

Conditionality and the Politics of Climate Change

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Abstract

International cooperation depends on conditional commitments between states. We examine the politics of conditional commitments in climate change using three experiments in ten major carbon-emitting countries. We specifically investigate whether public pledges of conditional action made by national governments increase public support for ambitious climate action in other countries. We find that only unconditional pledges increase public support for policy ambition in foreign countries. Additionally, countries seeking financial and technical transfers only gain foreign support for transfers when they combine conditional pledges with ambitious unconditional pledges. We also observe that the public in most countries only favors making part of their country's climate pledge conditional on other countries' actions when their home country makes an unconditional commitment at or above the average level necessary to prevent dangerous warming. Overall, public preferences are unconditionally aligned with addressing the climate problem. Conditional commitments are more aligned with increasing domestic support for climate policy than unlocking more ambitious settlements between countries.

Keywords: climate change; conditional commitments; international governance; climate policy

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1. Introduction

Conditional commitments are a cornerstone of modern international governance (Axelrod, 1984; Baldwin, 1993; Posner, 2013). States regularly use conditional pledges—offers to cooperate that are conditional on their counterpart’s actions—to address global problems. For example, conditional pledges have been widely used in trade negotiations, where reciprocity has been a key driver of gradual liberalization (Bagwell and Staiger, 2004; Goldstein and Gulotty, 2021).¹ Still, there are few domains where conditional pledges have been more predominant than in the international response to climate change. Conditioning can be explicit, as when the European Union pledged in 2010 to increase its goal of reducing carbon pollution from 20 percent to 30 percent if other countries also acted.² Low- and middle-income countries have also routinely made pledges to reduce emissions that are explicitly conditional on receiving technical and financial assistance from high-income countries (Pauw et al., 2020). Within the Paris Climate Agreement’s process for making nationally determined contributions (NDCs) to address climate change, more than 120 countries currently have commitments that are *explicitly* conditional on either financial transfers or policy ambition in other countries (Appendix 8). At the same time, the Paris Climate Agreement’s “trust but verify” architecture is a form of implicit conditionality because it allows national governments to ratchet up their country’s policy ambition after they observe other countries’ pledges and actions.

Yet, despite the ubiquity of conditional pledges in international bargaining on climate change, their theoretical rationale and empirical success remains unclear. Typically, conditional pledges are viewed as a strategy to increase the global ambition of climate policy (Underdal et al., 2012; Helland, Hovi and Sælen, 2018). Under the prevailing view, the public perceives policies that reduce emissions to be costly and harmful to economic competitiveness, unless pursued jointly and reciprocally with other countries (Barrett, 2003; Bechtel and Scheve, 2013; Aldy and Pizer, 2015; Rowan, 2022).³ One of the main challenges of addressing climate change is therefore to find bargains between countries that involve reciprocal actions beyond what each country is willing to do unilaterally. Countries could bargain in private but often choose instead to make public pledges of

¹ The concept of reciprocity is generally used in one of two ways. In some cases, it is understood as a backward-looking strategy, whereby defection by one state is punished by others (reciprocal punishment) (e.g., Axelrod and Keohane, 1985; Posner, 2013). In other cases, it is a forward-looking negotiation tool involving reciprocal offers or conditional pledges (Bagwell and Staiger, 2004; Goldstein and Gulotty, 2021). Empirically, we focus on the latter but note that the two definitions are closely linked and both are generally seen as essential to international cooperation.

² See <https://unfccc.int/topics/mitigation/workstreams/pre-2020-ambition/compilation-of-economy-wide-emission-reduction-targets-to-be-implemented-by-parties-included-in-annex-i-to-the-convention>.

³ Note that the same argument is often made to explain how trade barriers have been reduced under GATT (Bagwell and Staiger, 2004, chapter 4).

conditional action. This plausibly suggests that countries view these pledges as a way to increase public support in foreign countries for more ambitious bargains. We investigate whether public pledges of conditional action increase public support for international cooperation on climate change in foreign countries and whether these conditional pledges are preferred by the public at home. We posit at least three reasons why they may increase public support for ambitious emissions reductions. First, conditional pledges could communicate to elites, interest groups, and the public in counterpart countries that a settlement space is available beyond what either country is willing to do unilaterally. This may help domestic constituencies in counterpart countries to organize around ambitious policies or goals that do not have enough support if pursued unilaterally. Second, public pledges of conditional action may prevent leaders from backtracking on their stated level of policy ambition by activating domestic audience costs (Tingley and Tomz, 2020, 2022), thereby increasing the credibility of offers and thus successful bargaining between countries. Third, conditional pledges could trigger comparisons among the public about their home country's level of ambition relative to others (Aldy, Pizer, and Akimoto, 2017). This kind of "yardstick" competition might increase public support for policy ambition by changing beliefs about what is possible or appropriate (Tingley and Tomz, 2014).

However, there are a number of reasons to be more pessimistic about the ability of public pledges of conditional action to drive global ambition. Recent research has questioned whether concern about free-riding between countries is the main barrier to ambitious climate policy, instead emphasizing relative political power in domestic politics (Aklin and Mildenerger, 2020; Colgan, Green, and Hale, 2020). A growing number of studies document that the public in many countries does not prefer to lessen their home country's ambition when they learn that other countries fail to reciprocate cuts to emissions (Tingley and Tomz, 2014; Bernauer and Gampfer, 2015; Beiser-McGrath and Bernauer, 2019, 2022). This may mean that what other countries do is not a key factor in how the public forms preferences for climate policy. Public pledges of conditional action may even be counterproductive by signaling a lack of commitment on the part of the pledging country to address climate change (Victor, Lumkowsky, and Dannenberg, 2022). Since there are few enforcement mechanisms available to ensure that countries achieve their stated commitments, indicating a conditional willingness to act may signal that domestic support for action is low or fragile, eroding support for conditional cooperation in other countries. Alternatively, conditional pledges may simply signal to domestic constituencies that their political leaders are seeking to achieve fair settlements when bargaining with other countries (Anderson, Bernauer, and Baliatti, 2017), rather than trying to actually find more ambitious bargains.

We assess these competing claims by investigating whether public pledges of conditional action are effective at increasing public support for ambitious climate policy in foreign countries. We fielded a vignette experiment and two conjoint experiments with over 10,000 respondents in ten countries with high levels of carbon emissions. The countries included in the study are the United States, Mexico, Brazil, United Kingdom, Germany, Turkey, South Africa, India, China, Japan, and Indonesia, with sample sizes of $n > 1000$ in each country. We pre-specified our inquiries, research design, and plans for analysis in advance of fielding these experiments.⁴ The combination of experiments allows us to identify how public pledges of conditional action affect public support for emissions reductions.

Overall, the results indicate that conditional pledges are not an effective strategy to increase public support for more ambitious climate policy in foreign countries, calling into question core ideas about how the public forms preferences about mitigating climate change.

First, in a vignette experiment, we find no evidence that conditional pledges by a foreign country raise the public's preference for emissions reductions in their home country. In this experiment, we inform respondents of hypothetical pledges by other countries for emissions reductions that are either conditional or unconditional and more or less ambitious than their baseline preference. Only an unconditional pledge by a foreign country greater than each respondent's baseline preference increases preferred emissions cuts and it only does so slightly. This result does not depend on whether the foreign country making the pledge is considered by the respondent to be similar to their home country and does not vary substantially across countries. In short, conditional pledges do not trigger a desire among the public to reciprocate and ratchet up ambition.

Second, in a conjoint experiment, we find that conditional pledges by low- and middle-income countries decrease the willingness of members of the public in foreign countries to transfer financial and technical resources to them, unless accompanied by high levels of unconditional pledges that are currently uncommon. In this experiment, we ask respondents to prioritize the transfer of financial and technical resources between two low- and middle-income countries that make different hypothetical mixes of unconditional and conditional pledges to reduce emissions. In most cases, the public has a preference against transferring resources to low- and middle-income countries that make conditional pledges together with low levels of unconditional ambition, compared to countries making entirely unconditional pledges at the same level, perhaps because conditional pledges signal that a country is not serious about addressing climate change

⁴ <https://osf.io/w4528>

(Victor, Lumkowsky, and Dannenberg, 2022). Indeed, since the global architecture of climate policy has few enforcement mechanisms, foreign counterparts should recognize the time inconsistency problem of transferring resources based on pledges that are seen to be less credible, as recipient countries have incentives not to act effectively to maintain future access to transfers (Svensson, 2000).

Third, in another conjoint experiment, we find that the public in most countries only prefers that their own country make the final part of their pledge conditional when the overall level of ambition is high. In this experiment, we asked respondents to pick between two pledges that their home country could make to address climate change that have different mixes of unconditional and conditional pledges. Up to the point of doing what is stated as necessary to prevent damaging climate change, the public generally has a preference for unconditional pledges. While the public still supports unconditional action above that level, conditional pledges at these higher levels of ambition are preferred at the margins, perhaps because the public wants to avoid taking on unfair burdens (Anderson, Bernauer, and Balietti, 2017; Bechtel, Scheve, and van Lieshout, 2022). Importantly, even respondents in middle-income countries that receive large climate transfers do not prefer the kinds of conditional pledges with low levels of unconditional ambition that their home countries often make during international negotiations.

Despite the ubiquity of public pledges of conditional action in climate bargaining, this is the first study to examine their effects on public preferences systematically and cross-nationally. Our research adds to the growing body of theory and evidence that addressing climate change is not fundamentally constrained by bargaining problems between countries (Beiser-McGrath and Bernauer, 2019). While recent results suggest that reciprocity between local areas within countries is important for public support of climate policy (Coleman, Haring, and Jagers, 2023), our results call into question propositions that have been made about the ability of conditional commitments to increase ambition globally (Underdal et al., 2012). For both domestic policy and international transfers, conditional offers made by foreign countries do not generally raise public preferences for ambition. It is particularly notable that when low- and middle-income countries make conditional pledges that are accompanied by low levels of unconditional ambition, they decrease support for financial transfers by the public in sending countries. And in terms of domestic policy, it is only at high levels of ambition that the public prefers that their own country make part of their pledges conditional, perhaps indicating a general preference for fairness in the distribution of costs between countries (Anderson, Bernauer, and Balietti, 2017). Ultimately, when it comes to policy ambition on climate change, the public is less interested in what other countries are doing than is commonly assumed.

Our research also contributes to the understanding of international bargaining more generally and to the ways in which climate change offers an important empirical setting to study the problems of global cooperation. Audience cost theory has highlighted how public opinion can have important consequences for international bargaining: When leaders are punished for deviating from their public statements by domestic audiences, they can enhance their credibility with negotiating partners. Audience cost theory has been applied to understand bargaining over international conflict (Fearon, 1994) and international trade (Chaudoin, 2014). At the very core of scholarship on international bargaining is the problem of explaining the conditions under which states make credible, conditional commitments to each other (Leeds, 1999). Yet the results of our experiments indicate that conditional pledges are more consistent with domestic preferences for fairness, rather than an effective strategy to build credibility and facilitate more ambitious settlements between countries on climate change.

2. Conditional Pledges in International Bargaining on Climate Change

The success of climate policies often depends on public support. Studies have highlighted the critical role of public opinion in political support for such policies as carbon prices (Harrison, 2013) and renewable energy feed-in tariffs (Aklin and Urpelainen, 2018). As a result, much attention has been given to understanding the level and determinants of public preferences for climate policy (Leiserowitz, 2007; Howe et al., 2015; Drews and Van den Bergh, 2016). This includes several studies that have sought to identify patterns of support for international climate agreements. Bechtel and Scheve (2013), for instance, link public preferences to the design of international climate institutions. Gaikwad, Genovese, and Tingley (2023) explore how the features of climate-related international transfers affect public support in both sending and recipient countries.

The typical account of cooperation on climate change emphasizes that need to address free-riding by finding conditional bargains between countries (Barrett, 2003; Keohane and Victor, 2016; Aklin and Mildemberger, 2020). Greenhouse gas emissions represent a textbook global public bad, which, presumably, requires international cooperation to be addressed because every country has an incentive to free-ride.⁵ Barrett and Stavins (2003, 350) note that an implication of bargaining over climate change mitigation is that “as others mitigate more, a country’s incentive to mitigate at the margin falls.”

⁵ For critical views on this perspective, see Aklin and Mildemberger (2020) and Colgan, Green, and Hale (2020).

It therefore stands to reason that the public support for climate policy will be based on perceptions about what other countries are doing to reduce emissions. Indeed, recent results suggest such concerns are operative in shaping public opinion at the domestic level (Coleman, Harring, and Jagers, 2023).

Yet, public preferences about climate policy do not seem to follow a strict logic of conditional cooperation, at least in terms of reinforcing patterns of mutual defection. Tingley and Tomz (2014) study whether the public in 26 countries, including the United States, have preferences for conditional cooperation. They find little evidence that other countries reducing emissions less than is needed decreases support for action on climate change domestically, though preferences for ambitious policy do increase when other countries do more. Tvinnereim, Lachapelle, and Borick (2016) conduct a survey experiment in four countries (Canada, Norway, Sweden, and the United States) and find little support for conditional cooperation among North American respondents. Scandinavian respondents, however, did attach importance to reciprocity. Stroik et al. (2019) fielded a survey experiment in the United States and China among adults and college students. They identify conditional cooperators among the American public, but virtually none among students nor among Chinese respondents. Bechtel, Scheve, and van Lieshout (2022) conduct experiments in France, Germany, the United Kingdom, and the United States. They find that the public cares about other countries' actions and seek reciprocity. This appears to be primarily driven by notions of fairness. In contrast, other studies find very little evidence that public preferences for climate policy are significantly affected by the actions of other countries (Bernauer and Gampfer, 2015; Beiser-McGrath and Bernauer, 2019).

None of these studies, however, specifically examine public responses to conditional pledges. And it is assumed that activation of conditional pledges will be crucial to achieving global goals of limiting climate change (Christiansen, Bois von Kursk, and Haselip, 2018). We are thus left with a puzzle about why so many countries are making public pledges of conditional action to reduce emissions, while evidence suggests that domestic preferences for climate policy are not significantly affected by the actions of other countries on average. Some results suggest that conditional cooperation is asymmetrical and that more ambition in foreign countries can lead to stronger preferences for ambitious policy domestically (Tingley and Tomz, 2014). We take this as our starting point and test the idea that conditional commitments to address climate change can spur public preferences for more action in other countries (Underdal et al., 2012). There are several reasons why conditional pledges may drive more ambition for climate policy in foreign countries.

First, finding cooperative settlements in complex negotiations with many parties can be difficult, a problem made worse by holdouts when bargaining takes place in repeated interactions (Fearon, 1998). Public pledges may serve as an informative signal to relevant audiences in foreign countries that a settlement space beyond what is unilaterally acceptable is available. This may help interest groups and the public in foreign countries to organize around more ambitious action. To the extent that cooperation problems limit ambition because of concerns about the distribution of costs or economic competitiveness (Aldy and Pizer, 2015), public pledges of action may offer a credible signal of intent to move beyond a unilateral settlement and thus facilitate cooperation (Tingley and Tomz, 2020, 2022). If there are available settlements on climate policy beyond what each country is willing to do unilaterally, public pledges may help to identify them.

Second, public pledges to take action may be more credible than private pledges. There is a substantial amount of evidence that leaders face domestic penalties when they renege on public commitments or threats that they make to other countries. Much of the work in this area has focused on how public statements increase the credibility of action in crisis bargaining (Fearon, 1994) or trade negotiations (Chaudoin, 2014). More recently, similar types of evidence have been identified for bargaining over climate change (Tingley and Tomz, 2020, 2022). When identifying settlements beyond what is unilaterally acceptable is difficult, public, conditional pledges may help to establish the credibility that it is worth engaging in negotiations to identify those settlements.

Third, there is a reasonable amount of empirical evidence that public opinion is informed by the comparisons that members of the public make between their home country and other countries. For example, Tingley and Tomz (2014) show that learning about other countries doing more to address climate change raises the preferred level of ambition for action among the American public. These kinds of heuristic comparisons may be especially important for technical pledges of emissions reductions that are not easily understood by the public. Conditional pledges may raise pressure for matching contributions by inviting negative comparisons between the receiver of a conditional pledge and the sender of a conditional pledge, all while not incurring the costs of unilateral action.

As an alternative, it is possible that conditional commitments are mostly made with an eye to showing domestic audiences that leaders negotiating with international counterparts are seeking fair settlements. There is substantial evidence that public preferences over climate policy are shaped by considerations of fairness (Anderson, Bernauer, and Baliotti, 2017; Bechtel, Scheve, and van Lieshout, 2022). This may mean that the public is willing to “do its part” unilaterally, but does not generally want to take up the slack for countries that are not contributing their fair share.

If this alternative hypothesis is correct, then it may be the case that public, conditional pledges are a signal to domestic audiences, rather than a useful bargaining tactic in international negotiations.

More negatively, public pledges of conditional actions to address climate change may be counterproductive by signaling a lack of commitment on the part of the pledging country (Victor, Lumkowsky, and Dannenberg, 2022). To the extent that countries are worried about taking on costly actions that are not reciprocated by other countries, they will be worried about the ability and intent of counterparts to follow through. Related to actions that are conditioned on transfers, there are even incentives of the receiving government to make slow progress in order to continue receiving support in the future (Svensson, 2000). Unilateral pledges may signal that counterparts have a strong interest in achieving their pledges, while conditional pledges may signal that ambition is not a strong priority or is politically tenuous. Indeed, recent evidence suggests that countries become more ambitious in their international pledges under the Paris Agreement when their trading partners adopt more climate policies but not when they put forward more ambitious pledges (Rowan, 2022). Conditional pledges might be taken as an indication that counterparts are not credible in their ambitions, and countries may look to other sources of information to learn about whether their counterparts are serious.

While we do not attempt to separate these various mechanisms as part of our experimental design, we test whether the net effect of public pledges of conditional action is positive or negative in a variety of circumstances. If the net effect is not positive, then optimism about using public, conditional pledges to ratchet up international ambition on climate change is likely misplaced. Table 1 summarizes these theoretical mechanisms.

Table 1: Theoretical expectations about the roles of public, conditional pledges on support for international cooperation in foreign countries

Mechanism	Direction	Theoretical Expectation
Identify settlement space	(+)	Conditional pledges signal the availability of cooperative settlement beyond the limits of unilateral action
Audience costs	(+)	Conditional pledges increase the credibility of cooperation by making it more costly for leaders to backtrack
Heuristic comparisons	(+)	Conditional pledges cause foreign audiences to update beliefs about what is possible or desirable
Fairness	(0)	Conditional pledges signal to domestic audiences that leaders seek fair settlement but do not change foreign preferences
Diminished credibility	(-)	Conditional pledges signal that the country does not have a strong interest in ambitious policy

3. Research Design

We simultaneously fielded conjoint and survey experiments in ten countries (United States, Mexico, Brazil, United Kingdom, Germany, South Africa, India, China, Japan, and Indonesia). These countries are all top 20 carbon polluters globally and thus are important national players in global climate policy. The sample includes four of the five largest carbon polluters globally (China, United States, India, Japan), all pivotal actors to global climate action.⁶ The sample also includes the regionally significant carbon polluters in Latin America (Brazil, Mexico), Europe (United Kingdom, Germany), Africa (South Africa), and Asia (Indonesia).

