Online Appendix:
What Stymies Action on Climate Change?
Religious Institutions, Marginalization, and Efficacy in Kenya

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Environmental Efficacy in Kenya in Comparative Context

Figure A1 presents environmental efficacy in Kenya in comparative perspective, using data from the Wave 6 Afrobarometer. The figure demonstrates that Kenya is among the countries on the continent with highest levels of environmental efficacy; it has among the highest percentage of citizens saying that ordinary citizens "can do a lot" and the lowest percentage of citizens saying that ordinary citizens "can do nothing."
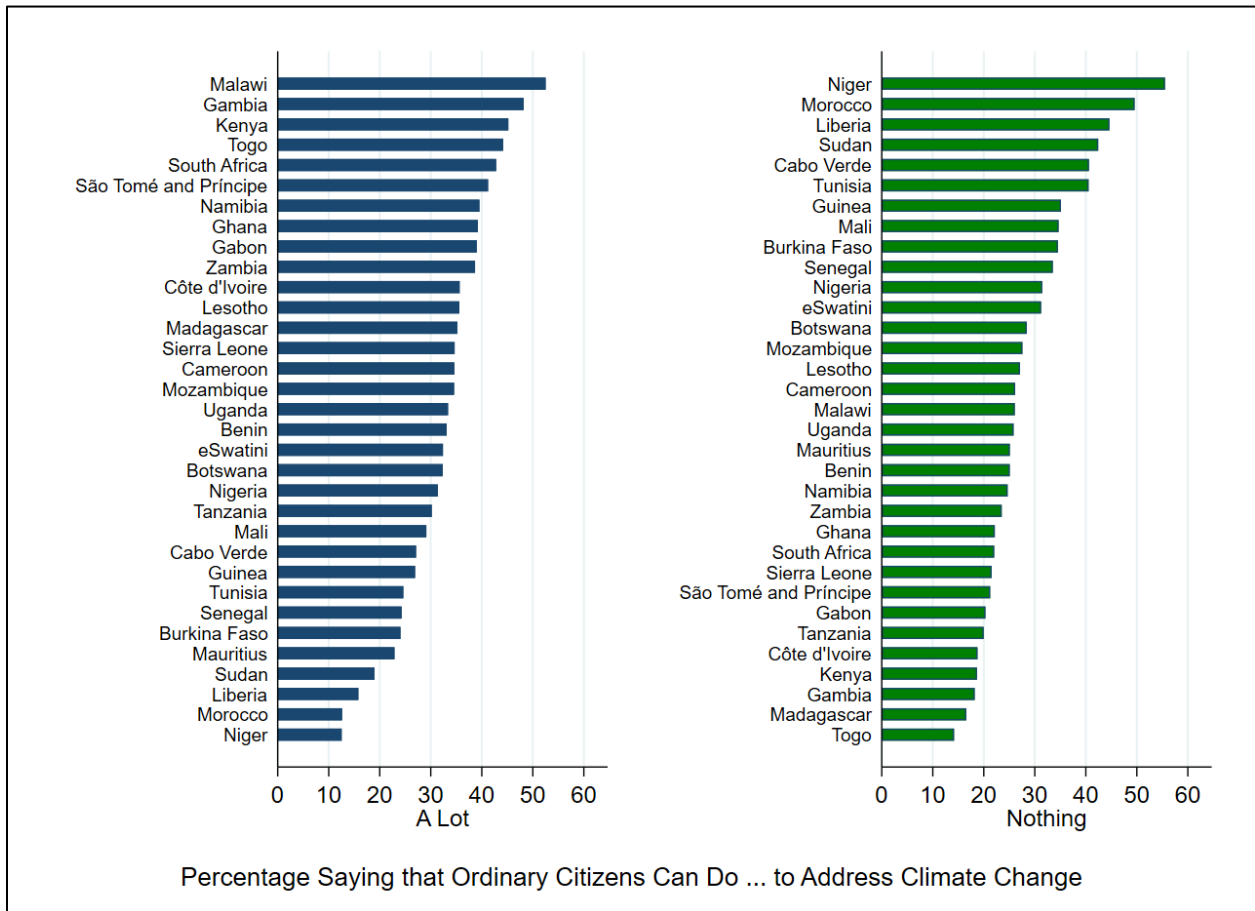

