

Where the Debate between Development and Environmentalism Gets Personal: Public Opinion, Vulnerability, and Living with Extraction on Ecuador's Oil Frontier

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The predominant literature on environmental attitudes comes from developed country experiences and suggests that economic structures and post-material values will be most likely to foster environmental concern.¹ Yet a growing literature on developing country experiences suggest that this explanation is incomplete because it fails to account for physical vulnerability to environmental degradation and for the degree of damage done to the environment by developmental activities. This article discredits the importance of economic structures and post-material conditions in generating environmental concern in developing areas, hypothesizing that other factors will be more important, including: 1) physical proximity to environmental degradation such as from mining and oil operations, and 2) the level of vulnerability to ecosystem variance given an individual's dependence upon the ecosystem for their livelihood. Furthermore, we find that environmental concerns, when they occur, may be mitigated by the expectation of economic benefits.

To fully understand environmental concern in the developing world, we must consider the evolving nature of threats posed to the environment in these areas. Specifically, the neo-extractivist model of development adopted by many Latin American and other developing countries² places the threat of environmental degradation literally in the backyard of certain communities. Inglehart and his colleagues³ have emphasized the role of materialism in pro-environmental attitudes, thereby implying that in less affluent and developing economies, like Ecuador, where the majority of individuals have unmet material needs, environmentalism might be sacrificed for economic development. However, this expectation does not account for proximate threats to individual livelihoods posed by mining and oil operations. Mining and oil drilling can result in pollution, divert water flows, and force the relocation of entire communities,

threatening local agrarian economies. In this article, we use the results of our original nationwide survey in Ecuador to assess the extent to which two related but distinct issues – environmental degradation from neo-extractivism and vulnerability to ecosystem variance – determine environmental attitudes.

Latin America is said to be responsible for some 20 percent of the world's extractive conflicts,⁴ and within this geographical region, Ecuador has an extensive representation, with perhaps the highest number of conflicts per capita; it has only four percent of Latin America's population, but some eight percent of the region's extractive conflicts. Moreover, it is a quintessential neo-extractivist state where a leftist president has financed extensive social welfare provision through extraction.⁵ The leftist populist Ecuadorian government (if not that country's citizens) has harnessed the gains from extraction there by using oil revenues (some 53 percent of total exports) to nearly double social spending from 5 percent of GDP in 2006 to 9.85 percent of GDP in 2011.⁶ Environmental politics have been a central part of the public discussion during the Correa presidencies (2007-present), as have debates about extraction and how it would affect some of the world's most varied ecosystems. We argue that our findings underscore the importance of environmental vulnerability over traditional structural explanations of environmental attitudes. Furthermore, we propose that our arguments apply more broadly to other Latin American countries where the debate over extraction is raging, as well as other nations vulnerable to environmental degradation.

Many neo-extractivist governments claim to promote what has been deemed a “democratic developmental” state, which in addition to expanding the economy, also “builds human

capabilities, promotes sustainable development, and seeks feedback from civil society”.⁷ In Ecuador, the administration of President Rafael Correa claims to implement the democratic developmental model by including the rights of Mother Nature (*Pacha Mama*) in the 2008 constitution, evaluating environmental impacts, and respecting the rights of communities by utilizing prior consultation and environmental impact assessments before undertaking extractivist activities. Indeed, Correa claims to adopt a developmental model based on the indigenous concept of *sumak kawsay* (*buen vivir* or harmonious living). As aptly summarized by Kauffman and Martin,⁸ this concept bypasses the Western duality where humans dominate or conserve nature, because humans are believed to be an active part of nature rather than separate from it. Under *sumak kawsay*, “[r]ather than a linear progression of accumulation, development is understood as the attainment and reproduction of the equilibrium state of *buen vivir*, which refers to living in harmony with nature”.⁹

However, scholars question the democratic nature of contemporary Ecuador.¹⁰ We propose that Ecuador’s model is better conceptualized as “populist developmentalism” to account for President Correa’s increasingly authoritarian “populist polarization”.¹¹ Given the emphasis that Correa has placed on *sumak kawsay* and harmonized development¹² and his populist tendencies, Ecuador is an excellent case for analyzing the extent to which developmentalism mitigates environmental concern, or at least offsets this concern with concrete benefits. Using the results of our survey, we find that Ecuador’s extractive-led developmental model has done little to balance environmental concerns with economic demands – or attain *sumak kawsay* – in the minds of the public, and we support our survey findings with extensive interviews throughout Ecuador.

In the following sections, we formalize hypotheses to argue why the poor, like their affluent nation post-materialist counterparts, often care deeply about the environment. We then discuss how we use our survey to conceptualize objective vulnerability – as access to water, subsistence farming, and reliance on ecotourism – and proximity to extraction. Ecuador is a true laboratory for such questions, because the northern part of the Amazon region has been drilled extensively for oil but with notorious environmental degradation,¹³ the central part of the Amazon region is in the process of being leased in oil blocks for drilling, and the southern part of the territory is a pristine rainforest untouched by oil extraction.¹⁴ In other words, Ecuador affords great variation in respondent exposure to environmental vulnerability and extractivism, and we were able to exploit this in our survey sampling strategy (discussed in Appendix). After operationalizing our hypotheses and discussing our statistical findings, we utilize extensive interviews with leaders to further support our arguments.