We fielded the surveys in October 2021 during the week immediately preceding the United Nations Climate Change Conference, more commonly referred to as COP26. The Fall 2021 climate summit in Glasgow was the most important global climate meeting since 2015 and addressed the future of the Paris Agreement architecture for structuring global climate cooperation. The summit produced significant media attention for climate change and prompted public discussion of domestic and international climate policy. We thus timed our survey to align with a window when public opinion about climate policy played a potentially elevated role for negotiators. During this time, major international news outlets covered the run up to the climate negotiations, so the public had the greatest chance to be exposed to information about bargaining between countries and the climate policies of their own countries. The surveys were fielded by Dynata (formerly Survey Sampling International) with a minimum sample of 1,000 respondents per country. Dynata samples have routinely been used in cross-national political science survey research (c.f. Brutger et al., 2022; Kolcava, Smith, and Bernauer, 2023; Arias and Blair, 2022). We use all respondents for the main analysis, but all results reported in the main text are robust to using only respondents who passed comprehension checks (see Appendix 2).

In each country, we sampled until reaching minimum age by gender quotas in each country to help with representativeness. Appendix Figure S1 presents several of the demographic characteristics of the sample. We do not reweigh our surveys to match national demographic benchmarks. Our results should thus be interpreted as characterizing preferences across a diverse but not necessarily representative national sample. Moreover, Dynata recruits their sample via commercial, online panels. Our sample thus neglects individuals without internet access, which can be significant in some parts of the Global South. However, to the degree that international pledges structure national climate policies, we should expect more connected, online

⁶ The fourth-largest carbon polluter, Russia, could not be surveyed by our commercial survey provider.

respondents to be most relevant. Thus, even when not representative of the overall population, our sample may be more representative of the parts of the public whose opinions matter for national political leaders.

We had our survey instrument professionally translated into Spanish (Mexico), Portuguese (Brazil), German (Germany), isiZulu (South Africa), Chinese (China), Japanese (Japan), and Bahasa (Indonesia), and then back translated into English by a different translator or translation services to identify any cross-language inconsistencies in question meaning. South African respondents had the option of completing their survey in either English or isiZulu. Dynata samples of the Indian public only reach English speakers, so the Indian survey was not offered in Hindi.

Vignette Experiment: Foreign Pledges and Public Preferences for Domestic Policy

We ran a vignette experiment to test the idea that a conditional pledge might change the level of ambition among the public in foreign countries if the pledge exceeds unilateral preferences. Respondents were first asked to state their preferences for the reduction in emissions their home country should make. Specifically, each respondent was asked:

Scientists tell us that, on average, countries will need to reduce their greenhouse gas emissions by 30% by 2030 to keep the planet safe for humans. Knowing that reducing greenhouse gas emissions can be expensive, what reductions do you think [HOME COUNTRY] should promise?

Respondents were then given a slider between 0 and 100, labeled “% reductions in carbon pollution by 2030 that [HOME COUNTRY] should pledge.” For ease of presentation below, let x be the answer that respondents gave to this question, which was aimed to measure unilateral preferences.

After a series of unrelated questions, respondents were then asked:

Scientists tell us that, on average, countries will need to reduce their greenhouse gas emissions by 30% by 2030 to keep the planet safe for humans. Suppose you learn that [randomized country] decided to pledge [randomized pledge amount]. Knowing that reducing greenhouse gas emissions can be expensive, what reductions do you think [HOME COUNTRY] should promise?

Respondents were again given a slider between 0 and 100, again labeled “% reductions in carbon pollution by 2030 that [HOME COUNTRY] should pledge.”

The randomized country took one of four values: the United States, China, a high affinity country in the respondent’s mind, and a low affinity country in the respondent’s mind. We measured affinity by a separate question earlier in the survey. Here, every respondent was asked: “Now we’d like you to tell us something different. For each country, indicate how similar or different that country is from [HOME COUNTRY]. Use the slider where 0 indicates not at all the same and 100 indicates completely the same.” Respondents were given a set of nine countries (the set of other countries included in the cross-national sample) in a random order, with an individual slider for each country between 0 and 100. The high affinity country in our vignette experiment was the country that respondents ranked highest on this slider scale. The lowest affinity country in our vignette experiment was the country that respondents ranked lowest on this slider scale.

The randomized pledge amount took one of five values, all customized relative to the individual pledge that each respondent gave in baseline slider, labeled x . The five conditions were the following: $[x-10]$ percent unconditional reductions in carbon pollution; $[x-10]$ percent reductions in carbon pollution regardless of what other countries do plus an additional 10 percent reductions if other countries agree to the same; $[x]$ percent reductions in carbon pollution regardless of what other countries do; $[x]$ percent reductions in carbon pollution regardless of what other countries do plus an additional 10 percent reductions if other countries agree to the same; $[x+10]$ percent reductions in carbon pollution regardless of what other countries do. Respondents who gave a value of x that was less than ten were only randomized across the last three conditions, to avoid the possibility of negative reduction amounts.⁷ We only consider respondents who had preferred emissions reductions between 10 percent and 90 percent and were thus eligible for all the treatment conditions. In the main analysis, we estimate treatment effects using a linear model of the following form:

$$Y_{\text{post}} = \alpha + \beta \text{Pledge} + \eta Y_{\text{pre}} + \varepsilon_i \quad (1)$$

⁷ Across all countries in the sample, only 216 of 15,643 respondents held a baseline preference for less than a 10 percent reduction in emissions when told that a 30 percent reduction is needed to keep the planet safe for humans. We do not have enough power within this sub-sample to resolve how pledges by other countries affect preferences for emissions reductions.

Conjoint Experiment 1: Foreign Pledges and Public Preferences for International Transfers

Conjoint experiments offer a robust way to evaluate public preferences for different choice bundles with high external validity (Hainmueller, Hopkins, and Yamamoto, 2014; Bansak, Hainmueller, and Hangartner, 2016). The design approximates a real-world policy setting where people make policy evaluations across multiple dimensions together. In a conjoint experiment, individual respondents are asked to indicate which of two randomly generated bundles they prefer. The researcher can then calculate average marginal component-specific effects (AMCEs) for each element of each policy bundle (Hainmueller, Hopkins, and Yamamoto, 2014). The AMCEs measure the average causal effect of each element on support for the policy package, averaged across all levels of other elements.

In our first conjoint experiment, we asked respondents to choose between two hypothetical countries to receive climate-related financial and technical assistance from the global community. At the beginning of this experiment, all respondents received the following prompt:

Many developing countries have argued that they need financial or technological help to reduce greenhouse gas emissions. Please indicate which of two hypothetical countries should have priority to receive financial and technical assistance from the global community to solve climate change. On the next few pages, we are going to describe two hypothetical countries and ask which you would prefer to give financial and technical assistance to.

Respondents were then asked to choose between three different pairs of countries, displayed on separate pages. Each began with the text: “Please indicate which of two hypothetical countries should be prioritized to receive financial and technical assistance from the global community to address climate change.” The country pairs differed across four attributes: the recipient country’s level of unconditional commitment, the recipient country’s level of conditional commitment, the monitoring organization, and the recipient country’s income level. The first two attributes were presented in a fixed order across all respondents. The order of the third and fourth attributes were randomized by respondents, but kept consistent across the three choice sets each respondent received. These latter attributes (monitoring group, income) were included to boost external validity but are not a primary object of analysis. An example of this conjoint, as seen by the respondent, is given as the bottom pane of Figure 1.

Figure 1: Examples of conjoint choice pairs as seen by the respondent for the conjoint experiment on international transfers

Attribute	Country 1	Country 2
Commitment levels	30% reduction regardless of whether financial and technical assistance is provided	40% reduction regardless of whether financial and technical assistance is provided
	An additional 10% reduction if financial and technical assistance is provided	An additional 10% reduction if financial and technical assistance is provided
Who will monitor agreement?	The UN	The UN
Developing country's income level	Least-developed country (per capita income less than \$600)	Upper-middle income country (per capita income \$6,000-\$12,000)

The unconditional commitment attribute took one of six levels: 0 percent reduction regardless of whether financial and technical assistance is provided; 10 percent reduction regardless of whether financial and technical assistance is provided; 20 percent reduction regardless of whether financial and technical assistance is provided; 30 percent reduction regardless of whether financial and technical assistance is provided; 40 percent reduction regardless of whether financial and technical assistance is provided; or 50 percent reduction regardless of whether financial and technical assistance is provided. The conditional commitment attribute took one of two levels: no additional reduction even if financial and technical assistance is provided; or, an additional 10 percent reduction if financial and technical assistance is provided.

We conduct the analysis at the level of the policy package, using the method proposed by Hainmueller, Hopkins, and Yamamoto (2014). Our dependent variable is a binary indicator for whether each pledge bundle was preferred ($Y = 1$) or not preferred ($Y = 0$). We then use ordinary least squares regression to estimate the AMCE for each policy element. Thus, we use the model:

$$Y_p = \alpha + \beta U_p + \gamma C_p + \eta S_p + \zeta M_p + \varepsilon_p \quad (2)$$

where Y represents the indicator for whether the pledge bundle p was selected. U , C , S , and M are indicators for the unconditional commitment, conditional commitment,

sector, and monitoring levels for package p , respectively. ϵ is an error term. We cluster standard errors at the level of the respondent.

We compare respondent preferences across pairs of conditional and unconditional commitments that have the same absolute levels of carbon pollution reductions but differences in whether the final increment of the commitment is conditional or unconditional. For instance, we want to understand if respondents prefer a commitment that offers a 30 percent unconditional reduction versus a commitment that offers a 20 percent unconditional reduction with a 10 percent conditional add-on.

To make these comparisons, we first take the five by two set of independently randomized attribute levels for both the unconditional and conditional commitment attributes, specify these as ten possible outcomes, and treat them as independent conditions. We pair conditions based on their total carbon pollution reductions. For instance, we calculate the difference in support for the 10 percent unconditional commitment with the 0 percent unconditional + 10 percent conditional commitment.

We then take the mean of all differences across these pairs. We are able to take the simple mean because the probability of assignment is equal for all profiles. We then bootstrap the data by respondent, with new respondent ids assigned during each replication to prevent respondents from being considered part of a larger cluster at the analysis stage. For example, if survey respondent was selected twice, it would generate a unique id each time it was selected into the bootstrapped dataset. Finally, we estimate standard errors and confidence intervals from the resulting bootstrapped sampling distribution of the pairwise differences in support. We describe this estimand as the “effect of conditionality,” because it gives us the effect of the home country making the last 10 percent of its climate pledge conditional at various levels of its total overall commitment. We also average each of these various levels to calculate an “average effect of conditionality.”

Conjoint Experiment 2: Domestic Policy Packages

In another conjoint experiment, we asked respondents to choose between a pair of climate pledges to be made by their home country. Each respondent first received a short introductory vignette that read:

Scientists tell us that, **on average, countries will need to reduce their greenhouse gas emissions by 30% by 2030** to keep the planet safe for humans. However, each country can pledge more or less according to its own circumstances. We would now like to show you a pair of different pledges that

[HOME COUNTRY] could make. We will then ask you to choose which of these pledges you would prefer.

Respondents were then asked to choose between three different pairs of pledges, displayed on three successive pages. Each page began with the text “We would now like to show you a pair of different pledges that [HOME COUNTRY] could make. Please tell us which you would prefer.” The pledge pairs differed across four attributes: the level of unconditional commitment, the level of conditional commitment, the sector of the economy prioritized for emissions reductions, and organization tasked with monitoring the commitment. The first two attributes were presented in a fixed order across all respondents with the unconditional commitment given first and then the conditional commitment. The order of the third and fourth attributes were randomized by respondent but kept consistent across the three instances that each respondent saw. These latter attributes (sector, monitoring agency) were included to boost external validity but are not a primary object of the analysis. An example of this commitment choice conjoint, as seen by a respondent, is presented in Figure 2.

Figure 2: Example of conjoint choice pairs as seen by the respondent for home country pledges

Attribute	Pledge 1	Pledge 2
Commitment levels	30% reduction regardless of what other countries do	50% reduction regardless of what other countries do
	An additional 10% reduction if other countries agree to the same	An additional 10% reduction if other countries agree to the same
What sectors must reduce pollution?	Transportation	Industry
Who will monitor agreement?	A non-governmental organization	The UN

The unconditional commitment attribute took one of six levels: 0 percent reduction regardless of what other countries do; 10 percent reduction regardless of what other countries do; 20 percent reduction regardless of what other countries do; 30 percent reduction regardless of what other countries do; 40 percent reduction regardless of what other countries do; or 50 percent reduction regardless of what other countries do. The conditional commitment attribute took one of two levels: no additional reduction even if other countries agree to do more; or, an additional 10 percent reduction if other countries agree to the same. We use the same approach as the first conjoint to analyze the second conjoint experiment.

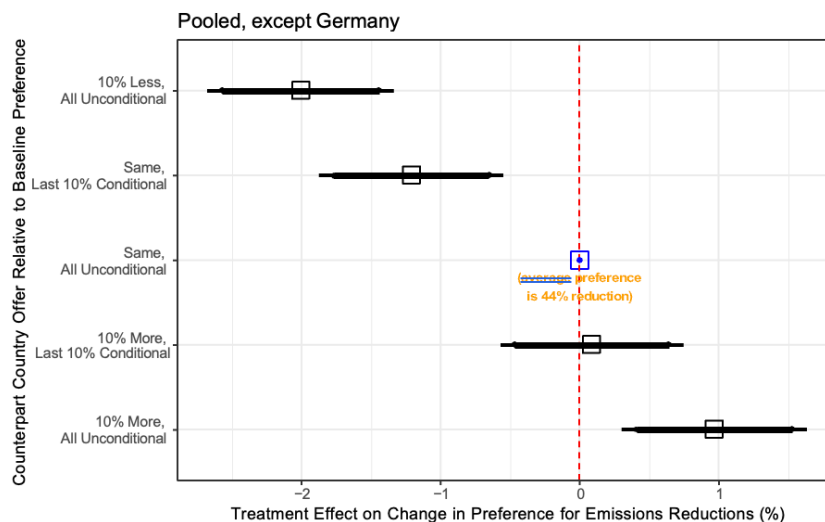
4. Results

Vignette Experiment: Foreign Pledges and Public Preferences for Domestic Policy

We first investigate whether foreign offers of emissions reductions, both conditional and unconditional, change respondents' preferences for their home country's reductions. In this experiment, each respondent was presented with a hypothetical pledge by a foreign country that was scaled to their baseline preference. The foreign pledge could be more or less ambitious than each respondents' baseline preference and be made up of fully unconditional or partly conditional components.

As displayed in Figure 3, when a hypothetical foreign country makes a less ambitious pledge, the average respondent becomes less ambitious relative to when a foreign country makes a pledge that matches their baseline preference.⁸ Notably, when foreign countries match a respondent's preferences for domestic reductions, but condition part of that pledge (the same/last 10 percent conditional condition), it still reduces preferences for ambition relative to a fully unconditional pledge of the same total amount. Theoretically, we would have expected unchanged preferences here as the total reduction should be identical to the same/all unconditional condition. Moreover, only unconditional pledges above the baseline preference by the respondent increase the level of ambition that the respondent prefers by their home country. This result indicates that only unconditional pledges by foreign countries lead to public preferences for more ambition.

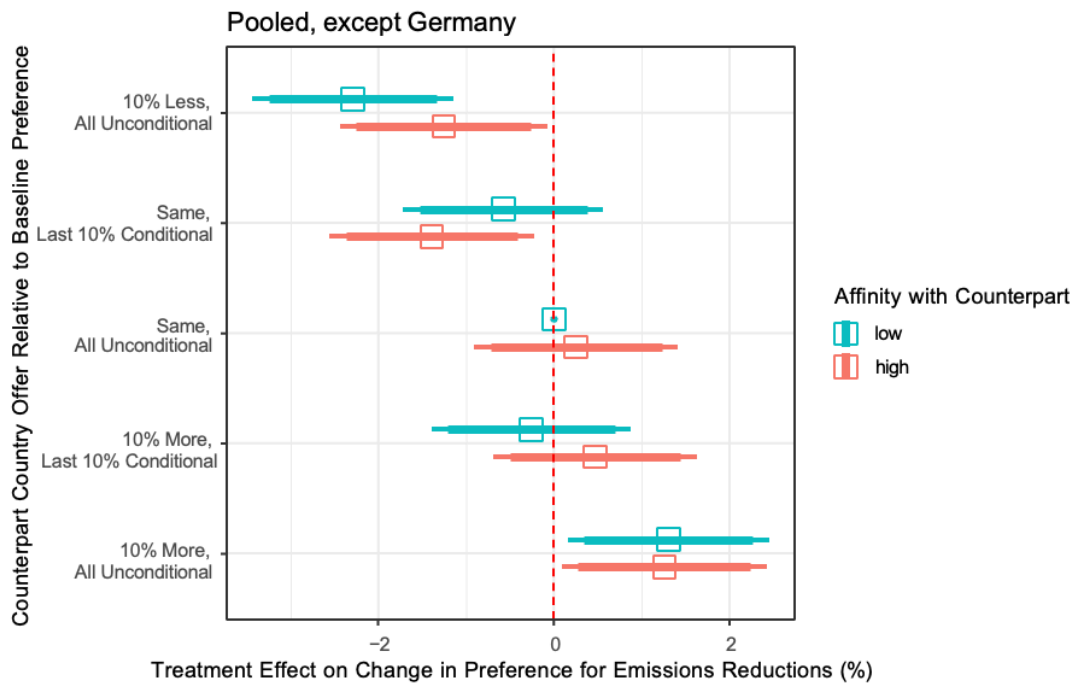
Figure 3: Effect of various foreign country pledges on preference for domestic emissions reduction



⁸ Because of a coding error, German respondents were not presented with all treatment conditions as intended. We remove these respondents from the pooled sample for this experiment.

We had initially expected that the effect of foreign pledges may be conditional on the type of country making the pledge. For example, a respondent might respond to the conditional offer of a “high affinity” country more than a “low affinity” country, since they may be more likely to believe that such an offer would be credible or provides information about the level of ambition that their type of country should make. In our survey, we asked all respondents to rank each other country in our sample on the basis of that foreign country’s similarity or dissimilarity to the home country. We then piped the identities of low and high affinity countries into our vignette experiment. Among subjects that received an offer by a counterpart country that was either their high or low affinity choice, we find no consistent pattern that the country making the offer moderates the response (Figure 4).