Figure A1. Environmental Efficacy in Kenya in Comparative Perspective, from the Wave 6 Afrobarometer

Qualitative Research Design

Fieldwork in Kenya for qualitative data collection took place between June 2, 2018 and June 17, 2018. The project received Institutional Review Board certification from Iowa State University (IRB ID: 18-803) as well as a permit from the Kenyan National Commission for Science, Technology, and Innovation. Data collection included interviews with 16 religious leaders and 9 focus groups with congregants. All interviews were conducted in English or Swahili. The field research team included two co-authors and two Kenyan research assistants. Interviews were recorded with permission and transcribed.

Sample Methodology

The study targeted three locations within Kenya: Kilifi, Central Nairobi, and Dandora. The locations were designed to represent differences in socio-economic status and urban/rural divides (see section: *Methods and Data* of the paper). Kilifi county was selected in order to include participants from a predominantly Muslim county along the Kenyan Coast that was not also predominantly ethnic-Somali in order to capture ethnic and geographic diversity within our sample.

Within each of these locations, we selected 3 Muslim, Pentecostal, and/or Catholic congregations. In Dandora and Central Nairobi, we included one congregation from each denomination. In Kilifi, we included 2 Muslim and 1 Pentecostal congregations. This decision reflects the need to balance representation of Muslims and Christian denominations within our sample. We had a total 4 Muslim congregations and 5 Christian congregations in our sample. Given these parameters, the selection of congregations was largely determined by convenience and the willingness of clergy to participate.

In each congregation, we sought interviews with two religious leaders. These leaders included the pastor, priest, or imam and another leader of his choosing. The second leaders held titles described as "second pastor," "second imam," "mosque director," and "group leader," among others. The final sample of leaders was 16; in one Muslim congregation in Kilifi, the leaders refused to participate, but consented for congregants to participate in the focus group.

Focus group participants were a non-random sample of members of the religious community. They were selected by the religious leader or, more often, by another community leader on his behalf. Consequently, the samples were composed of community members who were well-connected to the institution or more likely to be on site during the scheduled focus group, such as members of religious committees or regular worshipers. The focus groups were designed to be 8-10 congregants of mixed ages and genders. The actual focus groups were all mixed-gender, but the age distribution was uneven: some groups were composed of primarily younger participants and while others were composed of primarily older participants. The groups varied in size between 6 and 11 participants across 9 groups, for a total of 79 focus group participants.

Interview Methodology and Questionnaires

All interviews were semi-structured and used the same questionnaire across congregations. There were slight differences between the leader and the focus group questionnaires.

All interviews began with a question to gauge beliefs about climate change: *Some say that the weather in Kenya has been changing in the past 10 years or so. Others disagree. Has the weather or the climate been changing around here?* This question captures perceptions of climactic variability beyond the label of "climate change." All participants reported that there were signs of climate change in their communities, with the exception of one participant in the Kilifi Pentecostal focus group – indicating nearly unanimous belief in the existence of changing climate over the last 10 years.

The focus group questionnaire then proceeded with two sections: perspectives on climate change and beliefs about climate change solutions. The first section asked how they knew the climate was changing and why it was changing. This section specifically prompted for causal narratives related to climate change including the role of God's will and humans' use of resources. We also asked about where they had heard climate change discussed. The second section prompted beliefs about possible solutions to climate change. The questions in this section of the questionnaire asked participants what they think could be done to prevent more climactic changes. We asked participants what the role of the church/mosque should be in relation to climate change and whether they should contact politicians. All focus groups concluded with the opportunity for participants to share any other thoughts about perceptions of climate change.

