Environmental Attitudes in a Climate-Vulnerable State: Rainforests, Oil, and Political Competition along Ecuador's Extractive Frontier[1]

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Abstract

Across Latin America, rural, indigenous, and impoverished citizens have been mobilizing on behalf of the environment in an effort to protect their land and water. However, to date, we have very little evidence of what motivates environmental concern in developing countries. In contrast to the value-driven post-materialist argument that environmental issues are a concern only of the relatively affluent in advanced democracies, we offer an argument based on self-interest. We analyze original data from a 2014 national survey in Ecuador to claim that three interest-driven hypotheses better explain attitudes towards the environment. First, following literature developing in geography, we claim that vulnerability to livelihood-impacting environmental changes greatly enhances interest in environmental issues. Second, we argue that political competition may mediate environmental concern. Third, we claim – particularly for respondents in the Amazon region subsample – that a respondent's location on the "extractive frontier" (i.e. whether they live in an area where extraction is under consideration) will affect their environmental concern. Using original survey data from Ecuador – a country whose Andean and Amazonian ecosystems are being threatened by environmental change – we assess the explanatory power of post-materialism against the alternatives of vulnerability and self-interest. Our statistical results strongly support the argument that populations threatened by environmental change and who are on extractive frontiers (where mining and oil concessions are being considered) are more likely to express concern over the environment, but that these factors are conditional upon electoral competition. We further support our findings using qualitative evidence from in-depth interviews with government and community leaders in Ecuador during the summer of 2014.

Led by Inglehart (1990, 1995, 1997), many have argued that interest in environmental issues is part of a bundle of post-materialist attitudes held by the left-leaning affluent individuals whose material needs had been met. Such post-material values celebrated diversity and progressive politics across a range of areas. Inglehart and his colleagues based this theory largely on evidence from Western Europe, where prominent Green Parties emerged beginning in the 1980s. More recently, scholars such as Konisky, Milyo and Richardson (2008), McCright and Dunlap (2011) and Arbuckle and Konisky (2014) have argued that value-related causes, such as competition by individuals in government, ideological and partisan affinities, and religious beliefs, respectively, highly impact survey respondents' level of concern relating to environmental issues like climate change. These studies add further credence to the widely held claim that values shape attitudes on environmental issues.

However, new survey evidence from the developing world indicates that the poor who live off the land - those on the front lines of climate change and other manifestations of environmental degradation - have even stronger perceptions of the importance of such problems. Based on an unprecedented nationwide survey in Ecuador with a rural oversample, this paper argues that vulnerability theory, as argued by geographers and political ecologists, better explains citizen environmental attitudes in the developing world, where affluent citizens are the minority and Green Parties have not taken hold. Our argument is based on the idea that environmental attitudes reflect individuals' self-interest, and specifically, the extent to which environmental degradation impacts individual livelihoods.

After a brief review of the state of the literature on comparative environmental politics and political attitudes, this paper reviews post-materialism and its claims, considers the other hypotheses we test: "vulnerability theory" from geography as well as our own theory of the political economy of environmental concern. We present these three hypotheses, operationalize them, report several statistical models, discuss our findings, and then conclude. We find that, at least among Ecuador's multifaceted ecosystems with developing world income inequalities and demographics, a different set of causes of environmental awareness must be explored. These results should help bring political scientists into the discussion of climate change and vulnerability in the developing world, which has, to date, been dominated by other social sciences.

Post-materialism and Its Challengers:
Vulnerability Theory, Electoral Competition, and Framing in Local Extractivist Debates

Post-materialism did aspire to explain more than just the affluent European economies. The original argument, as articulated by Inglehart and Flannigan (1987), sought to explain leveling in the curvilinear relationship between economic development and income inequality that occurred in "mature industrial societies (1987, 1291)" only. That argument, based loosely on Maslow's Hierarchy of Needs[2], was that after basic needs were met (as they most frequently were in affluent nations), they were free to address "less basic" issues like environmental protection (as well as quality of life, womens' rights, etc.). However, in his 1995 piece, Inglehart appropriately