Hypotheses: Vulnerability, Extractivism, and Concern for the Environment

Vulnerability theory, mostly a tool for analysis by geographers, seems ripe for consideration by political scientists as a source of political attitudes. To Adger,¹⁵ vulnerability (“the susceptibility to be harmed”) is the flip side of resilience, “the magnitude of disturbance that can be absorbed before a system changes to a radically different state as well as the capacity to self-organize and the capacity for adaptation to emerging circumstances.” Still, Adger states that there have been few syntheses of social and ecological factors in considerations of vulnerability, and acknowledges the challenges of “developing metrics that incorporate both human well-being and recognize the relative and perceptual nature of vulnerability”.¹⁶ While a set of indicators linking

ecological and social/political vulnerability has not yet been found, in this article we follow Carlin, Love, and Zechmeister¹⁷ in seeking to use public opinion to study these issues.

Vulnerability is particularly relevant to the study of environmentalism in developing areas because for many poor populations, access to clean water, biodiverse forests and uncontaminated land dictate peoples' subsistence as well as their quality of life. Thus we argue that the motivation for environmentalism among the poor stems from "a material interest in the environment as a source and a requirement for livelihood".¹⁸ More specifically, individuals may be objectively vulnerable to environmental damage because they depend upon the environment for their livelihood, or because they lack basic resources such as water and energy and are therefore increasingly vulnerable to environmental change.

Furthermore, scholars of social movements,¹⁹ geography,²⁰ and even conflict²¹ have identified resource scarcity as another source of vulnerability and an important motivation for collective action. In particular, water shortages and the diminishment of other resources lead to vulnerability. Individuals perceive vulnerability as the extent to which they depend upon natural resources for their livelihoods, or the extent to which they believe themselves and their families to be impacted by environmental change. Our first hypothesis is thus:

Hypothesis 1 – Role of Objective Levels of Vulnerability

An individual's objective vulnerability to environmental change – or the extent to which his/her livelihood depends on the environment – is expected to increase a respondent's level of concern over the environment.

Separate from, but related to, vulnerability, is the effect of resource extraction on individuals' environmental concern, a hypothesis that fits more broadly within literature on the resource curse. Recent work in this area, such as Arce,²² building on Paler²³ and Ross,²⁴ extend the argument that natural resource abundance harms national economies. For example, Arce²⁵ addresses the micro-level effects of extraction on social conflict and studies movements seeking to benefit from extraction or halt it and its resultant degradation. Building upon these ideas, our second hypothesis, presented below, is based on claims²⁶ that 1990s neoliberal reforms in Latin America demobilized labor and other traditional groups, but opened spaces for indigenous communities and other new groups seeking to control natural resources.²⁷ In Latin America, anti-extraction protests reached their zenith near the Peruvian town of Bagua, in 2009, where 32 people were killed and hundreds injured.

Extensive oil production has hindered nations' environmental performance, possibly due to the expectations such oil production brings for economic development, and how the gains from that production get distributed.²⁸ Additionally, in the Andean region, "the negative environmental and social externalities brought about by the boom in the exploration and development of hydrocarbons reserves, and the impact these have had on local communities, constitute the main trigger of local conflicts today".²⁹ Beyond triggering actual conflicts, we believe that the possibilities of hydrocarbon production – with all its attendant environmental, political, social and economic complications – becomes a focal point in communities which then frames their environmental attitudes.

Hypothesis 2 – Role of Proximity to Extraction

Respondents in localities where resource extraction has been undertaken or is debated are likely to express greater concern for the environment.

Extractivist efforts can harm the land and water which poor, rural, and indigenous communities depend upon for their livelihoods, but extractivism is also promoted by developing-area governments as a means of economic advancement. Mining and oil contracts often stipulate that a percentage of royalties be redistributed back to local communities as development projects.³⁰ Indeed, the increasingly state-dominated neo-extractivist efforts across the Andean region have restructured the economies of these countries, creating an unprecedented level of development driven by royalties from the extraction of natural resources for export. The focus on development across Latin America has increasingly shifted “from the industrial ambitions and actors of earlier developmentalism to instead seek to build human capabilities and address sustainability”.³¹ Deeming this new form of state-focused development “democratic developmentalism,” Hochstetler and Tranjan³² recognize that states are increasingly concerned with broad-based monitoring and feedback from civil society. Given these efforts, we might expect there to be little tension between developmentalism and environmental concern, even for extractive-led development. If the state is mitigating environmental damage, then concern for the environment can co-exist with the desire for developmental benefits drawn from extraction.

The current administration of President Rafael Correa in Ecuador has certainly implemented an extraction-led developmental model by distributing unprecedented public services – such as roads, schools, and clinics – using funds received from the oil export surplus. Correa has also undertaken a range of symbolic gestures to win support of the indigenous community, whose

lands contain much of the mineral wealth in Ecuador, and who united in 1998 and 2000 to overthrow two separate presidents. Along these lines, Correa agreed to recognize the rights of Mother Nature (*Pacha Mama* in the indigenous language of kichwa) in the 2008 constitution, developed mechanisms to evaluate environmental impacts, and sought to respect the rights of communities by implementing prior consultation before undertaking extractivist activities.