The leader questionnaire featured the same two themes as the focus group questionnaire. However, it also included an additional set of questions about the leader's communication with the congregation. These questions include whether the leader had heard people within their community discussing issues related to climactic variability; whether the leader had shared any messages related to climate change in a sermon; and what shapes their decisions to discuss climate change with congregants.

Variable Coding for the Afrobarometer Analysis

Who Receives the Question on Environmental Efficacy?

As noted in the main text, only a portion of respondents received the question on environmental efficacy. First, the 1,599 respondents in the full sample were asked whether they had heard of climate change; 1,023 said they had. Next, the 1,023 respondents who had heard of climate change were asked whether they thought it needed to be stopped; 751 said yes to the follow-up question. Those 751 respondents were then asked whether they thought that ordinary Kenyans like themselves could do something to stop climate change.

It is important to ask whether the respondents who received the question on environmental efficacy differ in relevant ways, and in particular with respect to religion, from those who did not receive the question. In Table 1, we present results from three logistic regression models predicting whether respondents said they had heard of climate change; whether they said that it needed to be stopped (conditional on having heard of climate change); and whether they received the environmental efficacy question. Most importantly, the results show that religious affiliation is uncorrelated with receiving the environmental efficacy question. Education and an interviewer-coded measure of whether the respondent had difficulty answering questions in the

survey interview are the two strongest and most robust determinants of response. In addition, region appears to be associated with belief that climate change must be stopped.

Other Variable Coding in Afrobarometer Analysis

The main text and prior section discuss coding of the key dependent variables. Our key independent variable is religious affiliation, based on an item asking, "What is your religion, if any?" Interviewers coded open-ended responses into 34 categories. Unfortunately, as Sperber and Hern (2018) discuss, distinguishing among Christians is complicated in the Afrobarometer. The final interviewer checkbox is "Christian only (i.e., respondents says only 'Christian,' without identifying a specific sub-group)"—a category likely to catch many Pentecostals (given that their congregations are often non-denominational), as well as Christians who do not attend church, and misclassified members of other Christian traditions. In the analysis presented in the main text, we recode the interviewer-coded values into a three-category variable: Muslim, Christian, and None/Other. However, in some analysis in the appendix, we use a five-category variable: None; Catholic; Protestant and Evangelical; Pentecostal, Independent, and Other Christian; and Muslim.

In some analyses, we interact Muslim religious identification with two attitudinal variables: *trust in religious leaders* and *trust in state institutions*. The prompt for these items began, "How much do you trust each of the following, or haven't you heard enough about them to say?" Whereas trust in religious leaders comes from a single item, trust in state leaders is an index of trust in the President, Parliament, County Government, and Courts. Answers are coded on a four-point scale, from "not at all" to "a lot," and both variables are recoded from 0 to 1.

To account for other identities that intersect with identification as Muslim, we include indicators for Masai/Samburu and Somali ethnicity, region, and pastoralism. Pastoralists practice semi-nomadic or extensive livestock rearing. Unfortunately, the Afrobarometer does not measure pastoralism; our proxy is an indicator for rural residents who are Somali, Masai/Samburu, Turkana, or Pokot. We also include two subjective measures of ethnic identification, both rescaled from 0 to 1: *ethnic grievances*, from a question asking "how often, if ever," members of their ethnic group are "treated unfairly by the government"; and *Kenyan versus ethnic identification*, measured on a five-point scale where high values indicate stronger ethnic over Kenyan identification. Finally, our demographic controls include educational level, gender, age, urban versus rural status, and an index of hunger (based on responses to a question asking "Over the past year, how often, if ever, have you or anyone in your family gone without enough food to eat?").