Figure 4: Effect of various foreign country pledges on preference for domestic emissions reduction, based on whether respondent received offer from high or low affinity country



Conjoint Experiment 1: Foreign Pledges and Public Preferences for International Transfers

Many low- and middle-income countries pledge emissions reductions that are conditional on financing or other forms of support from higher-income countries. All else equal, this type of conditional bargaining may have a different logic. In particular, respondents might prefer to transfer resources to recipient countries that make part of their emissions reductions conditional, as doing so would allow the transfer to create additional commitments. Alternatively, unconditional commitments may be perceived by foreign audiences as demonstrating a higher level of commitment to addressing climate change by the recipient country. In practice, developing countries usually make pledges that involve only minimal unconditional pledges and significant conditional components. These countries may perceive that structuring their pledges around such conditional commitments may increase the resources that wealthier countries will transfer to them.

As displayed in Figure 6, we do not find evidence that this is an effective strategy. Making commitments conditional only increases support for transfers to a recipient country when paired with high levels of unconditional commitments. These levels of commitment among low- and middle-income countries are currently rare. The conditional nature of these pledges reduces support by members of the public in our sample, which are from the most important donor countries globally. In addition, members of the public prefer to transfer to countries that are more ambitious, as a general trend (Figure 5). The patterns are seen consistently across prominent donor countries in our sample (Figure 7), indicating that the conditional strategy is not helpful for unlocking more resources. See Appendix 6 for the full set of results by country.

Figure 5: AMCEs of climate pledges on support for financial and technical transfers

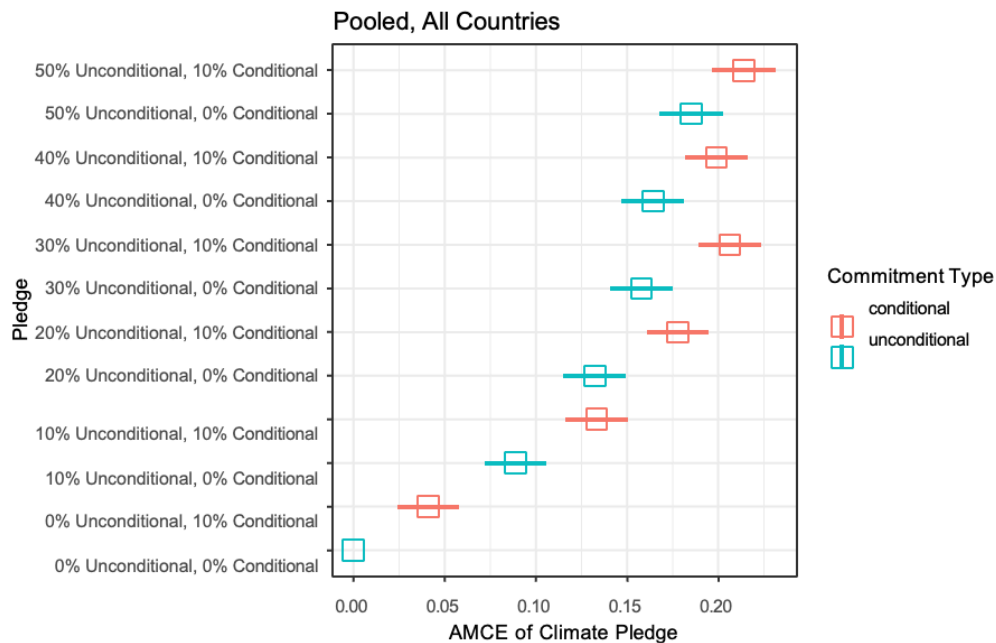


Figure 6: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment

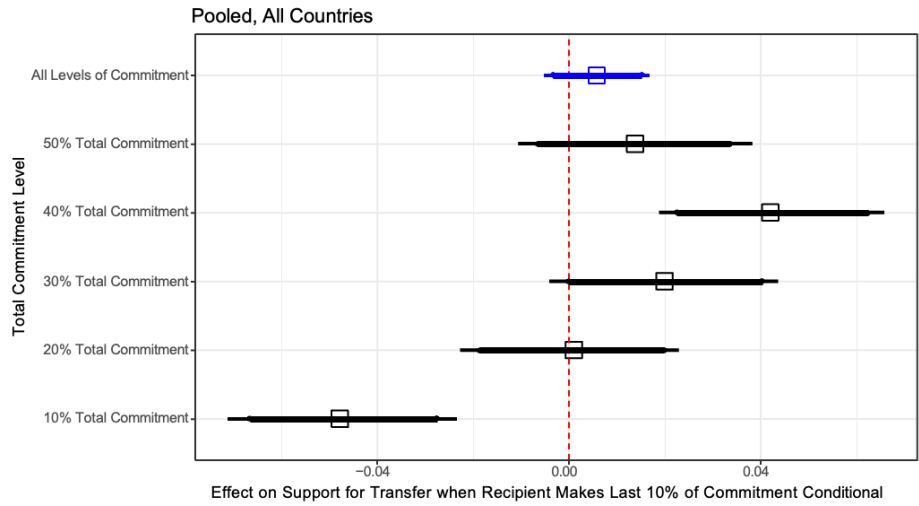
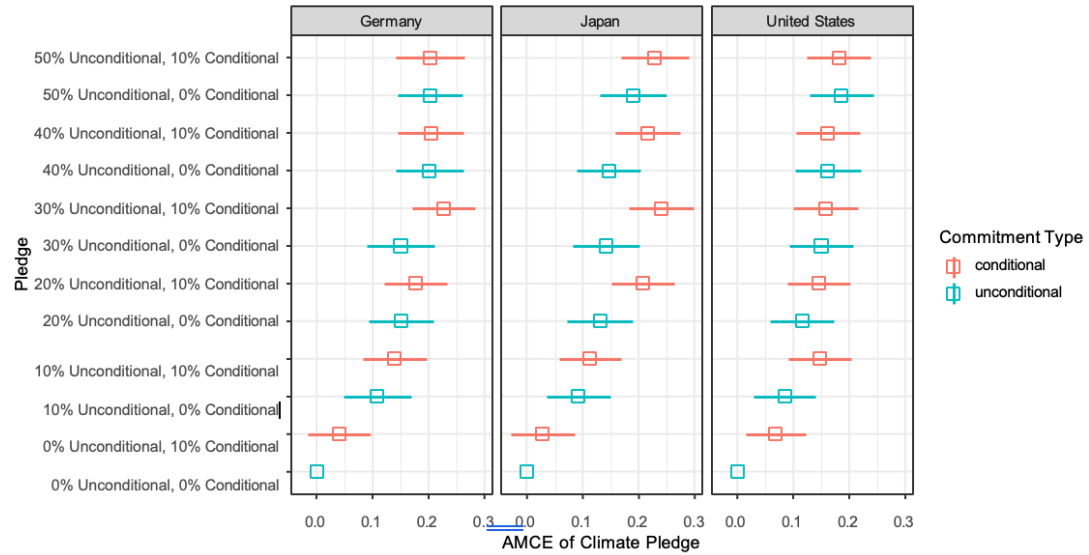


Figure 7: AMCEs of climate pledges on support for financial and technical transfers among three prominent donor countries

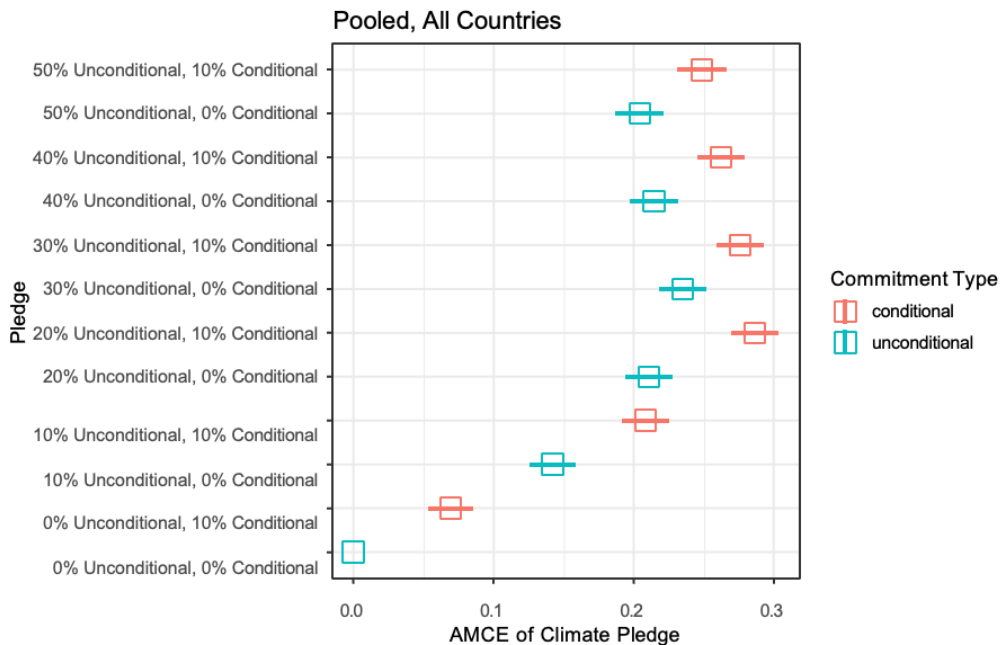


4.1 Conjoint Experiment 2: Domestic Policy Packages

We also investigate whether conditional commitments increase support for emissions reductions in a respondent’s home country. If public preferences were determined by whether other countries took reciprocal actions, respondents would always prefer conditional commitments to unconditional commitments. If policy preferences are instead asymmetrical, we may find that the concerns about reciprocity become important at higher levels of policy ambition. Under this logic, the public might prefer unconditional reductions to a certain point where the perceived economic costs are too large to support further unilateral reductions. At this point, it may be possible to gain public support for more ambitious policy by making emissions reductions conditional on reciprocity from other countries. The same structure of preferences could also emerge based on considerations about fairness (Anderson, Bernauer, and Balietti, 2017; Bechtel, Scheve, and van Lieshout, 2022).

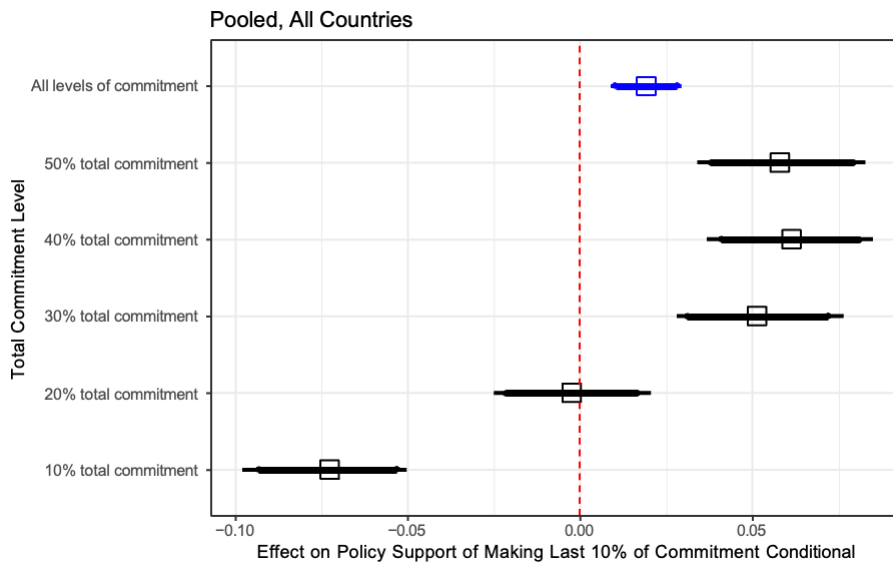
Overall, the results of the second conjoint experiment show strong baseline support for ambitious unconditional climate policy action. Our vignette asserted that reductions of 30 percent on average by 2030 would be necessary according to climate science. Pooled results across all ten countries in our sample (Figure 8) show that members of the public preferred unconditional pledges through this level over pledges that are partly conditional. In particular, we find positive AMCEs on ambitious unconditional action in every country in our sample (see Appendix 7 for results by country). On average, members of the public also support unconditional action at higher levels (e.g., 50 percent unconditional reductions) relative to unconditional action at lower levels of ambition.

Figure 8: AMCEs of climate pledges pooled across countries, independent of foreign commitments



At the same time, conditional commitments generally increase support over these unconditional pledges at these highest levels of ambition. When we hold total ambition constant (Figure 9), we find evidence that conditional pledges build domestic support at high levels of ambition by around 5 percentage points. In contrast, at lower levels of overall commitment, respondents are less supportive of policy options that make the final 10 percent of the commitment conditional. In this way, conditionality can generate additional public preferences for climate mitigation beyond the scientific minimum, even as baseline levels of unconditional support exist.

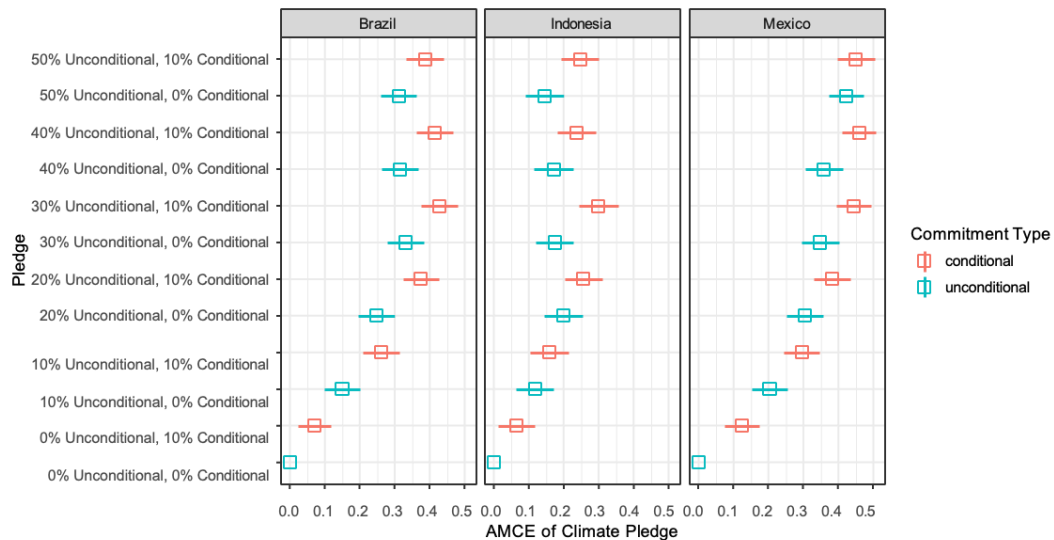
Figure 9: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, independent of foreign commitments



Overall, these results indicate that conditional commitments at low overall levels of unconditional commitment are perceived poorly on average because of a lack of ambition. At a 30 percent level of total commitment, making the last 10 percent conditional seems to increase support when choosing between different policy options, which may indicate that as costs become more of a constraint, respondents become concerned about free-riding and reciprocity by other countries. At the same time, this is also the level scientists say is necessary by 2030 to address the climate crisis. Overall, these results offer evidence that conditional climate pledges can help to attract support for ambitious climate policies at the margins, even though respondents also hold positive unconditional preferences up to the point needed to address climate change. We find the same basic structure of preference among respondents in middle-income countries that in recent years have been the most aggressive in making their pledges conditional on financing and other types of technical support from higher income countries (Figure 10). If strong preferences for conditional cooperation were to emerge anywhere, we might expect it to be the predominant preference in the countries that have not been substantial contributors to the historic emissions of carbon pollution. Yet even in Brazil, Indonesia, and Mexico, we still find that ambitious, unconditional pledges

are preferred to doing nothing. We also find that partly conditional pledges are less preferred by the public of these countries at low levels of unconditional ambition. In the latest round of available NDCs, these three countries all made pledges to reduce emissions that are conditional on the actions of other countries and global agreements on key policy issues related to mitigating climate change. In its 2020 updated NDC, Brazil made no firm unconditional commitment and expressed a need to see strong support from the international community to make progress on achieving carbon neutrality by 2050. India has taken a similar stance in its own pledges, arguing that reducing emissions is the responsibility of developed countries that have contributed most to historic emissions. For its part, Indonesia set an unconditional commitment of 29 percent reduction, which could reach 40 percent conditional on policy support from the international community. Mexico likewise made an unconditional pledge of 25 percent reductions, which could be increased to 40 percent conditional on international cooperation on a number of policy issues such as a well-functioning international carbon market, more technical cooperation, and financial transfers. Overall, some developing countries are using conditionality in a way that appears consistent with domestic public opinion, while others are out of step with foreign public opinion by making commitments fully conditional on the actions of other countries.

Figure 10: AMCEs of climate pledges pooled across countries, independent of foreign commitments



5. Discussion and Conclusions

Many countries make public pledges to reduce emissions conditional on the actions of other countries as part of climate negotiations. Finding ways to gain agreement for reciprocal actions has been central to international bargaining on climate change. Countries that make public pledges likely intended to either gain support for their negotiating position at home, increase the credibility of their pledge in the eyes of their counterparts, or influence public opinion abroad. Yet, despite the prevalence of public pledges of conditional action in climate policy, we know little about the ways that these offers shape public opinion and therefore the prospects for faster reductions in emissions.

We provide the most complete investigation of the effect that conditional pledges have on public opinion. We find that conditional pledges do not increase preferences for ambitious climate policy by members of the public in foreign countries. Foreign pledges only increase support for ambitious climate policies when they are unconditional, or at least couple with high levels of unconditional ambition in the case of financial and technical transfers. In terms of domestic preferences, in most countries the public still prefers unconditional climate action over no action up to levels that scientists suggest are necessary to confront the climate crisis. But they prefer conditional pledges at high levels of ambition, perhaps as a consequence of domestic concerns about fairness. These results imply that public pledges of conditional action mainly appeal to domestic audiences, rather than impact foreign opinion, at least at the level at which they are commonly offered.

Our results are complementary, but distinct, from a growing body of research that casts doubt on the idea that public preferences for climate policy follow a prisoners' dilemma logic involving a vicious cycle of mutual defection. Tingley and Tomz (2014) first showed that the public in most countries does not want to decrease climate ambition when they learn that other countries are doing less. This same result has held in studies that examine whether other country's pledges to do less than is needed or fair diminish public support for climate policy (Bernauer et al., 2016; Beiser-McGrath and Bernauer, 2019). On the other hand, there is a good amount of evidence that the public prefers that ambitious climate policy be reciprocated in fair ways by other countries (Anderson, Bernauer, and Baliotti, 2017; Bechtel, Scheve, and van Lieshout, 2022). Our studies help to reconcile these findings by showing the contingent nature of public preferences for conditional action: The public prefers to do what is necessary to address climate change unconditionally, but consistently prefers burden sharing at high levels of commitment. Thus, public pledges of conditional action are consistent with appealing to domestic constituencies.