However, Correa's use of extraction-led developmentalism has largely been viewed as motivated by populism and as propaganda by a variety of communities facing the threat of extractivism. As such, oil drilling and mining are highly politicized in Ecuador. Because Correa has not successfully promoted "environmentally-friendly" extractivist development, we posit that individuals who expect extraction to reward them with economic benefits – in the form of employment opportunities, development projects, or even community-level cash transfers – might be less concerned for the environment in the face of extractivism. Indeed, economic self-interest has effects on a wide range of attitudes, particularly when individuals perceive the consequences of political activity to be relevant to their own economic situation.³³ In states like Ecuador, then, where extraction is not done in environmentally-friendly ways, environmental concern expressed by those living in areas where extraction could occur should dissipate with the belief that extraction has economic benefits.

Hypothesis 3 – Role of Expectation that Extraction Has Benefits

Proximity to extraction should lead respondents to have increased environmental concern, but that positive effect should dissipate for individuals that expect extraction to benefit their country.

Within the broader, overarching debate between proponents of economic development and advocates of environmental protection, these three hypotheses are separate, at least in international debates. However, at the local level, the hypotheses may, in reality, have some conceptual overlap. Whether the state offsets damages from extraction by distributing public spending in extractive areas is the mechanism which relates these two hypotheses. It bears mention also that vulnerability represents those who depend inordinately on the environment for their livelihoods or feel endangered by threats to the habitats where they live, and that while not excessively correlated with the extraction variables, poorly regulated extraction can contribute to respondents' sense of vulnerability.

Case Selection and Survey Methodology

Ecuador was selected as the site for the survey of dispositions towards the environment for several reasons. Ecuador is a critical case for assessing how vulnerability, extractivism, and the rhetoric surrounding extractive developmentalism shape environmental attitudes. Like a majority of countries across Latin America, citizens in Ecuador experience high levels of income inequality, and live in a diverse set of circumstances that determine their vulnerability to environmental change. Such conditions allow us to assess the extent to which individual-level factors, such as vulnerability and exposure to extractivism, influence concern for the environment. Ecuador has a vast range of ecosystems experiencing a range of vulnerabilities, a wide array of respondents from urban and rural areas, different religious groups, and a wide range of ethnic identities. Furthermore, a great distinction exists in the oil-rich Amazon area

between the already-drilled north, the central Amazon, where drilling is being initiated and debated, and the undrilled south.

The nationwide survey was conducted in Ecuador between March and June 2014 after several focus groups and trial questionnaires were administered throughout different parts of the country in January 2014. The survey was administered face to face in three separate samples (with each stratified down to census blocks): 1200 to the urban Ecuador population usually polled (300 each in Quito, Guayaquil, Cuenca, and Manta/Portoviejo); 600 to rural dwellers in rural areas of the nation's central Andean indigenous region provinces (150 each in Azuay, Pichincha, Imbabura, and Tunguragua), and 750 in provinces located in the Amazon region (150 each in Napo, Sucumbios, Orellana, Zamora Chinchipe, and Pastaza). This sample assured us of coverage of most of the nation's poor, rural, and indigenous communities and, among each of the three samples, ensured a 4 percent (or less) error at a 95 percent confidence interval. See Appendix B for a more thorough description of our sampling technique. Below we elaborate the questions used to evaluate our hypotheses, and then estimate our models and present our findings.

Data and Variables

To test all three hypotheses, we conceptualize citizens' concern for the environment as our dependent variable. We rely on one measure developed from citizen responses during focus groups and extensive field tests. The question involves two stages. First, we provide individuals with a list of concerns, including basic needs (employment, ability to buy basic goods, health

problems, and security), as well as arguably higher-order or abstract concerns (ability to obtain or pay for education, interpersonal relations, the overall situation of the country, and the environment), and ask them if they are worried about each of these concerns with a simple “yes” or “no” response. We then followed up with a question: “Taking into account the previous list, how much do you worry about the environment? Not at all, less than most other concerns, more than some of the other concerns, more than the majority of the other concerns, more than any other concern?” Please see Table A1 in the Appendix for a description of the survey items, question wording, and coding of this and all other variables included in the analysis, and Table A2 in the Appendix for the descriptive statistics of this and all other variables.

The responses capture concern for the environment relative to other concerns that, in theory, should matter to affluent individuals as well as to vulnerable populations. The response to the question is continuous, where 0 represents that the environment is not at all a concern compared to other problems, 1 indicates that the environment is less of a concern than some problems, 2 indicates that it is more of a concern than some other problems, 3 is that environment is more than a majority of the problems, and 4 indicates the environment is more worrisome than any other problem. We coded individuals who answered “no” to the initial question of whether they worry about the environment as zero. In the sample, the mean response is 1.93 (meaning that on average the environment is more of a concern than some other problems), and 25.15% of the citizens indicate they are concerned about the environment more than the majority of other problems (3) or more than any other problem (4). We also generated a binary variable analyzed in Model 2, which is coded one if an individual expressed the highest level of environmental concern and zero for other levels of environmental concern.

We focus group-tested this measure of environmental concern in both rural and urban areas in Ecuador's three regions (coast, Andes, and Amazon) and found that respondents understood the nature of the two-staged question, and responded in a way that accurately captured their concern for the environment. We also believe that the two-staged nature of the question did not prime respondents to express greater concern for the environment because the responses are corroborated by other survey items. For example, 27.62% of respondents answered that environmental protection is one of the three most important services that the Ecuadorian state should guarantee. In a question about what services the state should provide, environmental protection was one choice among nine, which included other services such as protection of private property, protection against crime, education, health, retirement, unemployment, work opportunities, and economic assistance. Prioritizing protection of the environment as a state service was positively ($r = 0.11$) and significantly ($p = 0.00$) correlated with environmental concern as we measure it above. The consistency of these results suggests that our dependent variable accurately captures the trend of environmentalism among respondents.