To explain our efficacy findings, we also examine perceived causes of climate change. All respondents who had heard of climate change were asked, "Which of the following do you think is the main cause of climate change, or haven't you heard enough to say?" Two response options were read aloud: "Human activity, like burning fuel and other activities that pollute the atmosphere" and "Natural processes." The interviewer also coded if the respondent volunteered "both" or "neither of these."

We also rely on two quantitative indicators of issue salience. Our first indicator of issue salience is from a question asking whether the climate has improved, gotten worse, or stayed the same in

the past 10 years. Responses are scaled as an ordinal variable, and modeled using ordinal logistic regression. The second indicator of issue salience comes from responses to a question asking, "In your opinion, what are the most important problems facing this country that government should address?" Responses were open-ended, and the interviewer coded the first three answers provided. The questionnaire did not have a category specifically for climate change; instead, we treat four (out of 32) coded responses as being related to climate change: "farming/agriculture," "food shortage/famine," "drought," and "water supply." We code two dichotomous variables, one indicating whether a respondent mentioned a climate problem as the top issue, and the second indicating that a climate problem fell within their top three issues.

Robustness Checks and Additional Statistical Analyses

Ethnicity as a Determinant of Efficacy

Because religious affiliation and ethnicity are correlated in Kenya, we run a series of robust- ness checks to test whether the negative association between Muslim identity and efficacy can be explained by ethnicity. Table 2 reports results from a full model of environmental efficacy. The final model controls for a long battery of indicators of ethnic identification (some of which are highly collinear with being Muslim); the second control for a measure of ethnic grievances, and the third for a measure of self-identification as Kenyan versus a member of one's own ethnic group. All three models also control for the full suite of demographic controls from the models presented in the main text: pastoralism, region, education, age, gender, urban status, and hunger. The negative and statistically significant effect of being Muslim persists in all three models.

Determinants of Issue Salience

Table 3 reports results from the full models of the three measures of issue salience: a trichotomous variable for whether the climate has improved, stayed the same, or gotten worse; a dichotomous variable for whether the respondent mentions a climate-related issue as the most important problem the government should address; and a dichotomous variable for whether the respondent mentions such an issue as any of the top three most important problems. Though religious affiliation was strongly and statistically significantly related to these three variables in bivariate analysis, the relationship disappears once we control for region. However, the table shows that region of residence, living in a rural versus urban area, and a proxy measure for being a pastoralist are all significantly related to the salience of climate issues. For ease of presentation, the table omits coefficients for Somali and Masai/Samburu ethnicity, which are statistically insignificant after controlling for various aspects of the lo- cation of residence.

Determinants of Belief that Climate Change is Anthropogenic

Table 4 examines whether there are statistically significant differences across religious groups in belief that climate change is anthropogenic (i.e., that humans are its sole or partial cause).

The analysis is limited to the 1,023 respondents who said they had heard of climate change. In total, 62 percent of respondents said that humans were the sole cause of climate change, and another 13 percent said that humans were at least partially the cause of climate change. The

results indicate only a weak relationship between religious affiliation and belief in anthropogenic climate change. Keeping Muslims as the baseline group, there is a weakly significant difference between Muslims and Protestants in one of the two models, but there are no significant difference between Muslims and any other group. Education is by far the strongest determinant of belief in anthropogenic climate change (this variable runs from 0 to 9). We also find some differences between regions in belief that climate change is anthropogenic. For ease of presentation, the table omits coefficients for Somali and Masai/Samburu ethnicity, which are statistically insignificant after controlling for various aspects of the location of residence.

Religious and State Trust as Determinants of Environmental Efficacy

Table 5 presents results from a series of models of environmental efficacy testing the robustness of the relationships among trust in religious leaders, trust in state leaders, Muslim identification, and environmental efficacy. These models further elaborate the results from models 4 and 5 of Table 1 in the main text. The first model in Table 5 in this Online Appendix presents the interaction between religious trust and Muslim identification; the second shows that the relationship is robust to controlling for trust in the state. Finally, the third and fourth models are limited to Muslims; given the small number of observations in those two models, we present the results with and without controls. Across all models, the analysis shows robustly that trust in religious leaders reduces Muslims' environmental efficacy, while trust in state leaders boosts Muslims' environmental efficacy.

