites—receiving cultural signals from world society and transmitting them to participants "on the ground" (Frank, Hironaka, and Schofer 2000). For example, in the global South, ecological improvements have emerged as domestic actors have responded "to changing global norms, ideologies, and practices of environmental regulation" (Sonnenfeld 2002, 23).

A few cautionary notes are warranted with regard to our main independent variables. First, our measure of domestic NGOs is biased toward large, well-funded national advocacy groups, overlooking small and clandestine organizations. The latter may be consequential in some contexts, though generally vis-à-vis policy reform we would expect the opposite. Second, it is possible that some domestic NGOs are fronts for industry interests (Walker 2014), perhaps explaining the weakness of their aggregate effects on policy reform. To address this possibility, we asked experts on environmental NGOs in four countries—Chile, Finland, Kenya, and Taiwan—if any domestic NGOs in our data set were known industry fronts. They identified none. Still, future research should examine whether such industry fronts are common around the globe or unique to the United States and other developed democracies. Finally, third, it may be that INGOs are attracted to domestic resources and are therefore impure indicators of top-down social forces. This is certainly plausible (though Murdie and Urpelainen

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[2015] suggest instead that INGOs often focus on countries where domestic institutions and activity are weak). While our models control for domestic resources—such as national wealth, education (generally the biggest predictor of political involvement and volunteering), and of course domestic environmental NGOs—the controls may be insufficient to rule out the possibility that our measure of INGO strength is tapping some other strength on the ground. Of course, even if this is the case, it remains critical that INGOs prove better able than their domestic counterparts to capitalize on local resources to generate policy reform. Our goal, after all, is not to denounce the importance of domestic factors but rather to compare their relative importance to global factors. Our analyses show that the latter matter more for environmental policy reform.

Conclusion

In short, our findings support the top-down model of social change by highlighting the exogenous sources of environmental policy reform. Despite the normative appeal of bottom-up imageries, we find little support for them. We also find scant support for interaction imageries, including Keck and Sikkink's boomerang hypothesis. Though we appreciate the turn toward transnational advocacy networks in the boomerang hypothesis, the argument still hinges on a domestic impetus for change, which is blocked by domestic regimes. The world society perspective provides an alternative imagery, in which social change is driven primarily via top-down dynamics.

Our study dovetails with prior work showing that international environmental groups tend to spur the expansion of domestic associations. Taken together, our results suggest that environmental reform is a top-down process in which international ties and the global environmental movement ignite domestic organizations *and* spur domestic policy reform. Growing legitimacy and resources of domestic NGOs may portend a sandwiching of the state as both domestic and international organizations pressure the state from above and below. Of course, the next big question is whether all this associational and policy activity leads to improved environmental outcomes, even amid the current wave of neoliberalism (Gareau 2013). A growing body of evidence suggests that it does (e.g., Schofer and Hironaka 2005; Jorgenson 2009; Shorette 2012; Hironaka 2014).

Finally, our paper contributes to the growing literature on policy diffusion and, in particular, the role of world society (for a review, see Dobbin, Simmons, and Garrett [2007]). World society theory has often identified a consistent effect of INGOs on policy adoption across a range of domains, and this paper is no exception. We are inclined to think the structural features of the environmental movement in world society are quite typical in most policy domains (e.g., INGOs expanding before domestic NGOs in the global South, INGOs having greater resources, etc.). However, recent research suggests that in some cases, such as reproductive issues in which global consensus is less evident, domestic factors may matter more (Boyle, Kim, and Longhofer 2015). More research on bottom-up, top-down, and interaction imageries across a range of policy areas is needed to better assess the generalizability of findings made here.