We use several key measures to test our expectation about the relationship between objective vulnerability and environmental concern. Specifically, we utilized questions measuring individuals' susceptibility to harm from changes in the environment. The first question measuring vulnerability is how often respondents had water available to use in their home. We used the question to create the *Water Scarcity* measure (coded 1 if they never have water available, or have it available only a few times a month or few times a week; 0 otherwise). Approximately 10.82% of our sample claims to live with scarce access to water. We expect individuals faced with water scarcity to be particularly vulnerable to ecosystem changes resulting

from climate change and/or extractive activities. Similarly, we asked respondents to indicate whether they produced on their land, and if that production was for commercial or subsistence consumption. We used this question to create the variable *Subsistence Farming* (coded 1 if they produce for family consumption, 0 otherwise). Some 27.29% of our sample identifies as subsistence farmers. We argue that individuals who lack basic resources, such as water, and who depend upon subsistence farming are among the most vulnerable to environmental damage, and are therefore more likely to be concerned for the environment.

Another objective measure of vulnerability to environmental damage is the extent to which an individual's livelihood is derived from the environment. The variable *Ecotourism* indicates whether a respondent directly benefits from ecotourism in their community (1 if yes, 0 otherwise), of which 13.59% of our sample does. We expect individuals who rely upon ecotourism to express greater concern over the environment, given that their livelihoods are directly threatened by environmental degradation.

Vulnerability to environmental damage can also be assessed from individual perceptions. The variable *Climate Change Concern* indicates the extent to which individuals worry that events related to dramatic climate change, such as droughts and floods, could affect them or their families in the next six months (where 1 represents not worried and 4 very worried). By our reasoning, the more worried citizens are about the impact of climate change (37.56% of the sample are very worried), the more vulnerable they perceive themselves to be to environmental damage, and the more likely they are to express concern over the environment. We also asked respondents questions about whether they have experienced possible impacts of climate change,

including droughts, floods, heat waves, and increase in sunburns over the past five years (for each 1 is yes, 0 otherwise). We created an *Impact Index* by deriving the first component of these measures using principal-component analysis, and expect that the more impact individuals have experienced, the more they should be concerned about the environment.³⁴

Our second hypothesis assesses the relationship between living in communities affected by extraction or debating extraction and environmental concern. We tested this hypothesis by constructing indicator variables based on an individual's locality (provided by the survey) and our coding of that locality as an area where extraction has occurred or is being debated. The first indicator called *Mining* assigns a value of 1 if the respondent's locality is within about 30 kilometers of an active mine, and 0 if not, and is based on the Ecuadorian government's list of mining projects and the map of their locations.³⁵ About 17.86% of our respondents lived in localities where mining occurs. Two other variables were used to code whether the respondent's locality was within about 30 kilometers of an area where oil is actively being extracted or not, and whether, if oil is not yet being extracted, the area is in a "block" the Ecuadorian government was considering for concession to an oil company. The *History of Oil Extraction* variable is coded a 1 for areas where oil is being actively extracted, while the *Oil Debate* variable is coded a 1 if the locality is part of an oil block under consideration by the government. About 6.58% of our sample lives in areas of active oil extraction, while about 14.94% of our sample lives in areas where oil extraction is under debate. The information was taken from government oil block maps given by SHE (Secretaría de Hidrocarburos de Ecuador) – the Ecuadorian Secretary of Hydrocarbons.³⁶

Our third hypothesis expects that concern for the environment by respondents facing local extraction will dissipate if they believe that extraction benefits Ecuador. We include a variable that measures the extent to which a respondent agrees that *Extraction Benefits Ecuador*, coded 0 if the respondent disagrees that allowing access to land in order to extract resources extraction benefits Ecuador, 1 if they believe that maybe it benefits Ecuador, or that it depends, and 2 if they agree that allowing businesses access to land to extract resources benefits Ecuador. Around 35.74% of our sample agreed with this statement, 49.43% disagreed, and 14.82% said maybe/it depends. Because we expect the effects of *Oil Debate* to be conditional on whether a respondent believes that *Extraction Benefits Ecuador*, we also include an interaction term to estimate whether expectations of extractive benefits mitigate the effects of the extractivist debate on environmental concern.

We also include variables that control for conventional explanations of environmental concern. In particular, we assess the structural argument that more affluent and professional citizens care more about the environment. The *Income* variable is an ordinal variable that indicates an individual's self-reported monthly income level (0 represents no income, 5 represents \$301 to \$500, and 10 represents an income of over \$2000 per month, with a mean of 4.67). Extrapolating from classic post-materialist theory, income should have a positive effect on concern for the environment, since more affluent individuals can "afford" to care about the environment.

The *Professional* variable indicates whether an individual is a professional, intellectual, scientist, technician or mid-level professional (1 if yes, 0 otherwise) and the variable should also have a

positive effect on concern for the environment. These individuals tend to be more educated, and more likely to hold the sort of self-expressive values and interest in “quality of life” issues that form the foundation for post-materialist perspectives.³⁷ Around 4.21% of our sample claims to be a professional.