Alternative Measure to State Trust: Political Efficacy

Finally, we examine whether our results are robust to using an alternative measure to state trust. We create an index of external political efficacy based on a battery of Afrobarometer questions that begins with the prompt, "How likely is it that you could get the following information from government or other public institutions, or haven't you heard enough to say?" Respondents were presented with the following four scenarios:
- "If you went to the local school to find out what the school's budget is and how the funds have been used."
- "If you went to the county registrar of lands office to find out who owns a piece of land in your community."
- "If you went to the county government office to find out about the county development plan and budgets."
- "If you went to the registrar of companies to find out how to register a new business in your community."

Using these items, we created an index of external political efficacy (alpha = .71), which we rescaled to run from 0 to 1. Table 6 presents a model equivalent to Model 4 of Table 1 in the main text. As we see, external political efficacy strongly conditions the relationship between identification as Muslim and environmental efficacy.

References

Sperber, Elizabeth and Erin Hern. 2018. "Pentecostal Identity and Citizen Engagement in Sub-Saharan Africa: New Evidence from Zambia." *Politics and Religion* 11(4):830–862.

Tables

Table 1: Determinants of Receiving the Question on Environmental Efficacy

	Yes, Had Heard of CC (1,023/1,599)	Yes, CC Must Be Stopped (751/1,023)	Yes to Both (751/1,599)
No Religion	0.641	-0.231	0.352
	(0.453)	(0.575)	(0.438)
Catholic	0.437	0.192	0.439
	(0.306)	(0.422)	(0.297)
Protestant	0.523*	0.139	0.470
	(0.310)	(0.424)	(0.300)
Pentecostal & Other Christian	0.309	0.163	0.307
	(0.288)	(0.400)	(0.281)
CC is Most Imp't Problem	0.017	0.208	0.117
	(0.124)	(0.168)	(0.118)
Difficulty Answering Questions	-2.521***	1.280*	-1.315***
(Interviewer Reported)	(0.373)	(0.653)	(0.375)
Education	0.274***	0.176***	0.273***
	(0.037)	(0.048)	(0.035)
Age	0.005	0.007	0.006
	(0.005)	(0.006)	(0.004)
Urban	0.107	0.310	0.217*
	(0.140)	(0.190)	(0.131)
Hunger	-0.036	-0.102	-0.071
	(0.056)	(0.075)	(0.055)
Male	0.074	0.125	0.115
	(0.118)	(0.158)	(0.112)
Central	-0.122	1.361***	0.533**
	(0.260)	(0.368)	(0.237)
Eastern	-0.008	1.041***	0.500**
	(0.262)	(0.346)	(0.239)
Rift Valley	-0.097	0.134	-0.000
	(0.241)	(0.291)	(0.218)
Nyanza	-0.407	0.219	-0.149
	(0.261)	(0.324)	(0.240)
Western	0.684**	-0.544	-0.026
	(0.300)	(0.333)	(0.268)
North Eastern	-0.298	0.302	-0.056
	(0.408)	(0.572)	(0.404)
Coast	0.173	0.602*	0.447*
	(0.292)	(0.365)	(0.267)
Observations	1565	1010	1565

Results from logistic regression models. Standard errors in parentheses. Constant omitted for ease of presentation. Muslim and Nairobi are baseline categories. * p < .10, ** p < .05, *** p < .01.