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Notes

1. In response to the literature, we formulate this hypothesis in terms of the enhancing effects of INGOs on domestic NGOs. Naturally, the reverse relationship could also hold. INGOs might be more effective when there are domestic NGOs on the ground with which to forge cooperative relations.
2. We thank an anonymous reviewer for this suggestion.
3. Of course, this does not allow us to address instances where domestic NGOs appeal to other international bodies, including dominant nation-states and intergovernmental organizations.
4. Alternative models, such as Cox regression, yielded results similar to those we report below.
5. The limitations and biases of these sorts of organizational data sources are discussed in Longhofer and Schofer (2010) and Schofer and Longhofer (2011). The use of founding dates to estimate organizational counts creates the potential for "survivor bias," excluding organizations that fail prior to publication of the data source. However, direct comparisons of recent and historical sources of environmental NGO data suggest that survivor bias is not a major issue (Longhofer and Schofer 2010). In addition, the Gale source mainly includes larger associations and those that are active in the public sphere. Small, informal, ephemeral, and clandestine organizations are not likely counted in our data set. For the purposes at hand—to study policy reform—a sample of large and active organizations is arguably rather appropriate. That said, our measure does not capture the full extent of "civil society" in a country. Domestic NGOs in the developing world may be especially challenging to identify and count (Watkins, Swidler, and Hannan 2012).
6. Some have recommended dividing INGO ties by population, but INGOs/capita massively penalizes large countries (per capita versions of the measure tend to have extreme outliers). We find it generally preferable simply to control for population. Others have recommended replacing the organizational- with individual-level data. But individual memberships are not the only or even the primary mechanism through which INGOs have effects. At another level of analysis, Sampson et al. (2005) show that the total number of community groups in a neighborhood is far more important for collective action outcomes than the density of individual memberships. Organizations engage in various activities, many of which do not hinge on individual memberships (e.g., lobbying, research, and advocacy). While we would obviously prefer both organization counts *and* individual memberships, the latter is not available on cross-national and longitudinal bases. We are confident that the former is highly salient to the outcome of interest here.
7. Sociologists are often skeptical of the notion that social problems or grievances naturally prompt movements or policy responses (e.g., Gusfield 1996; McAdam, McCarthy, and Zald 1996), but the argument is very common in other fields and thus warrants attention.
8. We examined sulfur dioxide emissions, particulate matter, ecological footprint, deforestation, and several others. None had consistent effects on policy reform.
9. We thank a reviewer for this suggestion.
10. An alternative operationalization is a three-way interaction between NGOs, INGOs, and low-democracy countries. Results were similar.
11. For consistency across the tables, we include democracy as an independent variable in these models even though there is less variation in democracy scores among democratic countries (though there is some variation). Results are consistent when democracy is omitted from these models.

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12. We dropped the interaction term from the models reported in appendix B, as we observed symptoms of multicollinearity when trying to estimate interactions with a small sample.
13. See http://www.gdrc.org/ngo/jpngo-face.html.

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Appendix

Appendix A. Descriptive Statistics

Variable	Obs	Mean	SD	Min	Max
Real GDP per capita (log)	2614	10.274	1.94	5.77	16.41
Population (log)	2614	6.76	1.67	3.02	11.79
CO_2 Emissions per cap (log)	2614	.137	1.73	–4.91	4.24
Polity IV democracy/autocracy score	2614	–1.041	7.52	–10	10
Secondary school enrollments	2614	.468	.296	0	1.43
Environmental NGOs (log)	2614	.493	.813	0	5.06
Environmental INGO memberships (log)	2614	.987	.768	0	3.55

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Appendix B. Effects of Domestic and International Environmental NGOs on Policy Reform: Developed vs. Developing Countries

	Environmental law		Impact assessment		Environment ministry	
	Model 15	**Model 16**	**Model 17**	**Model 18**	**Model 19**	**Model 20**
	Developed	*Developing*	*Developed*	*Developing*	*Developed*	*Developing*
GDP per capita (log)	–0.28	–0.12	0.16	0.09	–0.75	–0.38⁺
	(0.939)	(0.231)	(0.977)	(0.288)	(1.073)	(0.205)
Population (log)	0.15	0.15	–0.20	–0.32	0.42	0.14
	(0.895)	(0.222)	(0.945)	(0.281)	(0.995)	(0.198)
CO_2 emissions	0.21	0.02	–0.14	–0.22	0.59	–0.13
per capita (log)	(0.638)	(0.150)	(0.668)	(0.180)	(0.524)	(0.133)
Democracy	0.11	0.05**	0.32	0.02	0.02	0.03*
	(0.124)	(0.016)	(0.309)	(0.021)	(0.072)	(0.016)
Secondary enrollment	1.24	0.72	–1.90	1.02	2.45⁺	1.44*
	(1.708)	(0.662)	(1.479)	(0.803)	(1.290)	(0.643)
Environmental NGOs (Domestic)	0.10	0.02	–0.14	0.20	0.01	0.05
	(0.270)	(0.217)	(0.208)	(0.213)	(0.331)	(0.235)
Environmental INGOs (International)	0.27	0.87***	1.43**	1.24***	0.15	0.86***
	(0.513)	(0.210)	(0.449)	(0.256)	(0.539)	(0.215)
Constant	–3.96	–4.09***	–7.34	–4.85***	–0.16	–1.94*
	(4.648)	(1.111)	(4.853)	(1.322)	(5.029)	(0.965)
Observations	457	2,250	540	3,084	328	2,286
Countries	26	107	27	113	27	108
Events	23	91	24	66	26	95

***$p < .001$ **$p < .01$ *$p < .05$ ⁺$p < .10$, two-tailed test
Unstandardized coefficients, errors in parentheses.

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