We also incorporate control variables that the literature identifies as having a potential effect on concern for the environment. We control for *Media* access (coded as 1 for never having access to any media outlet, and 5 as daily access to media outlets) and *Popular Knowledge* (an index created by asking respondents if they have ever heard of a list of 14 different phenomena prevalent in the media). Average media access is 4.28, and popular knowledge ranges from 16.8% familiarity (respondents who had heard of the 169th Convention of the International Labor Organization) to 81.57% familiarity (respondents who had heard of the Confederation of Indigenous Nationalities of Ecuador, CONAIE). We expect that more regular access to the media and more extensive popular knowledge will lead to greater levels of environmental concern. We controlled for *Religion* with a question asking how important it is to an individual’s life (1 is not at all, 4 is very important, with the sample mean being 3.5, between somewhat and very important). The effects of this variable are nuanced, and we explore them further in a separate analysis.³⁸ We also controlled for several demographic factors, such as *Indigenous* ethnicity (1 if respondent self-identified as indigenous, 0 otherwise, with 40.24% of sample identifying as indigenous); *Education* (ordinal variable where 1 is no education and 8 is postgraduate education, with mean of 4.21, where a 4 corresponds to incomplete secondary education); and *Age* (continuous variable ranging from 16 to 85, mean of 37.56). Given that the indigenous are often considered stewards of the environment, we expect a positive relationship between

indigenous identity and environmental concern. We also expect education to be positively related to environmental concern, while age should have a negative relationship, with younger generations expressing greater concern for the environment.

We also used a series of political control variables. The first is whether an individual identifies with the Pachakutik party – an indigenous political party active in its opposition to government extraction for environmental and cultural reasons (1 if identifies with party, 0 otherwise). About 7.24% of our sample identifies with the Pachakutik (opposition) party. Next, in Ecuador's presidential system, the president – Rafael Correa – and his party – PAIS – are the biggest promoters of using oil and mineral wealth to develop Ecuador (and in fact, fund most of the country's social spending on the 10 percent royalties the government receives from extraction royalties). We include a variable that measures whether an individual identifies with the PAIS party (1 if so, 0 otherwise), and about 9.62% of the sample does.

Results and Discussion

To analyze the relationship between our multi-level independent variables and our ordinal dependent variable of environmental concern, we used mixed effects regression (Model 1) and logit with clustered standard errors (Model 2). We find substantial support for our hypotheses about the importance of vulnerability, proximity to extraction, and belief that extraction has benefits. In this section, we briefly review and discuss the results of our analyses.

Our analysis highlights the relevance of vulnerability, extraction, and developmentalism, while also demonstrating that conventional economic structural explanations – such as affluence or post-materialism – do not predict environmental concern. The individuals who are most vulnerable to environmental damage are indeed likely to express the greatest concern over the environment. Among the measures of vulnerability, water scarcity and ecotourism are both factors that make a respondent more likely to worry about the environment. For example, respondents with scarce water access (never, few times a month, few times a week) on average have a 23% probability of stating that the environment worries them more than the majority of other problems, compared to a 17% probability for those that have more stable water supplies. This trend is replicated for ecotourism. Subsistence farming, by contrast, does not have a significant effect on environmental concern.

Table 1. Individual and Local Predictors of Environmental Concern (Dependent Variable)

	1 (All Levels)	2 (Highest Level)
H1: Role of Objective Vulnerability		
Water Scarcity	0.162** (0.080)	0.410 (0.305)
Subsistence Farming	0.059 (0.059)	-0.178 (0.268)
Ecotourism	0.172*** (0.065)	0.273 (0.257)
Climate Change Concern	0.302*** (0.030)	0.761*** (0.217)
Impact Index	0.004 (0.019)	-0.062 (0.070)
H2: Role of Proximity to Extraction		
Mining	0.132* (0.069)	0.157 (0.194)
History of Oil Extraction	-0.955*** (0.169)	
Oil Debate	0.286** (0.129)	1.206*** (0.424)
H3: Role of Belief that Extraction Has Benefits		
Extraction Benefits Ecuador	0.018 (0.027)	0.098 (0.120)
Oil Debate*Extraction Benefits	-0.089 (0.066)	-0.545 (0.362)
Controls		
Income	-0.015 (0.016)	-0.129 (0.082)
Professional	0.063	0.571

	(0.115)	(0.425)
Media	-0.003	-0.077
	(0.024)	(0.124)
Religion	0.028	0.386*
	(0.032)	(0.204)
Popular Knowledge	0.037***	0.016
	(0.013)	(0.055)
Indigenous	-0.102	-0.688*
	(0.078)	(0.363)
Education	0.037*	0.043
	(0.021)	(0.099)
Age	-0.001	-0.005
	(0.002)	(0.008)
Pachakutik (Opposition) Party ID	0.196**	-0.157
	(0.094)	(0.520)
PAIS (Government) Party ID	0.031	0.351
	(0.075)	(0.267)
Constant	0.851***	-5.563***
	(0.214)	(1.436)
<hr/>		
Random Effects: Parroquia		
Variance of Intercept	-1.346***	
	(0.143)	
Variance of Residuals	-0.191***	
	(0.019)	
<hr/>		
<i>N</i>	1,517	1,416

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Concern over climate change also has a significant and positive effect on concern about the environment relative to other problems. For example, those who are not at all worried about climate change have a 4% likelihood of worrying about the environment more than the majority of other problems, compared to the 25% probability for those who are very worried about climate change. Perhaps surprisingly, we find no relationship between impacts of climate change and environmental concern based on the significance of the estimated coefficient of our *Impact Index*. A possible explanation for this is that the perception of climate change impacts does not necessarily result in increased concern about climate change, or increased vulnerability to climate change.