Our study also augments these previous results by testing whether public, conditional pledges by other countries can build greater public support for climate policy by identifying ambitious settlement space, signaling credibility, and activating comparisons between countries that might change beliefs about appropriate or possible actions. We find that while the public often prefers that their own country makes some of its commitment conditional, perhaps due to fairness considerations, these conditional

pledges do not affect foreign audiences in ways that drive ambition. This study adds to the growing body of theory and empirical evidence that suggests the public is not primarily concerned with what other countries are doing when forming their preferences about climate policy. At the levels of unconditional pledges that they are typically offered, conditional pledges do not seem to increase support transfers abroad. And the predominant preference among the public is for their own country to take on a fair share of action needed to address climate change. That the public may not be as attuned to public, conditional pledges in the real world as they are in this experimental context should temper optimism about conditionality being used to foster more ambitious international bargains.

Our results also point to the need for future work to deepen our understanding of the drivers of conditional pledges in the absence of clear effects on increasing public preferences for action. Future work could interrogate several hypotheses organized around four conceptual frameworks: decision-makers could be rational but ignorant; they could be socialized into believing that conditional pledges matter; or they could follow norms of reciprocity that are independent of the effectiveness of pledges on changing foreign public opinion; or conditional pledges could be targeted at more specialized interest groups. The first explanation is rooted in various forms of ignorance. Policymakers may simply not know that conditional pledges fail to shift public opinion in foreign countries in the ways that they expect. Political leaders may be rational, but their knowledge may be limited and too costly to acquire (Jones, 1999). Even in countries with considerable capacity and data transparency, political elites often misunderstand the public's preferences, including those regarding climate policies (Hertel-Fernandez, Mildenerberger, and Stokes, 2019).

Second, conditional pledges may be common because political leaders have been socialized and trained to believe that they are desirable. There are two distinct, but related, mechanisms that could operate here. One is that the experts or epistemic communities available to them believe that conditional pledges are necessary. Milkoreit (2017) documents how the beliefs of climate negotiators, for instance, shape the kind of agreements that states reach. Another mechanism, which is more constructivist in nature, posits that leaders are socialized to become conditional negotiators.

The third set of explanations is based on the preferences of audiences and elites. Maybe audiences expect their leaders to make conditional offers even if it is not effective. This may be caused by strong norms toward reciprocity and fairness in international bargaining (Albin, 2001; Diekmann, 2004; Fehr and Gächter, 2000; Anderson, Bernauer, and Baliotti, 2017). These norms are often more about expectations of what constitutes proper behavior rather than about their consequences.⁹ Climate elites themselves often hold views not based on what would be most effective, but rather what they consider to be appropriate responses to problems (Milkoreit, 2015). As a fourth alternative, it is also possible that public pledges of conditional action are meant to signal settlement

⁹ Although many studies emphasize the consequential motivations for reciprocity, see for instance Fehr and Gächter (2000).

space to certain types of interest groups or policy elites that are more attentive to international negotiations than public audiences. To the extent that these groups are pivotal, conditional pledges may yet serve to promote international cooperation to mitigate climate change. Our study shows that the effect of conditional pledges is not mediated by public opinion.

More broadly, one promising result for climate policy from our study is that a unilateral pledge by another country that is more ambitious than what the people prefer at baseline increases preferences for ambitious action. This result is in line with the idea that the pledge-and-review, bottom-up architecture of international climate governance can ratchet up ambition over time. This result is also complementary to findings that support for ambitious, unilateral climate policy is fairly robust (Bernauer and Gampfer, 2015; Saul and Seidel, 2011; Urpelainen, 2011). Our study lends support to the idea that there may be returns to unilateral, unconditional, and ambitious leadership to address climate change in making foreign public opinion more favorable to ambitious climate policy.

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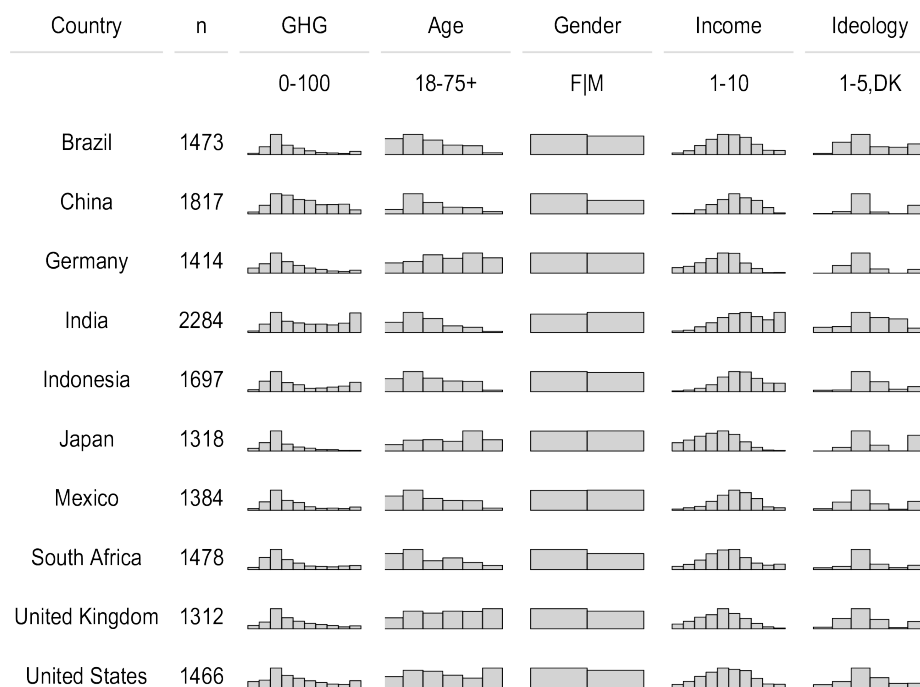
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Appendix 1: Details on Research Design

1.1 Sample Statistics

Figure S1: Descriptive statistics from the survey sample, including baseline preferences for emissions reductions, distribution of age, gender, income, and ideology
 Note: The column “GHG” visualizes unconditional preferences for carbon pollution reductions prior to presentation with the experimental modules but after informing subjects of the reductions recommended by scientists. Income was measured on a self-reported scale of 1–10, relative to other individuals in each respondent’s home country, following World Values Survey practice. Ideology was measured on a 1–5 scale with 1 as the far left and 5 being the far right. Sample sizes vary since sampling continued until benchmark sample sizes were met for each age by gender quota in each country.



1.2 Ethics and Informed Consent

As discussed in the main manuscript, we conducted these cross-national experiments using a commercial panel provided by Dynata. This commercial provider uses proprietary sampling methods to increase the national representativeness of each country sample, so we have no reason to believe that any vulnerable groups are over- or under-represented. Dynata compensates respondents according to its own proprietary procedures and we contracted for access to their pre-existing panel. All respondents provided affirmative, informed consent with no elements omitted as part of a splash page embedded in a Qualtrics survey. We documented informed consent electronically. We received no reports of adverse events or responses to the survey instrument.

Appendix 2: Robustness Check

We embedded a comprehension check prior to any of the three experiments to check whether respondents understood the concept of conditional commitments. The item we used to assess comprehension read

[HOME COUNTRY] says it will reduce 20% of [HOME COUNTRY'S] pollution. If other countries also act to reduce their pollution, then [HOME COUNTRY] will cut an additional 10% of national pollution. Assume that other countries do not act to reduce their pollution, then how much will [HOME COUNTRY] reduce?

- 20%
- 30%

Across all countries in the sample, 68 percent of respondents passed the comprehension check by choosing the correct answer (20%), which is consistent across countries. While failure to comprehend conditional commitments should add noise to the dataset and attenuate treatment effects, we confirm that the main results in each of the three experiments are consistent among respondents who passed the comprehension check.

Figure S2: Effect of various foreign country pledges on preference for domestic emissions reduction among respondents who pass a comprehension check

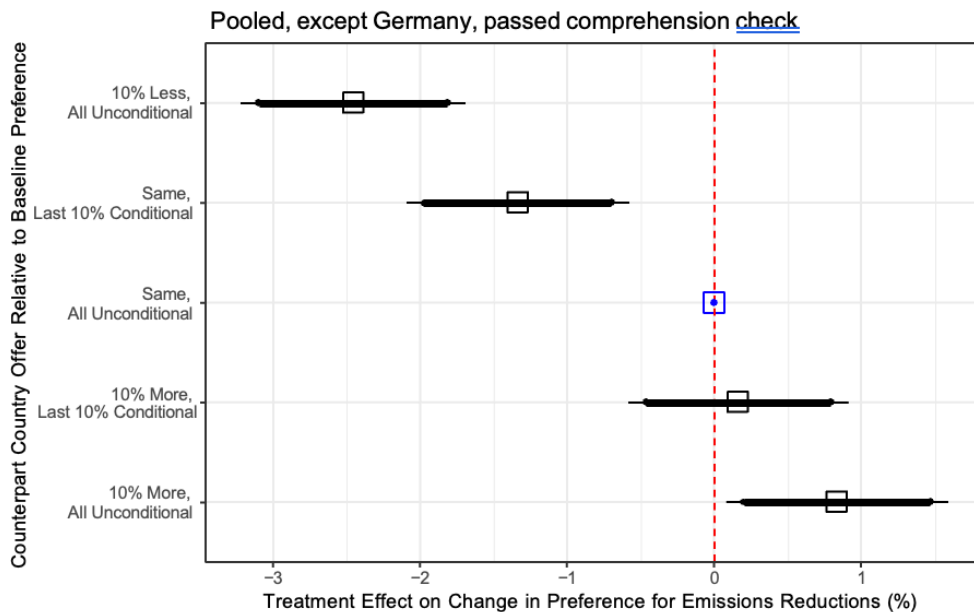


Figure S3: AMCEs of climate pledges on support for financial and technical transfers among respondents who pass a comprehension check

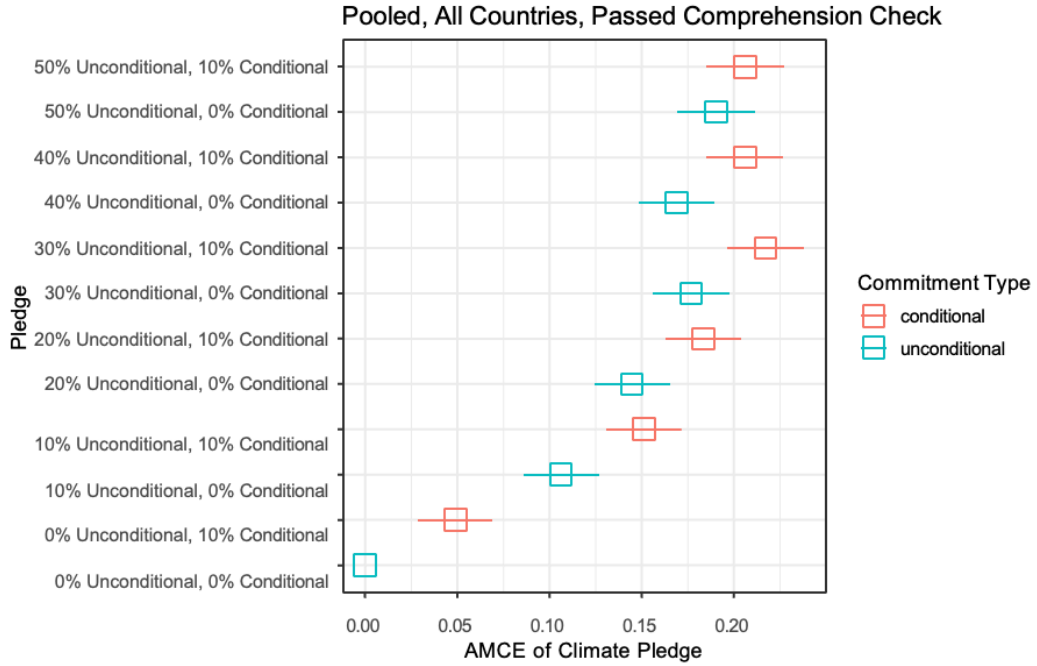
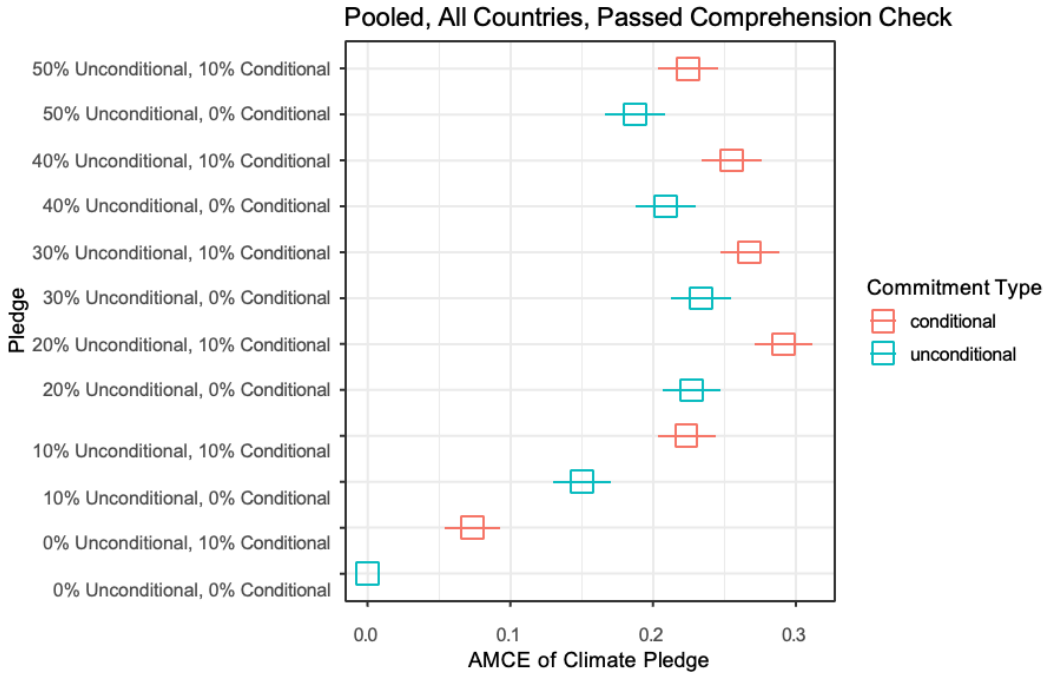


Figure S4: AMCEs of domestic climate pledges pooled across countries, independent of foreign commitments, among respondents who pass a comprehension check



Appendix 3: Pre-Registration

We pre-registered all experiments reported in this paper prior to fielding the surveys at <https://osf.io/w4528>. All analyses follow the pre-registered specifications. We note the following modifications or clarifications from the pre-analysis plan:

1. Our pre-analysis plan indicates that we will construct confidence intervals by bootstrapping respondents without specifying how clustering will work. Because of the size of the data and the number of subgroups, we found this approach to be intractable for working with the dataset. Accordingly we switch to bootstrapping the estimates when computing the aggregate effects of conditionality from the AMCEs. This decision makes working with the data more tractable but does not influence any of the substantive findings.
2. For analysis of the conjoint experiments, the pre-analysis plan equation (1) indicates that the profile order (Op) will be used as an unconditional covariate. This was an error in the pre-analysis plan, since respondents respond positively to one of the choices in each profile. Thus, this covariate has no prognostic value for determining which profile attributes are more likely to be chosen. We remove this term in all conjoint analyses.
3. We only use complete cases in the conjoined experiments, i.e., responding to make a choice in all three profiles. This enables us to use the `cjoint` package for analyzing the results. Incomplete cases are approximately 1 percent of the dataset, so this cannot plausibly change the results.
4. Our survey instrument went to field with errors in the vignette experiment. In particular, not all randomized conditions were allocated to the Germany sample. As a consequence, the Germany sample is removed from the pooled analysis. Additionally the survey instrument did not have a restricted set of experimental conditions for respondents who prefer 90 percent or more emission reduction at baseline. This means that a small number of respondents received information about counterpart countries making conditional pledges of >100 percent emissions reductions. To make the analysis comparable across countries, we only use respondents who have a baseline preference for emissions reductions between 10 and 90 percent when analyzing the vignette experiment. These respondents are eligible to be assigned to all experimental conditions with values that make sense.

Appendix 4: Main Results with all Estimated Coefficients

Table S1: Full tabular output for main result in vignette experiment (Figure 3)

	(Figure 3 output)
(Intercept)	5.169*** [4.529, 5.809]
10% Less, All Unconditional	-2.005*** [-2.677, -1.334]
Same, Last 10% Conditional	-1.210*** [-1.873, -0.547]
10% More, Last 10% Conditional	0.087 [-0.572, 0.747]
10% More, All Unconditional	0.966** [0.300, 1.633]
Pre-Treatment Pledge	0.919*** [0.908, 0.930]
Num. Obs.	10,604
R ²	0.725

Notes: The dependent variable is the preferred level of emissions reductions post-treatment. Reference category is the same level as the respondent's pre-treatment preference, all unconditional. Brackets display 95 percent confidence intervals. ***p < 0.001, **p < 0.01, *p < 0.05.