[2] Brechin makes the connection between "post-materialism" and Maslow's Hierarchy on page 794 of his 1999 piece.

criticized scholars of the "boom" in environmental interest, through a statement which holds equally true today: "much of this research is limited to the tip of the iceberg, focusing on what people think about environmental problems without probing into why they think it or how deeply they are committed" (1995, 57). Using cross-national World Values Survey data from 43 countries at the time, Inglehart's conclusions were two-fold: 1) that post-materialist cultural factors – defined as "emphasizing self-expression and . . . quality of life" – were critical, but that 2) "people are concerned about the environment because they face serious objective problems [such as air and water pollution]" (1995, 57).

Brechin (1999) critiqued the "post-modernism plus objective problems" theory, arguing that while it was true that citizens from poor countries were more concerned with local environmental problems, there were no patterns of difference in views of more abstract and global problems between the respondents in rich nations and those from poor ones. Carrying Brechin's concern further, we seek in this paper to more systematically explain differences in the attitudes of survey respondents, but as being related more to environmental vulnerability, local extractivist debates, and political competition. To test these hypotheses, subnational samples are needed. In sections below, we explain the selection of Ecuador and the sample sites within the country, but first we briefly describe the arguments which drive our explanations.

Formerly just the purview of human and political ecologists, vulnerability theory seems ripe for consideration by political scientists as a source of political attitudes. Over the last several years individual characteristics – such as access to information and local social networks – have been brought into consideration of this theory at the household level, and national policies, international assistance, and impacts of globalization have been brought in at more aggregated levels of analysis (Fussell 2007, 158). To Adger (2006, 268-269), 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." In his 2006 review of the literature, Adger emphasizes the need for giving greater consideration to human factors in vulnerability, as "the common property resource tradition, for example, stresses the importance of social, political, and economic organizations in social ecological systems, with institutions as mediating factors that govern the relationship between social systems and the ecosystems on which they depend" (269). Still, Adger states that there has been little in the way of a synthesis of social and ecological factors into considerations of vulnerability, and he acknowledges the challenges of "developing metrics that incorporate both human well-being and recognize the relative and perceptual nature of vulnerability" (274). While an elusive set of indicators linking ecological and social/political vulnerability has not yet been found, in this paper we follow Carlin, Love and Zechmeister (2014) in seeking to use public opinion to study these issues. However, we address what Adger references above as "the relative and perceptual nature of vulnerability" by considering citizens' perceptions of their vulnerability in relation to particular empirical manifestations of environmental degradation.

The "extractivist debate" frame argument is based on claims (Yashar 2005, Silva 2009) that 1990s neoliberal reforms in Latin American demobilized labor and other traditional groups, but, according to other scholars (Arce 2014, Yashar 2005), may have opened spaces for the mobilization of other groups such as indigenous communities in their efforts to control natural

resource extraction. Protests to resist oil extraction reached their zenith near the Peruvian town of Bagua, in 2009, where 32 people were killed and hundreds were injured. Clearly, that event galvanized the debate in Peru, and authors like Arce (2014) and Vasquez (2014) have claimed that localized debates over whether to open up environments to extraction have a great effect on public opinion and citizen mobilization.

As with vulnerability, extractivism in developing areas often taps into individuals' self-interest when it comes to environmental concern. Extractivist efforts can harm the land and water upon which poor, rural, and indigenous communities depend 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 in the form of development projects (see Becker 2012 for a discussion of this phenomenon in Ecuador). Indeed, the increasingly state-dominated extractivist efforts across the Andean region promise to redesign the economic model of these countries, reduce dependency upon developed nations, and create an unprecedented level of development. Not only are extractivist debates divisive, they are also crucial for motivating concern over the environment – or lack thereof. We argue that the extent to which extractivist debates affect environmental concern is conditioned by the belief that the government will fulfill its promise to redistribute mineral profits back to the community.