Other strong predictors of environmentalism are mining, the presence of oil, and the debate over oil in the locality of the respondent. As expected, mining has a positive and significant effect on

concern for the environment over all other problems. By contrast, the presence of oil extraction has a negative relationship with environmental concern. This is perhaps one of the most interesting findings of our analysis, and coincides with the experience specific to Ecuador. Mining is still relatively new and has received much interest from international NGOs educating individuals about the adverse effects of mining operations where it is taking place. By contrast, oil extraction that is already underway for some areas began decades in the past, and has left the environment already devastated. In areas with a history of oil extraction, and where the environment is already quite degraded, individuals are much less likely to express concern over the environment. Individuals who live in localities with a history of oil have a miniscule 0.46% probability of being concerned about the environment over any other problem, and instead have a 15.35% likelihood of being not at all concerned about the environment. In fact, because there are no individuals living in areas with a history of oil extraction that express the highest levels of concern over the environment, that variable is dropped from the analysis in Model 2.

The findings for oil debate are more nuanced. Oil debate alone has a positive and significant effect on expressions of environmental concern, indicating that unlike respondents who live in areas where oil drilling has already occurred, citizens in areas where drilling is debated are more likely to express concern over the environment. However, when we interact oil debate with whether individuals believe that extraction benefits Ecuador, we find that oil debate has conditional effects on environmental attitudes, based on whether an individual agrees that extraction has benefits. In order to simplify the interpretation of the interaction between oil debate and the belief that extraction benefits Ecuador, we created a binary dependent variable which measures the most extreme level of environmental concern – believing that the

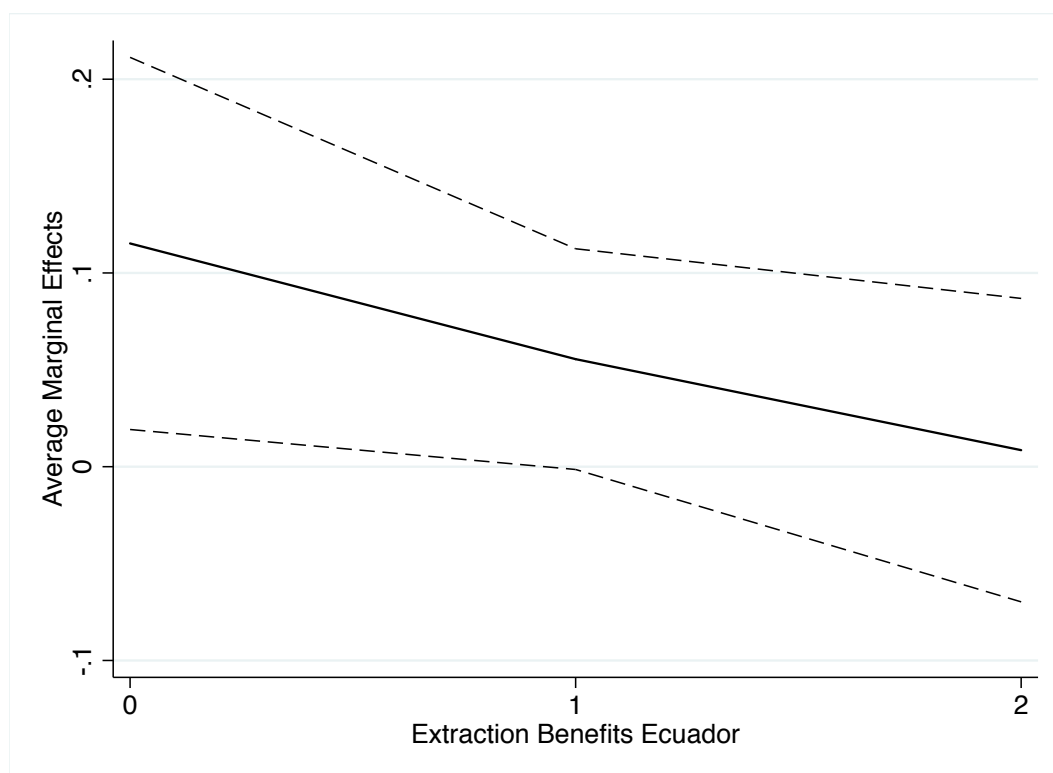
environment is more worrisome than any other problem (*Environmental Concern* = 4) – and used a logit model with clustered standard errors to estimate the coefficients (see Model 2). In this model, living in an area where oil is debated remains a significant predictor of environmental concern. However, when a respondent believes that extraction may benefit Ecuador, the effect of oil debate is dampened, as given by the negative coefficient on the interaction term.

To further illustrate the effects of the oil debate and the belief that extraction benefits Ecuador, we plotted the marginal effects of living in a locality where oil extraction is debated across the three values for belief in the benefits of extraction (see Figure 1). This figure demonstrates that oil debate is likely to influence whether respondents believe the environment is the greatest concern – but only when individuals do not agree that extraction benefits Ecuador. That effect declines when individuals believe that extraction may benefit Ecuador, and becomes insignificant when individuals agree that extraction may be beneficial, or is beneficial. We argue that these findings demonstrate that individual expressions of environmental concern are influenced by their local experience with extractivism, but also the extent to which they have faith that extractivism will benefit Ecuador, and potentially, its local communities.