Figure S5: AMCEs of climate pledges and all other attribute levels on support for financial and technical transfers

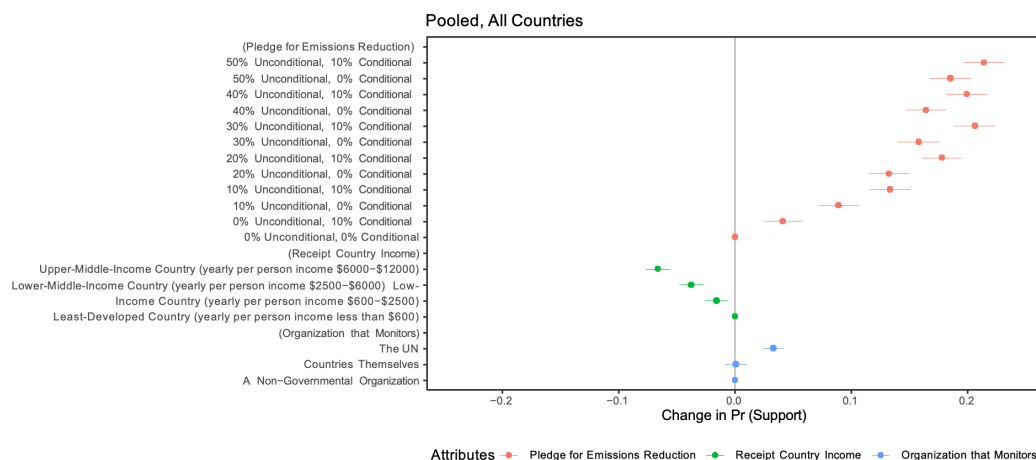
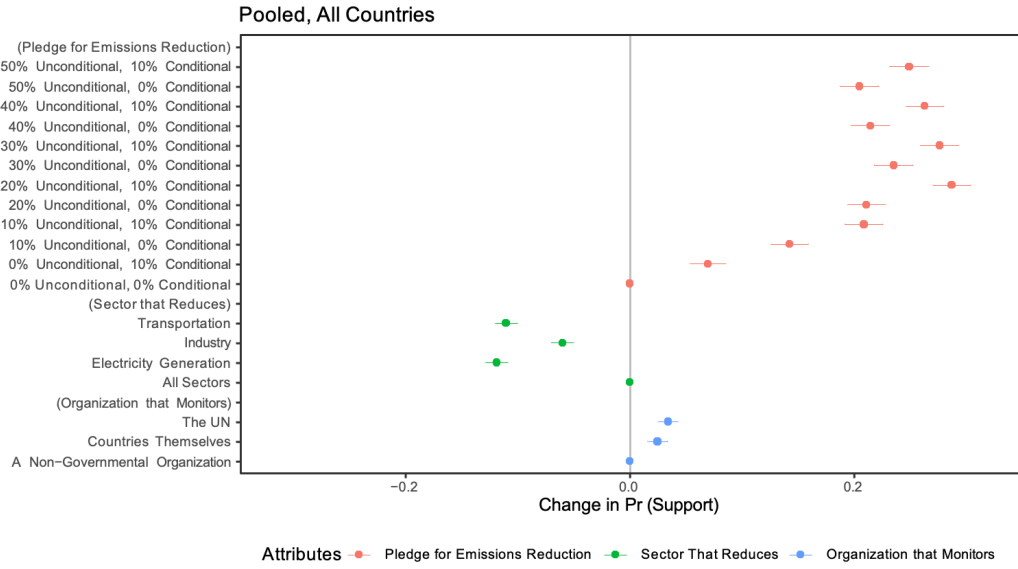


Figure S6: AMCEs of climate pledges and all other attribute levels on support for domestic policy packages



Appendix 5: Vignette Experiment by Country: Foreign Pledges and Public Preferences

Figure S7: Effect of various foreign country pledges on preference for domestic emissions reduction, Brazil

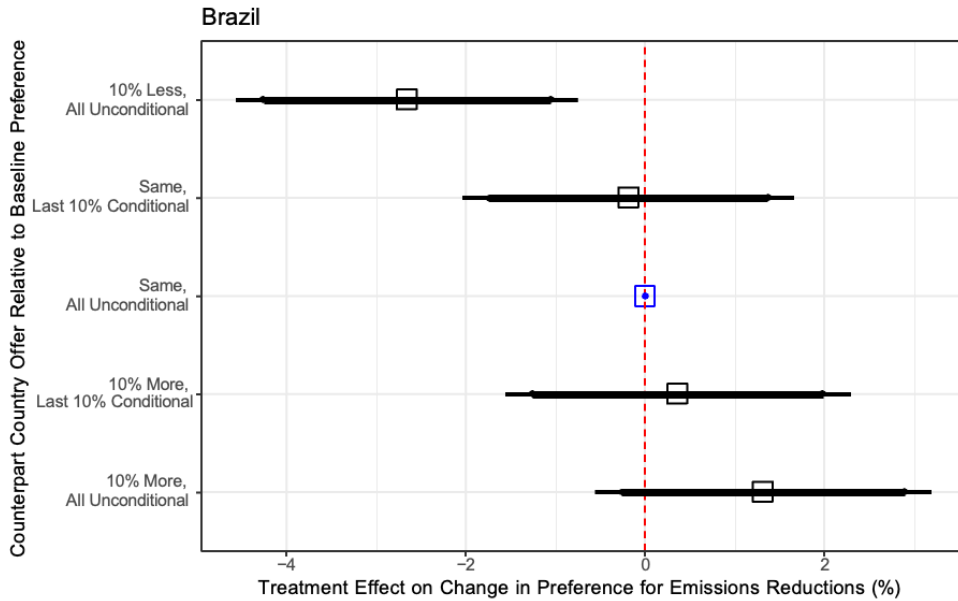


Figure S8: Effect of various foreign country pledges on preference for domestic emissions reduction, China

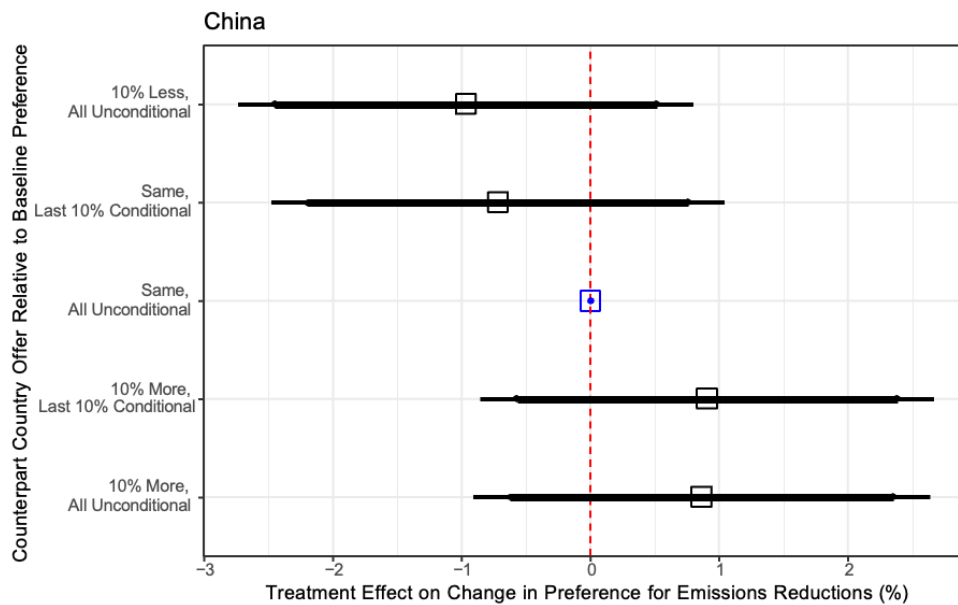


Figure S9: Effect of various foreign country pledges on preference for domestic emissions reduction, India

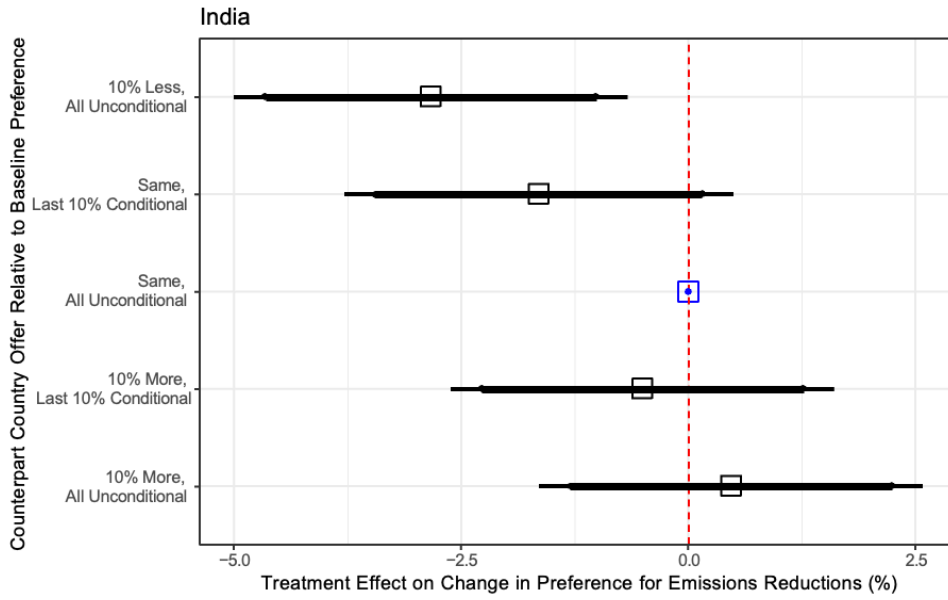


Figure S10: Effect of various foreign country pledges on preference for domestic emissions reduction, Indonesia

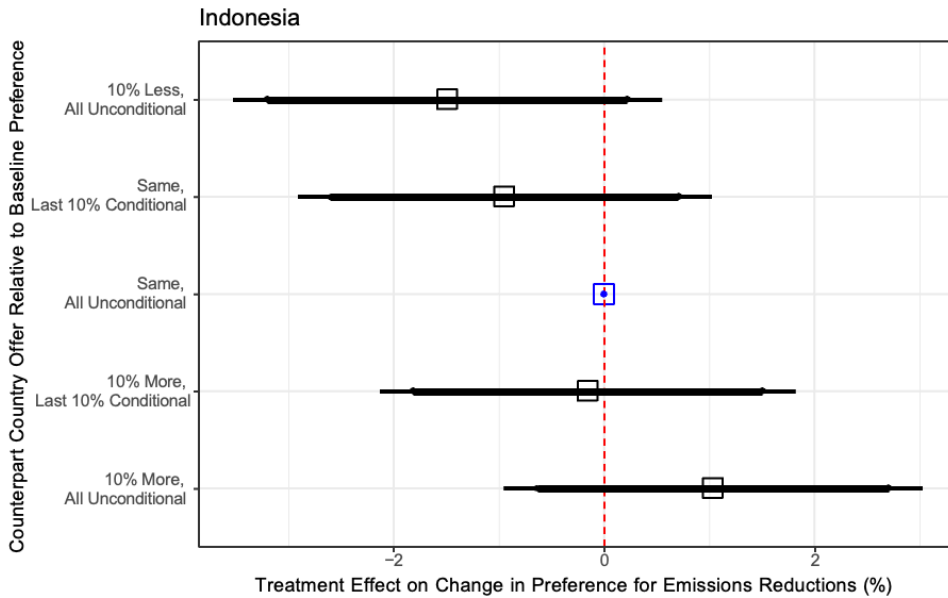


Figure S11: Effect of various foreign country pledges on preference for domestic emissions reduction, Japan

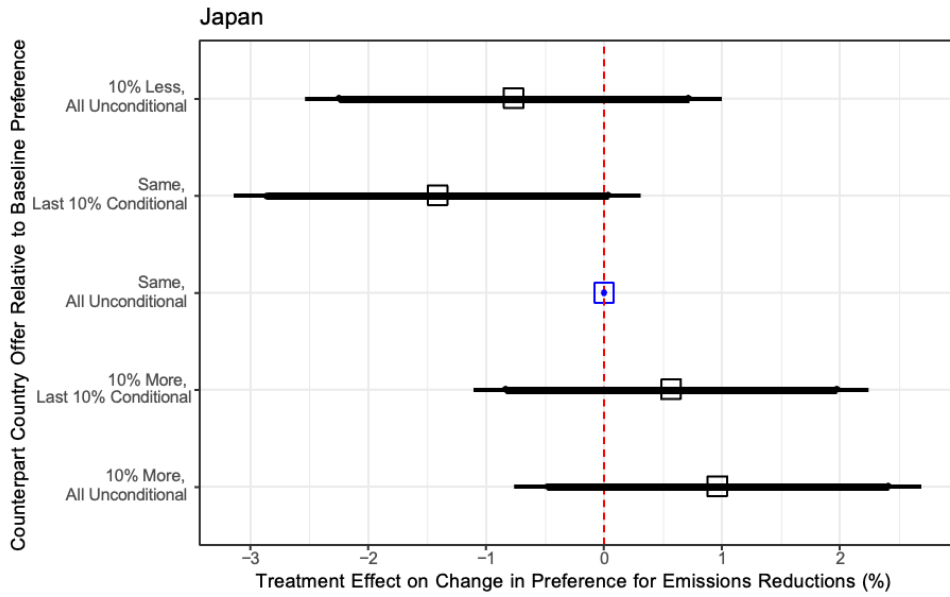


Figure S12: Effect of various foreign country pledges on preference for domestic emissions reduction, Mexico

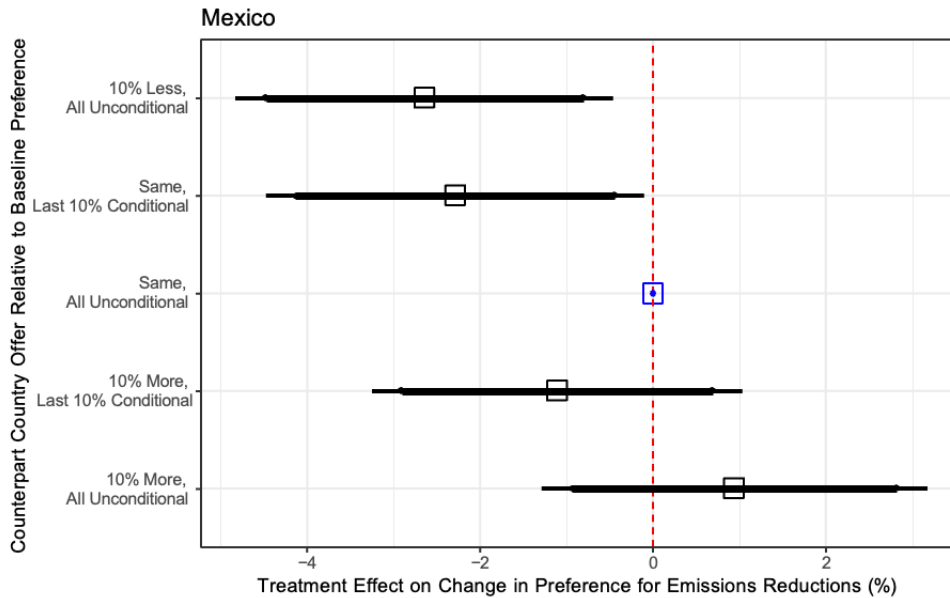


Figure S13: Effect of various foreign country pledges on preference for domestic emissions reduction, South Africa

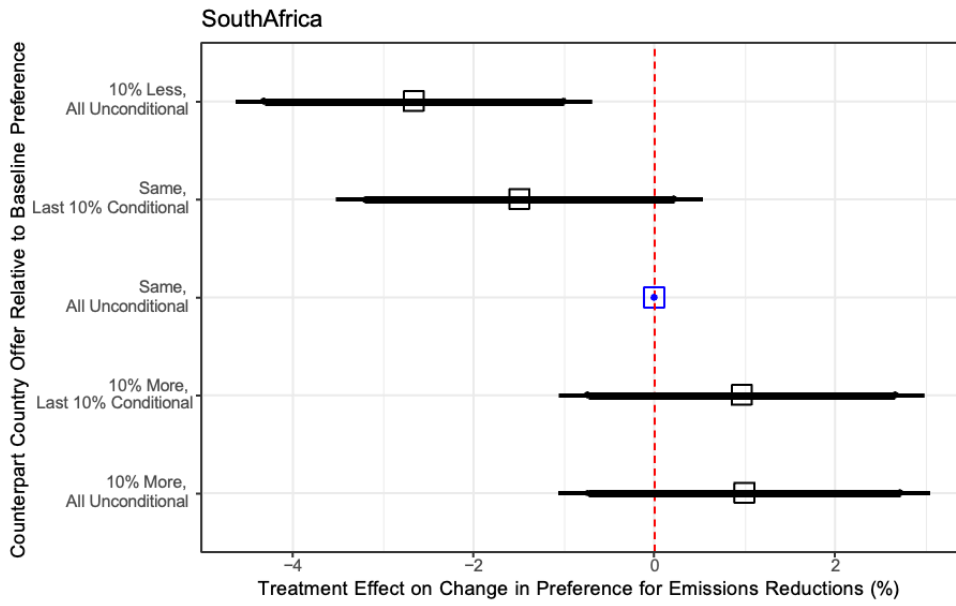


Figure S14: Effect of various foreign country pledges on preference for domestic emissions reduction, United Kingdom

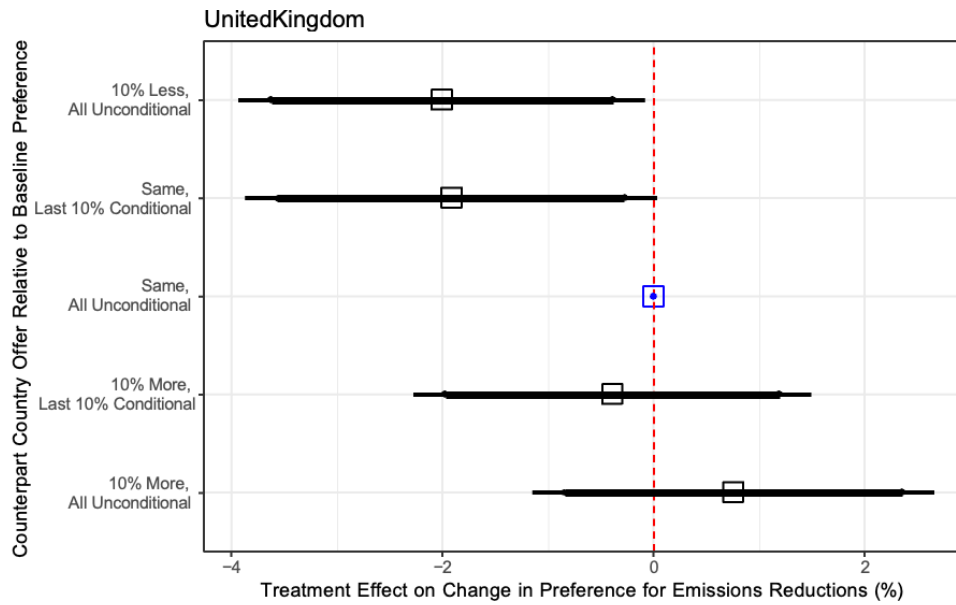
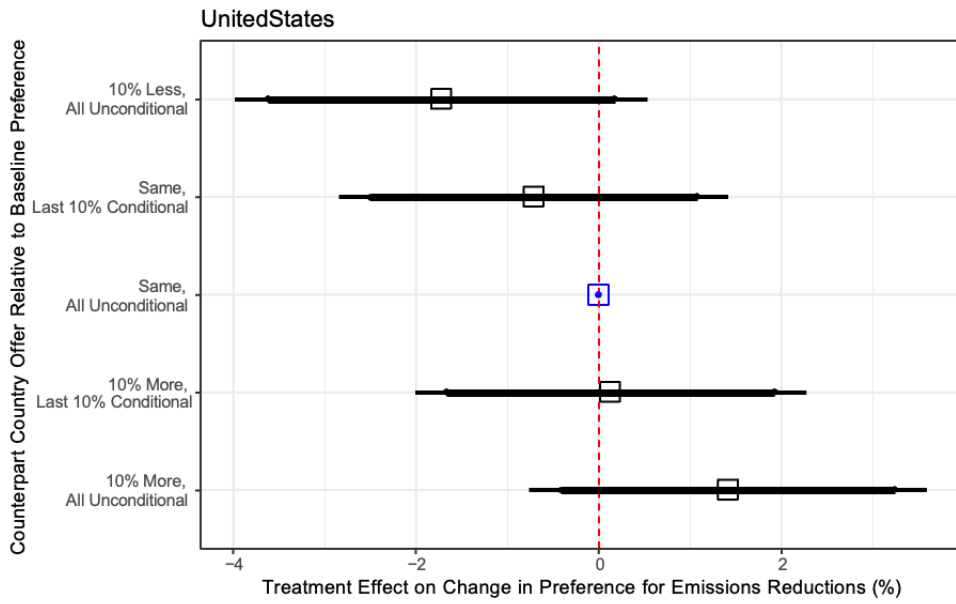