Table 2: Determinants of Environmental Efficacy: The Role of Ethnicity

	(1)	(2)	(3)
Muslim	-0.725*	-0.850**	-0.867**
	(0.435)	(0.395)	(0.390)
Pastoralist	-0.579*	-0.835***	-0.808***
	(0.322)	(0.238)	(0.262)
Masai/Samburu	-0.684		
	(0.419)		
Somali	-0.211		
	(0.490)		
Luo	-0.451**		
	(0.205)		
Luhya	-0.167		
	(0.166)		
Kamba	-0.302		
	(0.415)		
Kalenjin	0.045		
	(0.177)		
Kisii	-0.676***		
	(0.235)		
Meru/Embu	-0.500		
	(0.491)		
MijiKenda	-1.019***		
	(0.386)		
Taita	-1.202***		
	(0.383)		
Pokot	-0.276		
	(0.329)		
Turkana	-0.099		
	(0.759)		
Ethnic Grievances		-0.011	
		(0.277)	
Kenyan v. Ethnic ID			-0.273
			(0.424)
Observations	714	743	742

Results from ordinal logistic regression models. Standard errors in parentheses. Cutpoints, region fixed effects, and controls for education, age, gender, urban status, and hunger omitted for ease of presentation. * p < .10, ** p < .05, ***

Table 3: Determinants of Issue Salience

	Climate has Worsened	Top Issue	Among Top 3 Issues
Muslim	-0.063	0.053	0.101
	(0.282)	(0.408)	(0.392)
Masai/Samburu	0.698	0.056	-0.312
	(0.596)	(0.210)	(0.502)
Somali	-0.679	-0.106	-0.004
	(0.458)	(0.900)	(0.536)
Pastoralist	0.153	1.193∗∗∗	1.290∗∗∗
	(0.666)	(0.345)	(0.467)
Central	0.089	-0.085	0.261∗
	(0.125)	(0.191)	(0.146)
Eastern	0.235	1.626∗∗∗	1.218∗∗∗
	(0.158)	(0.241)	(0.155)
Rift Valley	-0.694∗∗∗	0.181	0.368∗∗
	(0.148)	(0.225)	(0.150)
Nyanza	0.331∗∗	0.318	0.380∗∗
	(0.158)	(0.254)	(0.163)
Western	-0.263	-1.449∗∗∗	-0.723∗∗∗
	(0.167)	(0.276)	(0.173)
North Eastern	2.306∗∗∗	1.124∗	1.584∗∗∗
	(0.856)	(0.670)	(0.403)
Coast	0.747∗∗∗	1.443∗∗∗	0.785∗∗∗
	(0.095)	(0.155)	(0.082)
Education	-0.015	-0.183∗∗∗	-0.109∗∗∗
	(0.045)	(0.038)	(0.029)
Age	0.012∗	0.005	0.005
	(0.007)	(0.006)	(0.005)
Urban	0.077	-0.468	-0.391∗
	(0.200)	(0.288)	(0.204)
Food shortage frequency	0.105	0.117∗∗	0.153∗∗∗
	(0.067)	(0.051)	(0.042)
Male	0.184	0.066	0.031
	(0.150)	(0.220)	(0.073)
Observations	1442	1565	1565

Results from ordinal logistic regression models. Standard errors in parentheses. Nairobi is baseline category. Constant and cutpoints omitted for ease of presentation. ∗ p < .10, ∗∗ p < .05, ∗∗∗ p < .01

Table 4: Determinants of Believing Climate Change is Anthropogenic

	Humans Sole Cause of Climate Change	Humans Sole or Partial Cause of CC
Muslim	-0.241	-0.243
	(0.353)	(0.287)
Education	0.102	0.197∗∗∗
	(0.071)	(0.068)
Age	0.006	0.009∗∗
	(0.006)	(0.004)
Urban	0.047	0.177
	(0.150)	(0.213)
Food shortage frequency	-0.018	-0.076
	(0.087)	(0.050)
Male	-0.043	-0.006
	(0.136)	(0.138)
Pastoralist	-0.279	-0.212
	(0.226)	(0.345)
Central	0.002	-0.325∗∗
	(0.094)	(0.150)
Eastern	-0.693∗∗∗	-1.041∗∗∗
	(0.094)	(0.146)
Rift Valley	0.216∗∗	-0.206
	(0.103)	(0.131)
Nyanza	-0.463∗∗∗	-0.409∗∗∗
	(0.089)	(0.133)
Western	0.605∗∗∗	0.587∗∗∗
	(0.101)	(0.169)
North Eastern	0.372	-0.120
	(0.337)	(0.943)
Coast	-0.646∗∗∗	-0.546∗∗∗
	(0.127)	(0.167)
Observations	977	977