The controls for the effects of affluence and professional individuals are not significant in our results, and call into question the relevance of economic structural explanations for individuals living in developing countries like Ecuador. First, income is not significantly related to environmental concern, meaning that wealthier individuals do not express greater concern for the environment relative to other problems. From the perspective of post-materialism, this is a surprising finding, given that, as per Inglehart, we would expect wealthier individuals to place

greater emphasis on factors affecting their quality of life. However, at least in Ecuador, this does not appear to be the case. Indeed, when examining the list of concerns that we asked about on our survey, the wealthy are disproportionately concerned about one aspect in particular when compared to poorer fellow citizens – consumerism. In addition, they tend to also be more concerned about their work, education, and health when compared to individuals from lower income levels. Because the wealthy in Ecuador tend to be relatively isolated from environmental threats, and because they continue to place a high priority on consumption and other essential needs, they do not place the environment among their highest concerns.

Figure 1. Marginal Effects of Oil Debate on the Probability of Highest Level of Environmental Concern Across Belief that Extraction Benefits Ecuador



The only controls that have significant effects on environmental concern are popular knowledge and education; individuals with greater levels of popular knowledge and education also express greater concern for the environment.

Ecuador's Context: Community Responses to Neo-Extractivism

A disconnect exists between economic structuralism and the self-interest evinced by citizens in a developing country on the “front lines” of environmental degradation. Rather than expressing concern over the environment because they can “afford” to, as Inglehart³⁹ and others suggest, we find that individuals in developing countries like Ecuador express concern when they cannot afford to ignore the impact that environmental damage has on their livelihoods and their communities. In Ecuador, this is manifested through several controversies, such as rainforest pollution from oil spills, and the pitfalls of strip mining in the country’s mountainous Andean region, including water scarcity. Yet as our statistical results demonstrate, individuals living where oil has already been extracted express little concern over the environment. Meanwhile, in areas where oil is debated, individuals are no more or less likely than others to be concerned about the environment when they believe that extraction has benefits. In this section, we provide evidence of these debates and citizen reactions based on extensive fieldwork conducted in Ecuador in 2014.

The statistical analysis of our survey illustrates the powerful positive effect that living near mining has on environmental concern. Indeed, community leaders across Ecuador expressed such concern in response to President Correa’s prioritization of mining. For example, in the Intag

valley, a rare cloud forest in the heart of Ecuador's mineral-rich Andean region, citizens have mobilized to prevent mining explorations. As summarized by community leader José Cueva, mining is "on the environmental side, disastrous because of the contamination of the water, of the air... but there is also a grave social impact, and the worst of all would be the relocation of four communities and almost 200 families...that would obviously lose their way of life".⁴⁰ Clearly, for these communities, President Correa is not adhering to a model of democratic development, nor is he standing by his commitment to developing in harmony with nature (*sumak kawsay*). In response to mining, concern for the environment as well as for individual livelihoods is very strong.

However, in the Amazon region, interviewees were much more divided regarding their views of the environment. Those living near the already-exploited northern oilfields had much more sanguine views than those who lived in the still unexploited southern rainforests, where Amazon ecotourism is still pristine. In the north, the focus was more on mitigating environmental damage already done, and interviewees seemed to place a lower priority on environmental protection than on economic development. For example, in Lago Agrio where Texaco/Chevron left open pits of oil that drain directly into the water supply, leaders of the Waorani indigenous group strongly criticized the central government's failure to attend to environmental degradation, but were divided over whether to further explore and drill for oil. Indeed, the national president and vice president of the Waorani organization openly disagreed in a joint interview over whether they should allow the government to extract more oil from Waorani land.⁴¹ Others, like the Andwa peoples, said they would accept reasonable compensation for oil drilling on their lands.⁴²

To the south in Coca and Puyo, where oil concessions are more recent, Kichwa, Shuar, and Waorani leaders conveyed ambivalence about whether to cooperate with further oil extraction efforts.⁴³ Near Tena, the newest outpost on the oil frontier, the province's historic Kichwa organization had splintered, dividing those that desire more oil drilling and the attendant economic investment, and those that expressed reservations about drilling due to its destruction of their current way of life.⁴⁴ In the pristine rainforest areas of the far south (near Macas), Achuar and Shuar leaders say they are completely against oil drilling, and have more strongly articulated pro-environmental attitudes.⁴⁵ The geographic relativity of community positions was summarized by a Sápara leader: "Those whose lands have been polluted are in favor (of more extraction). They live in that reality. Those who are opposed are those of us whose lands have not yet been contaminated, and above all, those of us who do not live near a paved highway".⁴⁶

Having demonstrated statistically that vulnerability and location along the extractive frontier are more important to Ecuadorians than socio-economics for their concern for the environment, we have also offered at least an introduction to the community-level debates which corroborate our causal claims. Our interviews also reinforced relationships found in Peru⁴⁷ and Bolivia⁴⁸ that citizens in extractive areas face greater conflicts not just over extraction, but over allocation of the riches from that extraction. Given that in Ecuador and the other Andean economies, extraction provides the single biggest source of tax revenue and, thus, public spending, these findings are not surprising. In the concluding section, we consider the broader implications of environmentalism driven by vulnerability and extraction.