Figure S15: Effect of various foreign country pledges on preference for domestic emissions reduction, United States



Appendix 6: Conjoint Experiment 1 by Country: International Transfers

Figure S16: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, Brazil

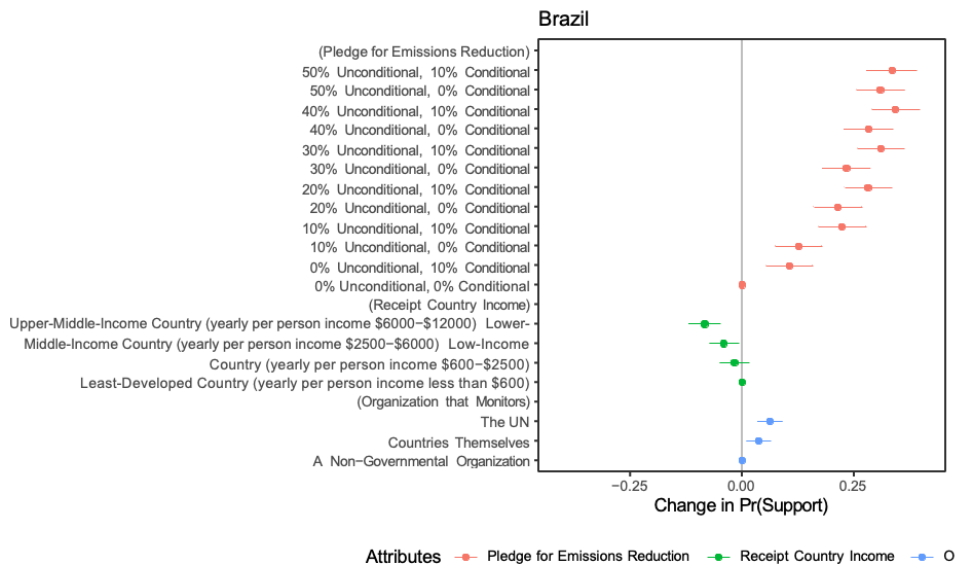


Figure S17: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, China

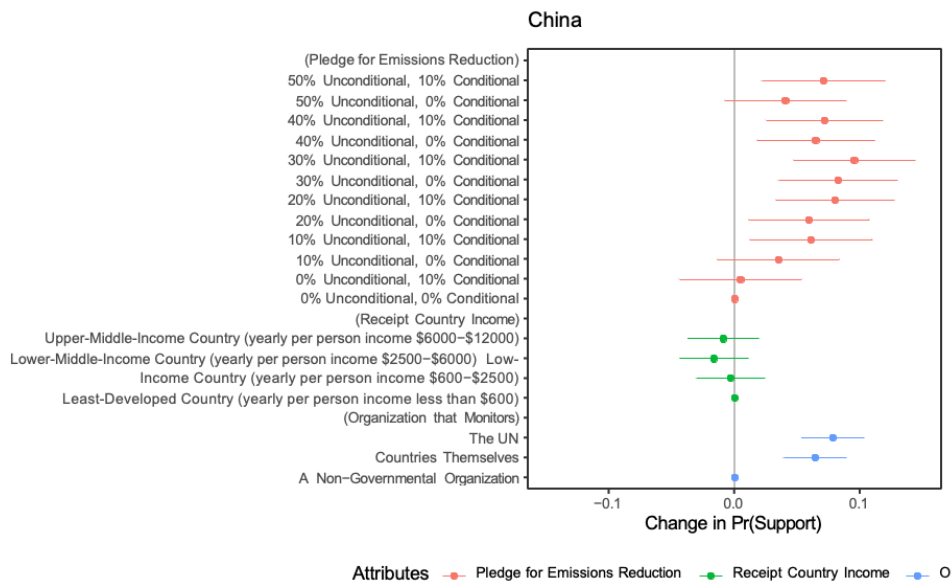


Figure S18: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, Germany

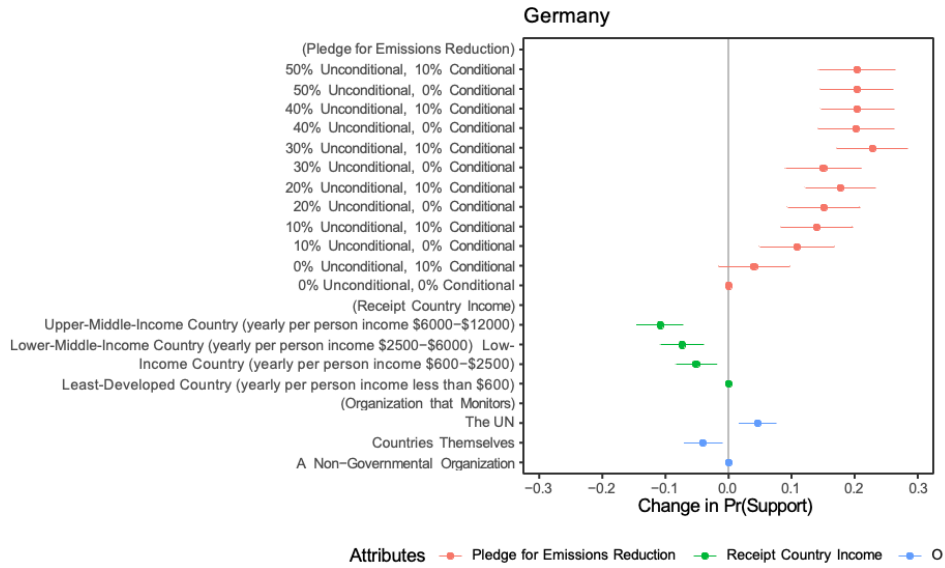


Figure S19: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, India

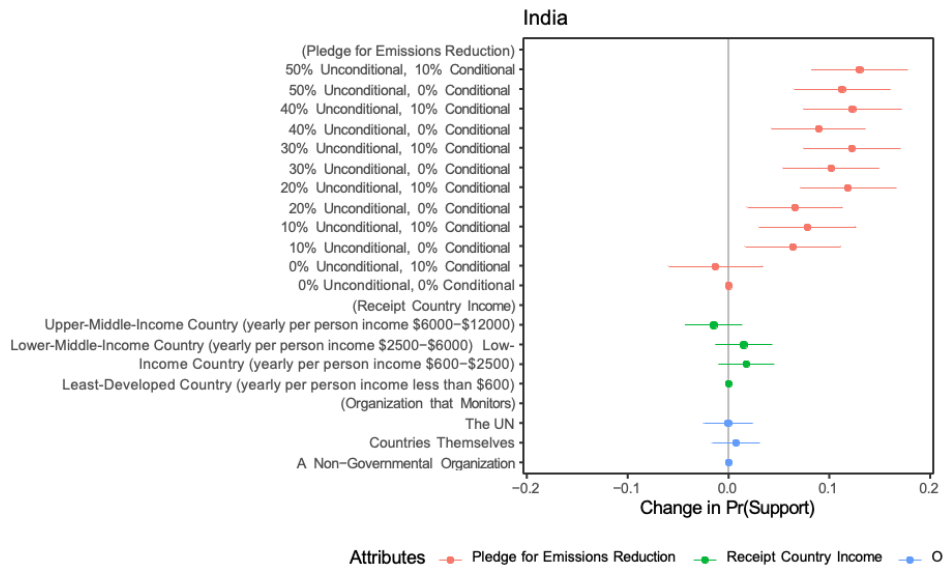


Figure S20: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, Indonesia

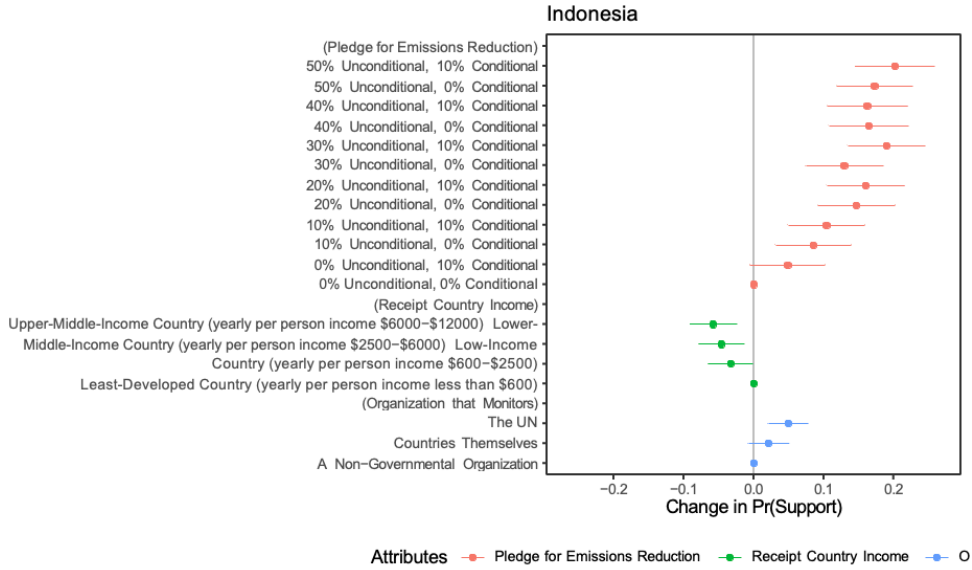


Figure S21: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, Japan

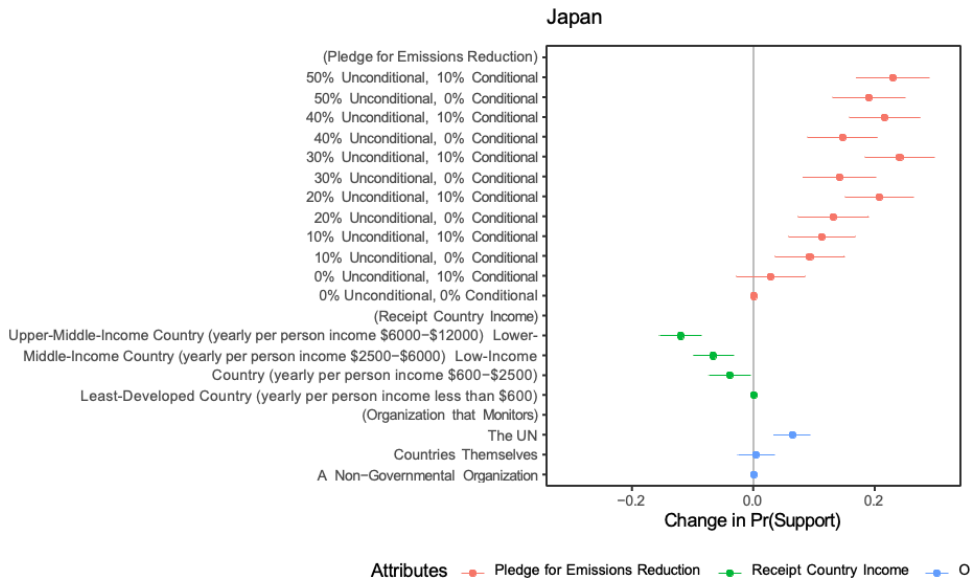


Figure S22: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, Mexico

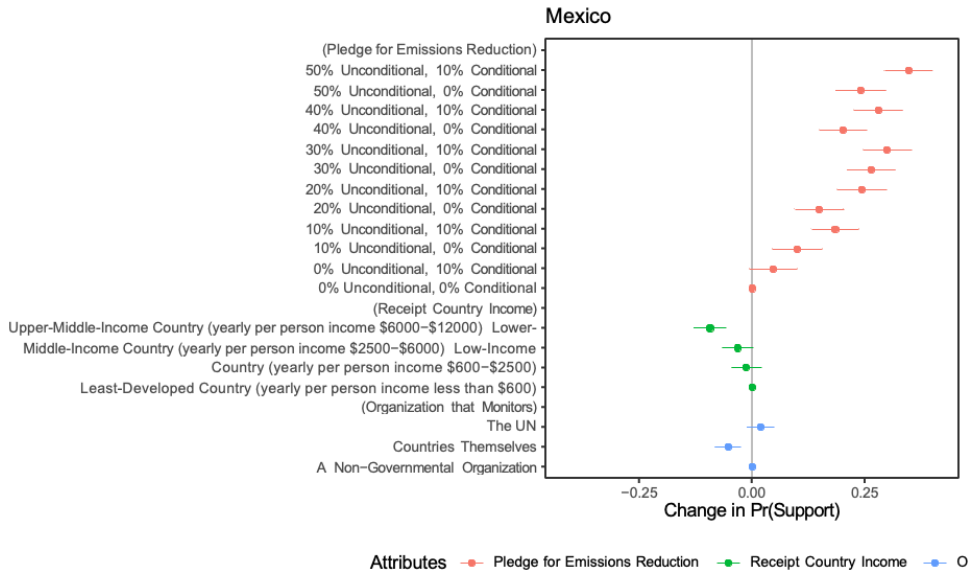


Figure S23: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, South Africa

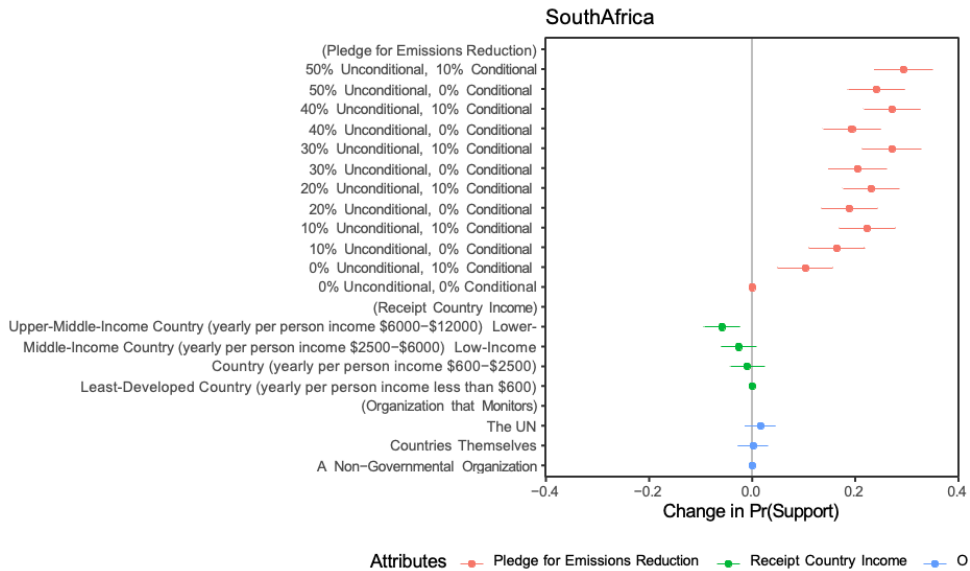


Figure S24: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, United Kingdom

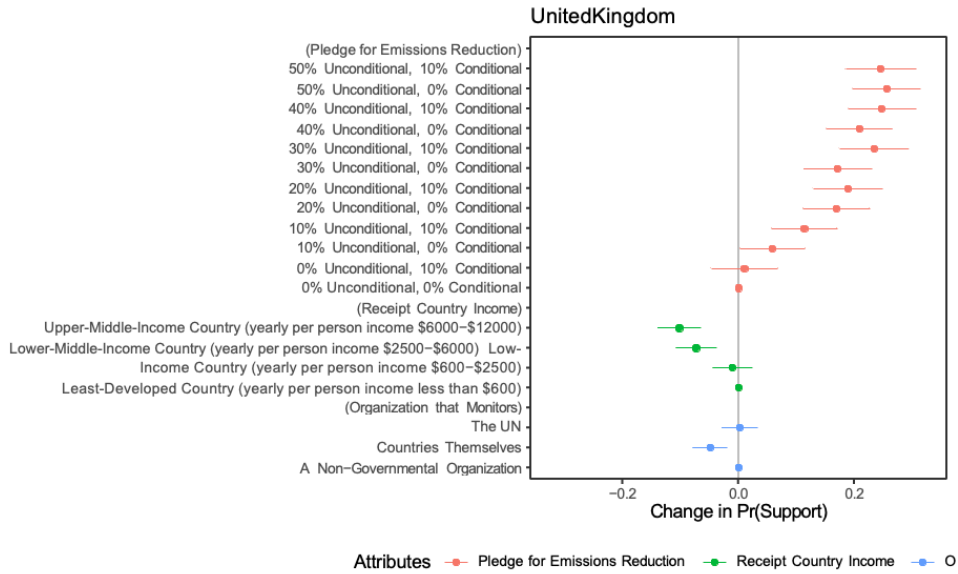
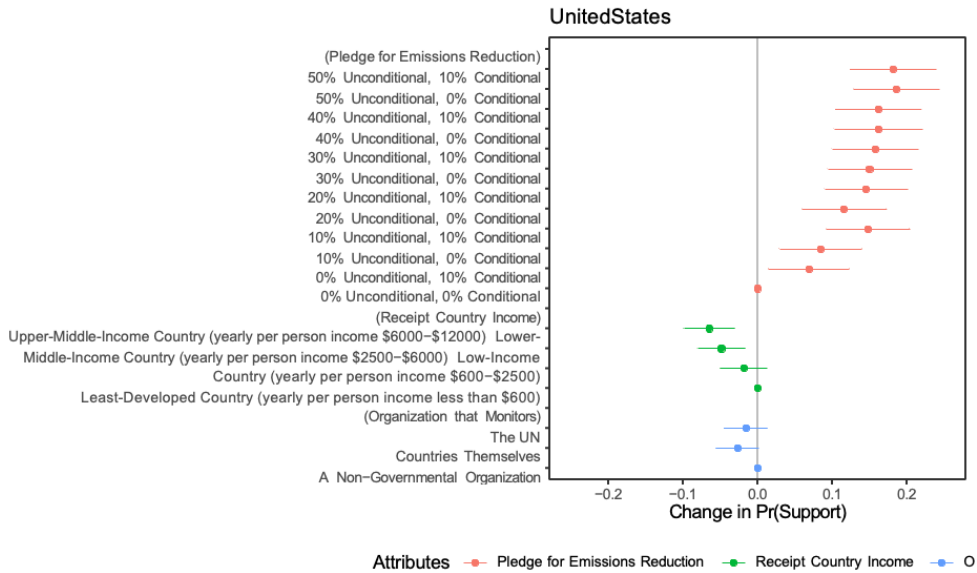