Results from logistic regression models. Standard errors in parentheses. Constant
and coefficients for Somali and Samburu/Masai are omitted for ease of presentation. Nairobi is
the baseline category. ∗ p < .10, ∗∗ p < .05, ∗∗∗ p < .01

Table 5: Determinant of Environmental Efficacy: Controlling for Religious Trust

	(1) All Respondents	(2) All Respondents	(3) Muslims Only	(4) Muslims Only
Muslim	2.130** (0.983)	1.063 (0.830)		
Trust in Religious Leaders	-0.070 (0.414)	-0.060 (0.420)	-3.612*** (1.075)	-8.634*** (1.707)
Muslim × Religious Trust	-3.709*** (1.248)	-3.659*** (1.153)		
Trust in State		-0.082 (0.487)	2.008** (0.993)	6.100*** (1.321)
Muslim × Trust in State		1.968*** (0.554)		
Climate Worsening	-0.200** (0.086)	-0.202*** (0.072)		-2.397*** (0.828)
CC Has Human Causes	1.130*** (0.414)	1.152*** (0.427)		5.912*** (1.123)
Masai/Samburu	-0.619* (0.329)	-0.600* (0.337)		
Somali	0.507 (0.361)	0.015 (0.410)		-5.807*** (0.811)
Pastoralist	-0.649** (0.257)	-0.656*** (0.253)		0.080 (0.407)
Education	0.090 (0.068)	0.088 (0.066)		-0.101 (0.362)
Age	0.001 (0.005)	0.002 (0.005)		-0.107*** (0.033)
Urban	0.107 (0.142)	0.126 (0.127)		0.815 (0.814)
Food shortage frequency	-0.146 (0.090)	-0.143 (0.097)		-1.089*** (0.241)
Male	0.085 (0.174)	0.082 (0.175)		0.303 (0.520)
Ethnic Grievances				3.240*** (0.210)
Kenyan v. Ethnic ID				1.619** (0.671)
Observations	710	710	52	49

Source: Afrobarometer Round 7 (2016). Results from ordinal logistic regression models clustered on region. Regional fixed effects and logistic regression cutpoints not shown; standard errors in parentheses. ∗ p < .10, ∗∗ p < .05, ∗∗∗ p < .01

Table 6: Determinant of Environmental Efficacy: Interactions with External Political Efficacy

	Coefficient	Standard Error
External Political Efficacy	0.447*	0.263
Muslim	-1.840***	0.508
Muslim * External Political Efficacy	1.559*	0.861
Climate Worsening	-0.170**	0.069
CC Has Human Causes	1.152***	0.394
Masai/Samburu	-0.613*	0.342
Somali	0.238	0.373
Pastoralist	-0.624**	0.262
Central	0.675***	0.108
Eastern	0.678***	0.169
Rift Valley	0.480***	0.101
Nyanza	0.695***	0.113
Western	-0.499***	0.109
North Eastern	-0.093	0.246
Coast	0.107	0.195
Education	0.074	0.065
Age	0.002	0.005
Urban	0.133	0.127
Food shortage frequency	-0.143	0.091
Male	0.081	0.174
Cutpoint 1	*0.040*	*0.922*
Cutpoint 2	*1.971***	*0.887*
Observations	*714*	

Source: Afrobarometer Round 7 (2016). Results from ordinal logistic regression models clustered on region. * p < .10, ** p < .05, *** p < .01