Conclusion and Implications

Overall, our analysis of individual-level survey data discounts the relevance of economic-structural causes of environmentalism in developing countries like Ecuador. Furthermore, it illustrates the importance of the fierce conflict between development and environmentalism missing from developed country debates. That conflict in Ecuador – as well as in other Andean nations mentioned – is between citizens seeking to use the environment as a stepping-stone out of poverty, and environmentalists seeking to preserve nature. The survey identified key problems in prior interpretations of interest in environmental issues – namely, the tension between economic development (represented by the expectation of benefits) and self-interested motivations for environmental protection (measured by objective vulnerability and proximity to extraction). Ultimately, we find that individuals in Ecuador express environmental concern when they are objectively vulnerable to environmental damage, and when they live in areas where mining has occurred and oil extraction is debated. Furthermore, we find that individuals living in areas where oil is debated become ambivalent towards the environment when they believe that extraction could benefit Ecuador, highlighting the continued tension between developmentalism and the environment.

Field research showed that these attitudes are outward manifestations of values formed in relation to political debates surrounding the role of the state in using extraction as a development tool. This debate occurs not only in many parts of Ecuador, but across the Andean region of Latin America more broadly, and Correa’s “populist extractivism” is not dissimilar to that of Morales in Bolivia, or models adopted in Colombia, Peru, and Venezuela. Populists like Correa seek to implement new social programs funded directly by the very extraction which is creating the damage. The state propels economic growth by staking the nation’s public spending on oil

royalties. The oil frontier in Ecuador, moving south and east from the heavily damaged area contaminated by the infamous Texaco (now Chevron) oil spills and then into virgin rainforests, polarizes citizen attitudes as it extends, giving even greater credence to the ambivalence people feel, particularly when they live in the areas of extraction.

Part of Ecuador's extractivism debate seems to be driven by diverse interpretations of *sumak kawsay/buen vivir* as a development approach. Though President Correa claimed to desire a developmental approach in harmony with ecological cycles and which promoted solidarity and dignity among living things, he has instead prioritized extraction, perpetuating the dichotomy between development and the environment, "a false dilemma posed by Western ideals."⁴⁹ For example, the Ecuadorian state in December 2015 amended the constitution to remove the ability of local communities to regulate extraction, doubling down on the populist "extractive development" side. In interviews, many indigenous leaders openly expressed consternation over Correa's abuse of the *sumak kawsay* concept⁵⁰ and even went so far as to create alternative Spanish terminology (*vivir bien* instead of Correa's *buen vivir*) to present a more mainstream version of the indigenous belief of development in harmony with nature.⁵¹

Reconciling respondents' personal needs to address vulnerability to environmental changes – which could worsen poverty – with efforts to insert their communities into regional, national, and global debates about resource extraction and climate change and the equities related to these, may be the attitude-defining debate of the next decade in resource-rich developing nations in the Andes and beyond. Even the poorest and most remote Ecuadorians have positions on these

issues, and their perceptions of the urgency of these matters may offer even further evidence of the need to bring vulnerability theory into political science.

Indeed, observation of the United Nations Framework Convention on Climate Change 2014 meeting in Peru revealed that the developing world is a macrocosm of Ecuadorian people, as their positions regarding climate change policy are dictated in large part on how vulnerable they are to environmental changes exogenous to their national spheres of influence; where they are located on the carbon emissions “frontier” and what domestic actors have to gain or lose from engaging in the international debate.⁵² Carbon emissions are not tangible, to be sure, but international efforts like REDD convert the abstract need to reduce emissions into concrete manifestations, like rainforest preserves, which directly affect resident livelihoods. Changes in the political importance of environmental issues are not just changes in esoteric values, but stem from peoples’ rational dependence on the environment for day-to-day survival and the extent to which they feel that environmental change may be outside their direct control.

The North-South debate, so prominent in the Cold War with regard to geopolitical proclivities towards capitalism or communism, has re-emerged, but with an environmentalist frame. As stated by Najam: “Developing countries have consistently contextualized environmental issues as part of the larger complex of North-South concerns, particularly concerns about an iniquitous international order and their desire to bring about structure change in that order. This has become more poignant in recent years as environmental negotiations on issues such as climate change have become increasingly focused on trade and economic aspects.”⁵³ Our findings show that the struggle between economic development and environmental protection has emerged as perhaps

the single defining issue in Ecuador, elsewhere in Latin America,⁵⁴ and in many developing countries and regional powers.⁵⁵

We conclude from our findings that where extraction has degraded the environment, citizens are less affirmative about the environment, and hence that environmental degradation discourages citizen activism, rather than encouraging it. This is bad news for environmental activism precisely where it is needed the most. More research is needed to discern more precisely the scope conditions for applying these representations of development and environmental protection. But we do know that views of extraction are conditioned by political attitudes – parting, but perhaps not limited to, expectations of redistribution – and this may be good news for those seeking to promote strong environmental attitudes.

While often possessing very localized roots, as we have shown, the chasm between development and environmental protection has also possibly been the leading cause of international negotiation failures to reach a United Nations agreement regarding carbon dioxide emissions during the decade prior to the 2015 Paris meeting.⁵⁶ The bigger question raised by this study is that if this tension is so pronounced within nations, based on polarization and based in part on economic and climatological vulnerability, then how can disparate nations with even more divergent perspectives hope to reach meaningful and lasting agreements without the help of Inglehart's harmonizing values? The good news, however, may be that rather than having to change political culture (a proposition taking decades), reformers might be able to try to materially reduce citizen vulnerability and devise less contentious extractive policies which do offer some compensation to environmental losers, in order to harmonize norms within countries

– if not at the international level – to more convincingly address environmental concerns. This pending international debate, over “loss and damage” in the global climate change adaptation parlance, may have effects which trickle down to the most local of levels.

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