Figure S25: Effect of receiving country making last 10 percent of climate pledge conditional on support for financial and technical transfers at various levels of total overall commitment, United States



Appendix 7: Conjoint Experiment 2 by Country: Domestic Policy Packages

Figure S26: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, Brazil

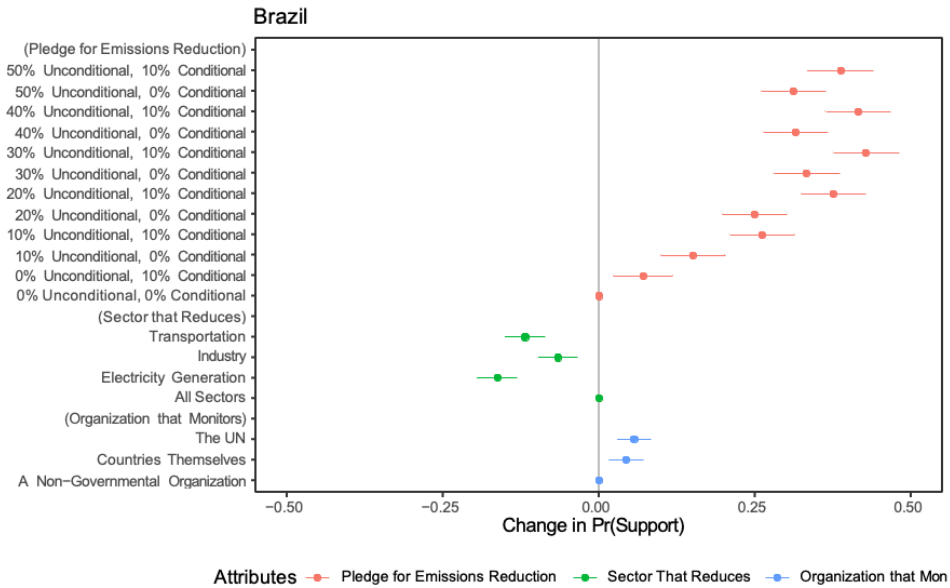


Figure S27: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, China

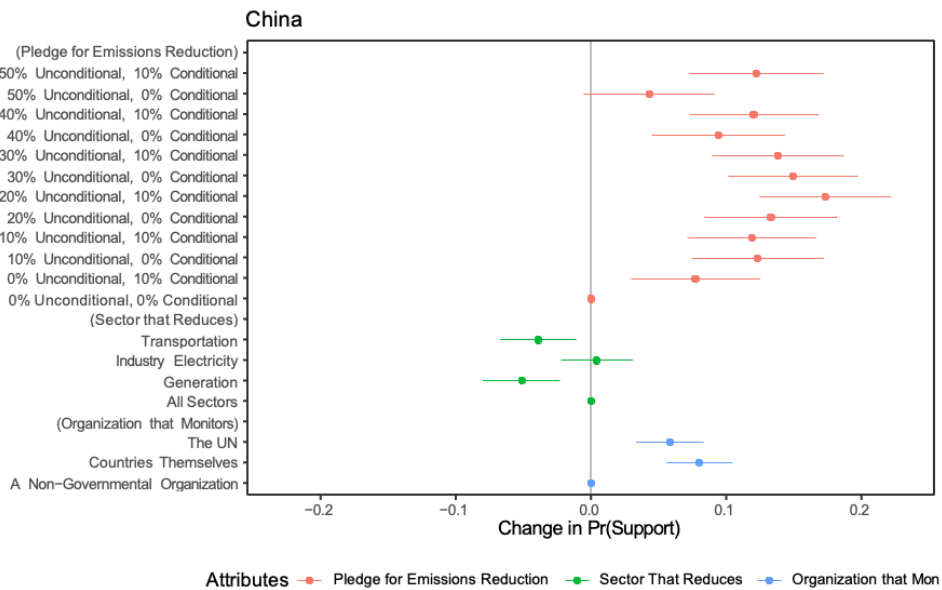


Figure S28: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, Germany

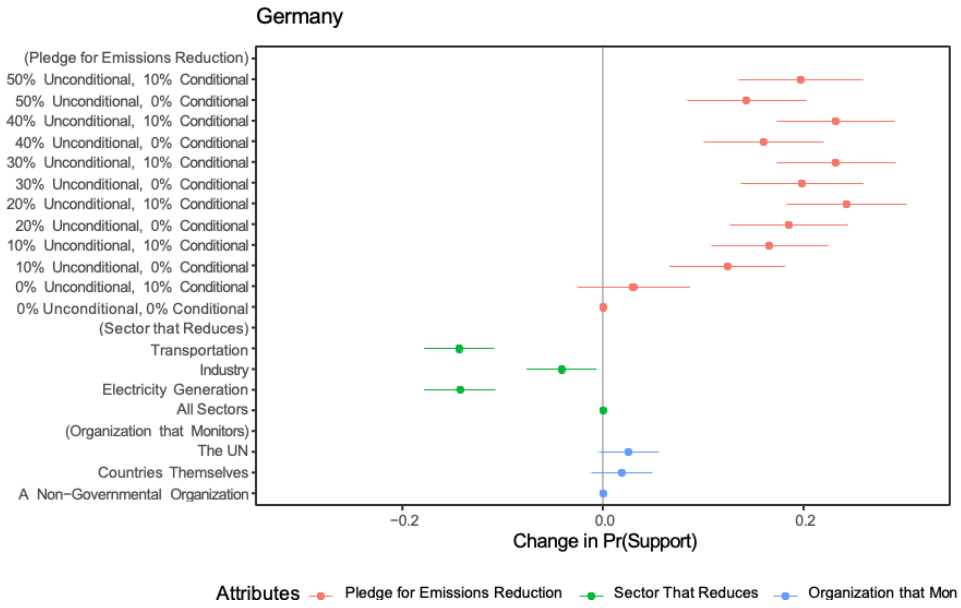


Figure S29: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, India

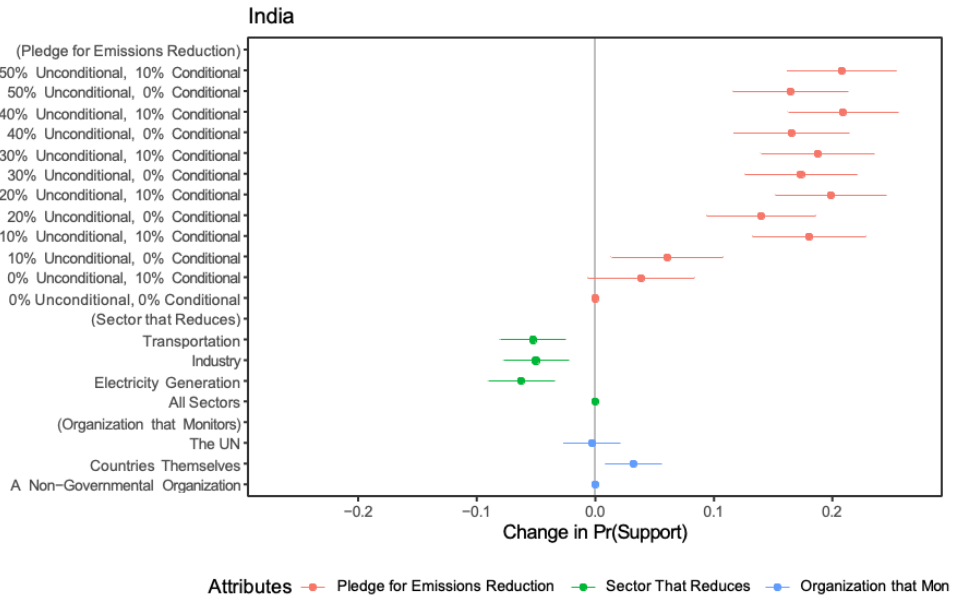


Figure S30: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, Indonesia

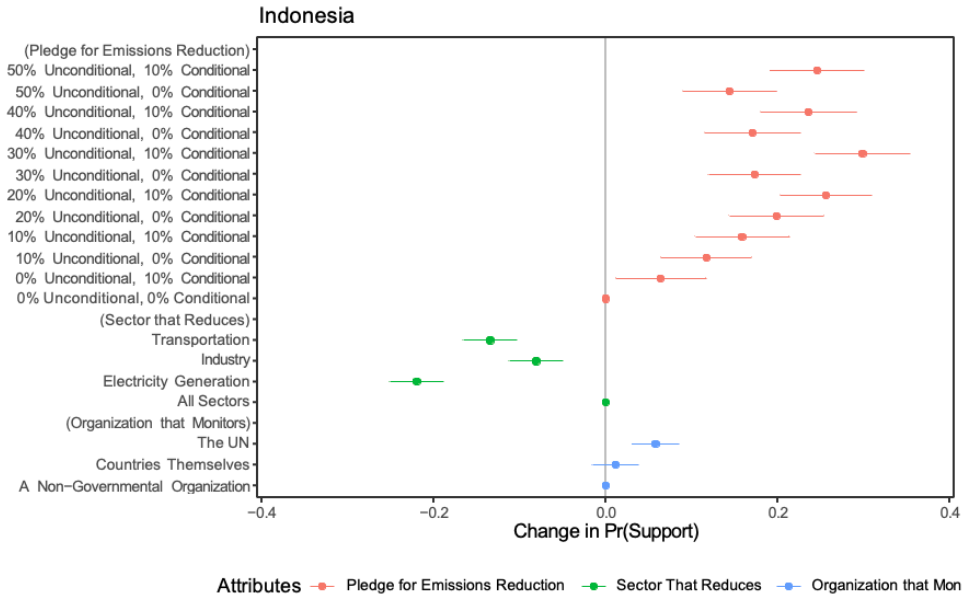


Figure S31: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, Japan

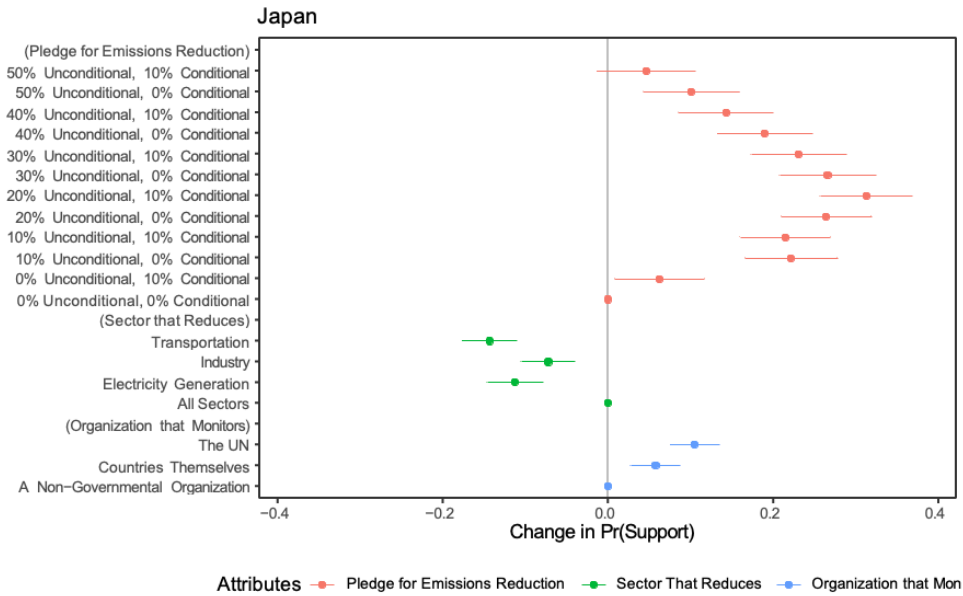


Figure S32: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, Mexico

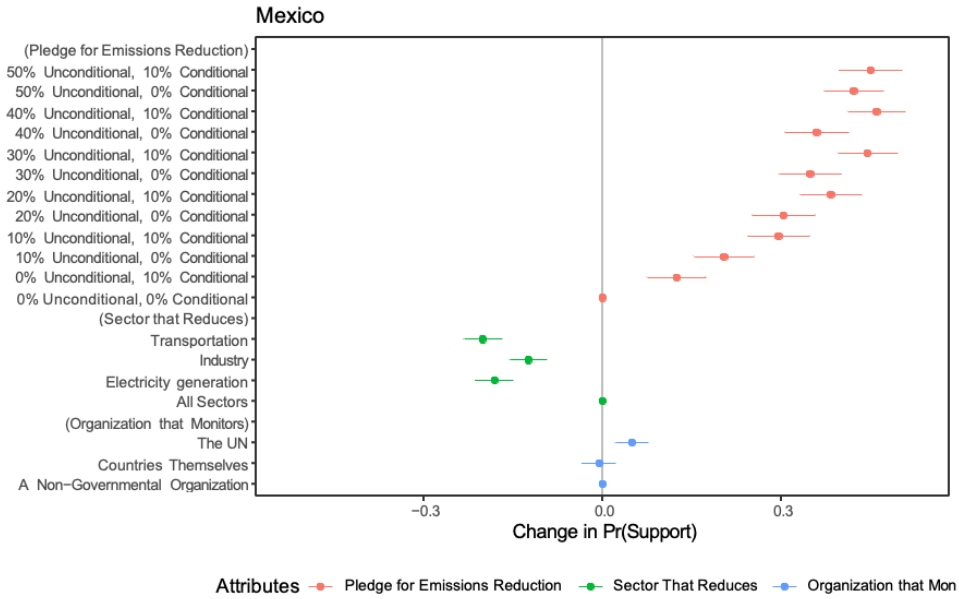


Figure S33: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, South Africa

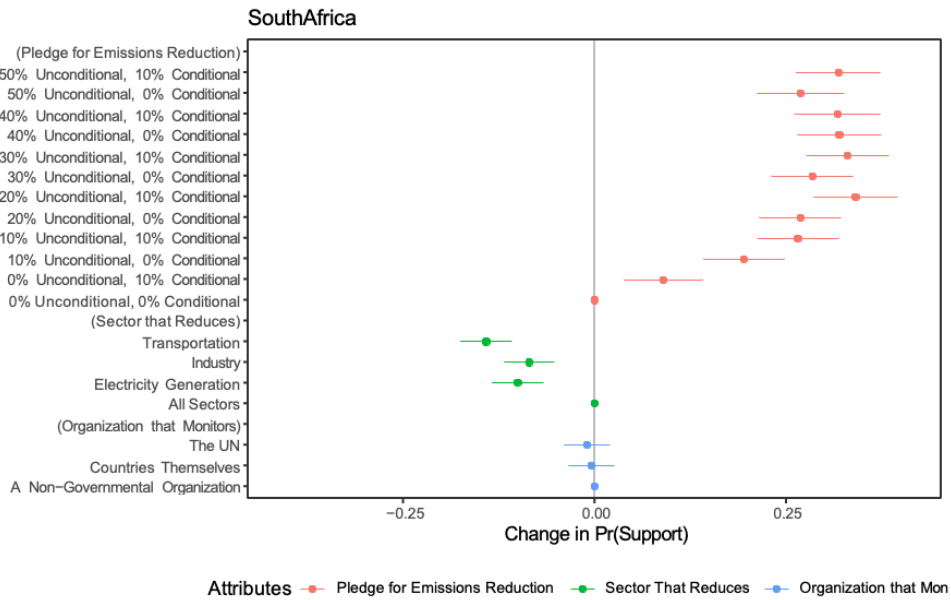


Figure S34: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, United Kingdom

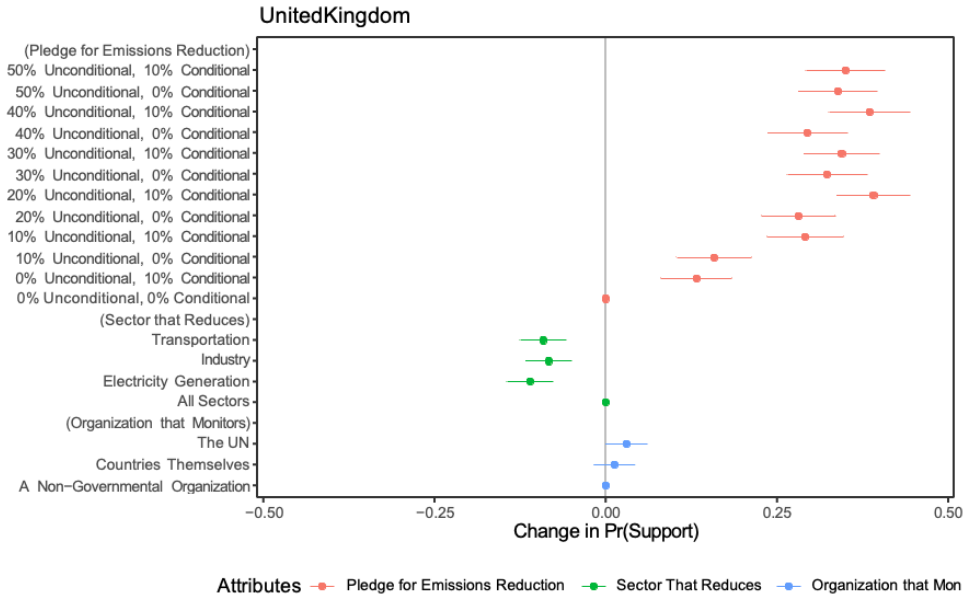
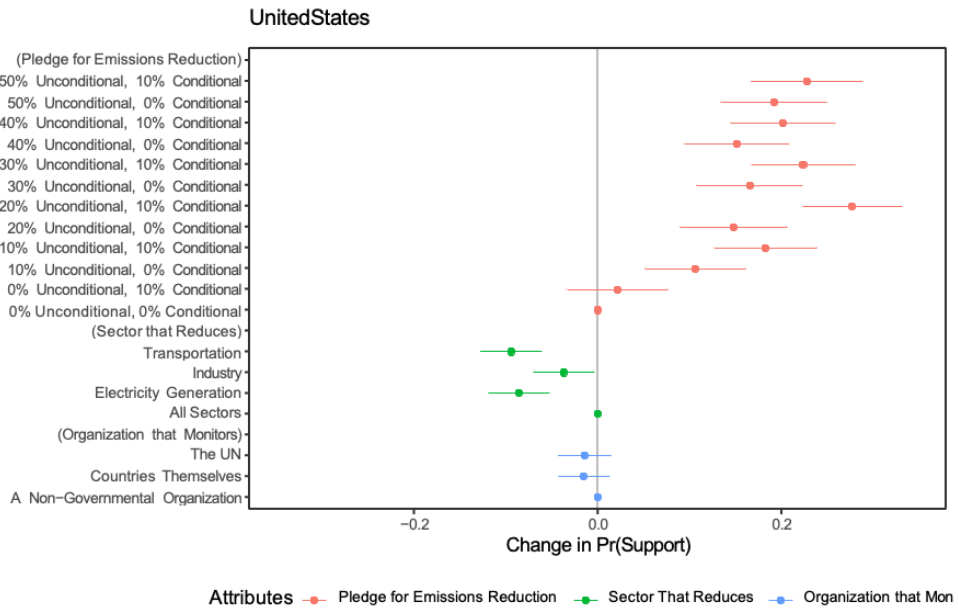


Figure S35: Effect of home country making last 10 percent of climate pledge conditional at various levels of total overall commitment, United States



Appendix 8: Conditional Climate Pledges under the Paris Agreement

Country	Conditional Target
Afghanistan	“13.6% reduction in GHG emissions by 2030 compared to a business as usual (BAU) 2030 scenario, conditional on external support.”
Algeria	“Reduction of greenhouse gases emissions by 7% to 22%, by 2030, compared to a business as usual – BAU – scenario, conditional on external support in terms of finance, technology development and transfer, and capacity building. The 7% GHG reduction will be achieved with national means.”
Angola	“15% of emission reduction by 2025, unconditionally. In addition, it is expected that through a conditional mitigation scenario the country could reduce an additional 10% below BAU emission levels by 2025.”
Antigua & Barbuda	“Conditional Mitigation Targets: 1) 86% renewable energy generation from local resources in the electricity sector by 2030 Conditional 2) 100% all new vehicle sales to be electric vehicles by 2030 Conditional 3) Explore potential for emissions reductions in the waste sector by 2025 Conditional 4) Explore potential for emissions reductions in the Agriculture, Forestry and Other Land Use (AFOLU) sector by 2030 Conditional”
Bahamas	“Reduction of its GHG emissions by 30% compared to its BAU scenario by 2030, conditional upon international support.”
Bangladesh	“In the conditional scenario, GHG emissions would be reduced by 61.9 Mt CO ₂ e (15.12%) below BAU in 2030 in the respective sectors. This reduction is in addition to the proposed reductions in unconditional scenario. The conditional scenario has 59.7Mt CO ₂ e (96.46%) emission reduction from the Energy sector, while 0.4 (0.65%) and 1.84 (2.97%) Mt CO ₂ e reduction will be from AFOLU (agriculture) and Waste Sector respectively. There will be no reduction in the IPPU Sector.”
Barbados	“35% reduction relative to the business-as-usual emissions in 2025, conditional upon international support. 70% reduction relative to business-as-usual emissions in 2030, conditional upon international support. The absolute emissions reductions resulting from this 2021

Country	Conditional Target
	NDC update conditional contribution below the 2008 base year are 705Gg CO ₂ e (2025) and 1,459Gg CO ₂ e (2030) respectively.”
Belarus	“40% economy-wide GHG emissions reductions from 1990 level by 2030 (Conditional), inclusive of LULUCF sector and subject to using international financing mechanisms to introduce the best available technologies for achieving GHG emission reduction. (Unconditional) At least 35% economy-wide reduction in GHG emissions from 1990 level by 2030, inclusive of LULUCF sector”
Belize	“Avoid a cumulative emissions total across all sectors of 5,647 KtCO ₂ e between 2021 and 2030 (peaking at 1,080 KtCO ₂ e in avoided emissions in the year 2030). The actions identified above are considered conditional on financial support and technical assistance.”
Benin	“20.15% emissions reduction target over the period 2021 to 2030”
Bhutan	“Remain carbon-neutral, where emission of greenhouse gases will not exceed carbon sequestration by our forests and sinks [and where] the successful implementation of intended actions to mitigate will depend on the level of financial and technical support received”
Bosnia and Herzegovina	“17.5% compared to 2014 or 36.8% compared to 1990 by 2030; 55.0% (conditional) compared to 2014, that is, 65.6% (conditional) compared to modelling 1990 by 2050.”
Burkina Faso	“29.42% reductions in GHG emissions by 2030 compared to the Business As Usual scenario. 19.60% unconditional and another 9.82% for the conditional scenario”
Burundi	“23% reductions in carbon emissions by 2030, 20% of which is conditional (14,897 Gg ECO ₂)”
Cabo Verde	“24% economy-wide emissions reductions below BAU by 2030, 18% reductions unconditional”
Cambodia	“The majority of targets identified are conditional on the international support. The emissions reduction of 64.6 million tCO ₂ e/year is expected by 2030, [which] is a 41.7% reduction compared with the BAU case.”

Country	Conditional Target
Cameroon	“35% overall mitigation (unconditional and conditional measures) by 2030 compared to the reference scenario (BAU 2030).”
Central African Republic	“The mitigation measures taken will generate, according to the unconditional scenario, a reduction in greenhouse gas emissions of 9.03% and 11.82% respectively by 2025 and 2030 by compared to the reference situation; and according to the conditional scenario 14.64% and 24.28% at the horizons 2025 and 2030 compared to the reference situation.”
Chad	“19.3% cumulative reduction of GHG emissions by 2030 to 88,350 kt CO ₂ eq (unconditional and conditional measures) compared to the reference scenario”
Comoros	“23% net reduction in GHG emissions, excluding LULUCF, and an increase in net CO ₂ absorption sink of 47% by 2030 compared to the baseline scenario. Planned actions to mitigate greenhouse gas emissions are conditional on obtaining international funding.”
Congo	“32.19% in the conditional scenario and 21.46% in the unconditional scenario in 2030 based on the reference BAU scenario”
Cook Islands	“81% emissions reduction in the electricity generation sector by 2030, 48% between 2021–2030 conditional on receiving external support, relative to 2006”
Cuba	“Increase forest cover to 165 thousand hectares or 33% coverage (conditional); 80 thousand hectares (unconditional)”
Co[^]te d’Ivoire	“An unconditional objective reduction of 30.41% corresponding to a reduction of thirty-seven (37) million tonnes of CO ₂ equivalent by 2030 compared to the scenario of reference; while the conditional target is raised to 98.95% (unconditional and conditional measures) by 2030 compared to the reference scenario.”
North Korea	“52% emissions reductions, 36% conditional on international cooperation”
Democratic Republic of the Congo	“21% reduction in total GHG emissions compared to the BAU in 2030 (19% conditional, 2% unconditional)”

Country	Conditional Target
Djibouti	“40% reductions in GHG emissions by 2030, and an additional 20% emissions reductions on the condition of new funding sources”
Dominica	“a total greenhouse gas emissions reduction of 45% below 2014 levels by 2030. This contribution is conditional upon receiving timely access to international climate change financing, technology development and transfer, and capacity building support for priority adaptation and mitigation measures.”
Dominican Republic	“27% reductions in GHG emissions, (7% unconditional) with 20% conditional on external finance”
Ecuador	“20% reductions in GHG emissions (9% unconditional) below BAU scenario, with 11.9% conditional by 2025”
El Salvador	“819 Kton CO2 Eq reduction in emissions in the energy sector, below 2019 baseline scenario by 2030, (640 Kton CO2 Eq unconditional)”
Equatorial Guinea	“20% by 2030, 50% by 2050, compared to 2010 levels, conditional on support being favourable, predictable, and that climate financing mechanisms become viable and distortions in existing market mechanisms are corrected. Favorable technical and financial support is necessary from both the national government and the international community.”
Eritrea	“38.5% by 2030, compared to BAU reference year 2010, conditional on additional support (12% unconditional)”
Eswatini	“14% economy-wide emissions reductions by 2030 compared to baseline scenario, 5% unconditional”
Ethiopia	“68.8% reductions (-277.7 Mt CO2eq) in GHG emissions by 2030 against the revised BAU, 14% unconditional”
Fiji	“30% of BAU CO2 emissions from the energy sector by 2030, as compared to reference year, 10% unconditional”
Gabon	“Gabon commits unconditionally to remain carbon-neutral up to and beyond 2050. Conditionally, Gabon will strive to maintain its net absorption of carbon at a minimum of 100 million tonnes of CO2 equivalent per year beyond 2050.”
Gambia	“49.7% reduction compared to the expected baseline level in 2030, 2.6% unconditional”

Country	Conditional Target
Georgia	“50–57% below 1990 level of domestic GHG emissions, conditional on international support, 35% unconditional”
Ghana	“39.4 MtCO ₂ e GHG reductions by 2030 if financial support from the international and private sector is made available to cover the full cost”
Grenada	“40% below 2010 levels by 2030, conditional on external funding”
Guatemala	“22.6% of its total GHG emissions from the base year 2005 projected to the year 2030, 11.2% unconditional.”
Guinea	“The conditional objective (CDN+) is...17.0% emissions reductions (excluding LULUCF) compared to the trend scenario, i.e. a growth in emissions of 4% per year over the 2020–2030 period”
Guinea-Bissau	“30% decrease in GHG emissions by 2030 compared to reference scenario, 10% unconditional”
Guyana	“Conditional avoided deforestation from reforms in the timber and mining industries (Guyana can continue to avoid emissions in the amount of 48.7 MtCO ₂ e annually if adequate incentives are provided). Given our solar, wind and hydropower potential and relatively small national demand, we believe that with adequate and timely financial support, Guyana can develop a 100% renewable power supply by 2025.”
Haiti	“26% reduction in GHG emissions by 2030 compared to reference scenario, 5% unconditional”
Honduras	“16% emissions reductions by 2030 compared to BAU scenario, conditional on international technical and financial support”
India	“Achieve 40% cumulative electric power installed capacity from nonfossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance”
Indonesia	“41% reduction target below the business as usual scenario by 2030, 29% unconditional”
Jamaica	“28.5% reduction relative to business-as-usual emissions in 2030, 25.4% unconditional”
Jordan	“31% GHG emission reduction by 2030 compared to Business As Usual (BAU) scenario in 2012, 5% unconditional.”

Country	Conditional Target
Kazakhstan	“A 25% reduction in GHG emissions by 31 December 2030 compared to the base year 1990, 15% unconditional”
Kenya	“32% emission reduction by 2030, relative to BAU scenario of 143 MtCO ₂ eq, conditional on international support for 87% of the budget”
Kiribati	“61.8% emissions reductions below BaU projections by 2030, 12.8% unconditional”
Kyrgyzstan	“43.62% emissions reductions under business as usual scenario by 2030, 15.97% unconditional”
Lebanon	“30–31% emissions reductions below BAU scenario by 2030, 15-20% unconditional”
Lesotho	“35% emissions reductions below BAU scenario by 2030, 10% unconditional”
Liberia	“64% emissions reductions below BAU by 2030, 10% unconditional”
Madagascar	“14% emissions reductions and 32% increase in GHG absorption below BAU scenario by 2030. These objectives continue to be conditioned by international supports (financial, technology, capacity building), which will be received from the international community (conditional contributions).”
Malawi	“51% reduction in GHG emissions compared to BAU in 2040, 6% unconditional”
Maldives	“26% reduction of emissions in 2030 (under a BAU) in a conditional manner”
Mauritania	“Carbon neutral by 2030, 11% net reduction compared to BAU by 2030 unconditional”
Mauritius	“The implementation of mitigation and adaptation actions as identified in this NDC is unconditional as well as conditional on external financial support received. The quantified mitigation target is equivalent to 40% reduction of GHG emissions by 2030 compared to the BAU scenario”
Mexico	“Conditional commitments would allow for increased emissions mitigation, reaching a target of up to 36% reduction of GHG emissions and 70% of black carbon emissions by 2030 compared to the BAU scenario”

Country	Conditional Target
Micronesia, Federated States of	“35% reductions below emissions in the 2000 base year, 28% unconditional”
Mongolia	“27.2% emissions reductions by 2030 excluding forestry, 22.7% unconditional, compared to the projected emissions under a business as usual scenario for 2010”
Morocco	“45.5% emissions reductions by 2030 compared to reference scenario, including an unconditional objective of 18.3%.”
Mozambique	“40 MtCO ₂ eq emissions reductions between 2020 and 2025; 1.2 tCO ₂ eq per capita emission reductions by 2025 ... conditional on the provision of financial, technological and capacity building support from the international community”
Myanmar	“Myanmar’s total emissions reductions contributions as a part of its NDC are 244.52 million tCO ₂ e unconditionally, and a total of 414.75 million tCO ₂ e, subject to conditions of international finance and technical support by 2030”
Namibia	“89% to 91% emissions reductions (conditionally) by 2030 compared to the (BAU) baseline over the 2015–2030 period.”
Nauru	“Achieving net zero greenhouse gas emissions by 2050, contingent on the effective mobilization of sufficient international financial, technical and capacity building support”
Nepal	“Activity-based targets and policy targets in key sectors, including emissions reduction in some sectors, e.g. 15,000 MW of clean energy generation by 2030, 5,000 MW unconditional”
Nicaragua	“Nicaragua will increase its ambition in the forestry sector under the condition of receiving sources of international financing for the implementation of programs and projects that contribute to the fulfillment of the country’s goal.”
Niger	“The AFAT sector, Conditional Reductions: 14.60% (BAU-2025) and 22.75% (BAU 2030). The sector Energy, Conditional Reductions: 48% (BAU-2025) and 45% (BAU-2030).”
Nigeria	“47% emissions reductions below BAU by 2030, conditional on international support; 20% (incl. LULUCF) unconditionally”

Country	Conditional Target
Niue	“Niue will achieve a 38% share of renewable energy of total electricity generation by 2020. Conditional upon additional international assistance, Niue could increase its contribution to an 80% share of renewable energy of total electricity generation, or to even higher levels, by 2025.”
Oman	“7% emissions reductions below BAU scenario, 4% unconditional”
Pakistan	“50% emissions reduction of projected emissions by 2030, 15% unconditional”
Papua New Guinea	“Energy: carbon neutrality within the energy industries sub-sector by 2030. LULUCF: by 2030 reduction in annual emission from deforestation and forest degradation, due to agriculture expansion and commercial logging of 10,000 Gg CO ₂ eq compared to 2015 level. The contributions outlined in this NDC are all conditional.”
Paraguay	“20% absolute GHG emissions reductions by 2030, 10% unconditional, base emissions of the INGEI 2000 of the 2CN)”
Peru	“8% absolute reduction in emissions level by 2030, 6% unconditional”
Philippines	“72.29% emissions reductions 2020–2030 for agriculture, waste, industry, transport, and energy against BAU for the same period of 3,340.3 MtCO ₂ e, 2.71% unconditional”
Moldova	“88% emissions reductions compared by 1990 level by 2030, 70% unconditional”
Rwanda	“38% reduction in GHG emissions compared to BAU in 2030, equivalent to an estimated mitigation level of up to 4.6 million tCO ₂ e in 2030, 16% unconditional”
Saint Kitts and Nevis	“61% economy-wide emissions reductions by 2030 relative to 2010, mostly conditional upon adequate international financial and capacity building support”
Saint Lucia	“7% emissions reduction in the energy sector relative to 2010, by 2030,” with substantial international support.
Samoa	“26% emissions reductions in 2030 compared to 2007 levels (or by 91 Gg CO ₂ e) compared to the new reference year once Samoa’s GHG emissions inventory has been updated”, conditional on external financial support

Country	Conditional Target
Sao Tome and Principe	“27% emission reduction by 2030, estimated GHG emissions reduction of 109 kTCO ₂ eq...conditional to the availability and mobilization of external funding with the aim of reducing projected emissions in the business-as-usual (BAU)”
Senegal	“29.5% emissions reductions below business as usual by 2030, 7% unconditional”
Seychelles	“Conditional target emission is 73.7% (820.7 ktCO ₂ e) emissions reductions relative to business-as-usual emissions in 2030.”
Sierra Leone	“Conditional contributions include specific emissions-reduction actions, such as policies or mitigation actions like advancing a feed-in tariff for renewable energy technologies, phasing out fossil fuel subsidies, gradually converting to no-tillage agricultural practices, reducing methane emissions from wastewater and providing a nutrient-rich digestate that can be used as a fertilizer, developing incineration facilities to reduce CH ₄ emissions from landfill sites, investment in reuse and recycling technology, emobility and mass transportation initiatives, and new REDD+ and blue carbon initiatives.”
Solomon Islands	“78% emissions reductions by 2030, compared to BAU projection, 33% unconditional”
Somalia	“30% emissions reductions by 2030 below projected BAU scenario, conditional”
South Sudan	“109.87 million tonnes of est. emissions reductions (tCO ₂ e), and 45.06 million sequestered tCO ₂ e by 2030,” conditional on international investments
Sri Lanka	“14.5% GHG emissions reduction with respective to BAU scenario for the period 2021-2030, 4% unconditional”
Palestine	“26.6% emissions reductions under BAU levels by 2040 if Israeli occupation ends, 17.5% unconditional”
Suriname	“Conditional mitigation contributions in the forest, electricity and transport sectors”
Syria	“The ratio of renewable energy is expected to reach 10% of power production by 2030 in case a real support by international donors is provided in order to sustain the existing initiatives and implement projects on the ground.”

Country	Conditional Target
Tajikistan	“40–50% emissions reductions below 1990 levels by 2030, 30–40% unconditional”
Thailand	“25% emissions reductions below BAU scenario by 2030, 20% conditional”
Timor-Leste	“Timor-Leste has made a conscious decision not to have a target for emission reduction, but outline the commitment to reducing emissions through various activities in sectors like transport, agriculture, forestry and energy. This will require international climate finance and assistance to develop an economy-wide GHG inventory.”
Togo	“20% emissions reductions, 11.4% unconditional”
Trinidad and Tobago	“Additional reduction achievable under certain conditions which would bring the total GHG reduction to 15% below BAU emission levels by December 31, 2030.”
Tunisia	“45% drop in carbon intensity in 2030 compared to reference year 2010, 27% unconditional”
Turkmenistan	“20% reduction in its greenhouse gas emissions in 2030 under the BAU scenario, relative to 2010 emissions,” conditional on international support
Tuvalu	“Unspecified conditional further reductions, unconditional 60% emissions reductions in energy sector below 2010 level by 2025”
Uganda	“Economy-wide mitigation target in 2030 of 24.7% reduction below the Business As Usual (BAU). The 5.9% (unconditional target) BAU emission reduction by 2030 will be facilitated by domestic resources, and the 18.8% (conditional target) is subject to the availability of means of implementation from international support such as financial resources, capacity-building, and technology transfer.”
Tanzania	“35% emissions reduction by 2030 below BAU scenario, 30% unconditional”
Uruguay	“Conditional economy-wide reductions in emissions intensity and specific reductions in food and forestry sectors”

Country	Conditional Target
Vanuatu	“30% energy sector emissions reductions below BAU, 100% electricity subsector emissions reductions by 2030, conditional upon international support”
Venezuela	“20% emissions reductions below BAU by 2030”
Vietnam	“27% emissions reductions compared to BAU scenario by 2030, 9% unconditional”
Zambia	“47% emissions reductions under BAU scenario by 2030, 25% with business as usual levels of international support”
Zimbabwe	“40% per capita GHG emissions reductions economy-wide by 2030 compared to BAU, fully conditional”