In the sections that follow, we operationalize hypotheses to test the post-materialist "values-driven" hypothesis, as well as more rationalist causes of environmental attitudes related to environmental vulnerability, political competition, and the extractivist bargaining frame. We explain why Ecuador was selected, how the survey and sample were designed, and briefly discuss how the survey was executed. Then we operationalize the three hypotheses using data from our survey, specify several statistical models using those variables and control variables, discuss the results, and offer conclusions.

Theory and Hypotheses

In this section, we briefly outline the values-driven hypothesis as specified by Inglehart (1997) and others, and present three alternative hypotheses based on respondent rationality – the Vulnerability Hypothesis, Extractive Debate Framing, and Political Competition – that we argue may better explain environmentalism in developing areas such as Ecuador.

The explanation that, at least for some time, has held "hegemonic status" (Guha and Martínez-Alier 1997, xiv) in the study of comparative environmentalism is Inglehart's (1992; 1995; 1997) theory of post-materialist values. As we outline above, Inglehart argues that poor people struggling to meet their basic needs simply cannot afford to value the environment. However, we suspect that Inglehart's argument will be insufficient to explain environmentalism in Ecuador, and instead offer three alternative hypotheses. In order to assess the validity of post-materialism, we summarize this hypothesis as follows:

> **Hypothesis 1 – The Post-Materialist "Values" Hypothesis**: Post-materialist living conditions and the associated post-materialist values are expected to increase a respondents' level of concern over the environment.

Recent research using cross-national survey data raises doubts about Inglehart's theory, but does not provide an alternative explanation for why poor people value the environment (Dunlap and York 2012). Our remaining hypotheses present such alternatives. The dominance of post-materialism within political science means that environmentalism among the poor, and in developing countries such as Ecuador, has been under-theorized. However, work in the interdisciplinary field of human and political ecology has begun to formulate potential explanations for environmental concern among impoverished communities. For many poor populations, access to clean water, biodiverse forests and uncontaminated land are not merely issues related to their quality of life. Instead, communities like the indigenous or rural agricultural workers rely upon subsistence farming or hunting and gathering, so natural resources form the cornerstone of their livelihoods. Thus, we argue that motivation for environmentalism among the poor stem not from post-materialist concerns for the "rights of other species" or moral concerns for future generations of humans, but rather from "a material interest in the environment as a source and a requirement for livelihood" (Martínez-Alier 2002, 11). 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 that are particularly threatened by environmental change. Individuals may also perceive vulnerability to such change given the extent to which they depend upon natural resources for their livelihood, or the extent to which they believe themselves and their families to be impacted by environmental changes. Our second hypothesis is thus:

> **Hypothesis 2 – Vulnerability Hypothesis:** Objective conditions of vulnerability to environmental change and perceptions of vulnerability to environmental change are expected to increase a respondents' level of concern over the environment.

Extensive oil production has been found to hinder nations' environmental performance, probably due to the expectations such oil production brings for economic development, and how that production gets distributed (Eisenstadt, Fiorino, and Stevens 2015). 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" (Vasquez 2014, 5). In addition to triggering actual conflicts, we believe that the possibilities of hydrocarbon production – with all of the attendant environmental, political, social and economic complications this may bring – becomes a focal point in communities which frames their attitudes on environmental issues.

> **Hypothesis 3 – Extractivist Debate Hypothesis**: Respondents in localities where debates over hydrocarbon and/or mineral extraction frame views on the environment are likely to express greater concern for the environment.

However, extractivism in developing areas tends to be highly politicized, particularly because extractivist efforts are increasingly driven by the state, and justified for the development opportunities they provide. Individuals who expect extraction to reward them with economic benefits – in the form of employment opportunities, development projects, or even community-level cash transfers – should not be as concerned for the environment in the face of extractivist debates. Indeed, economic self-interest has effects on a wide range of political attitudes,

particularly when individuals perceive the consequences of political activity to be relevant to their own economic situation (Doherty et al 2006). When individuals have competition in the government, they are likely to have faith that state-run extractivist efforts will provide the promised economic benefits. We argue that this expectation should mitigate environmental concern in areas where there is an extractivist debate. Specifically, the effects of the presence of extractivist debates on environmental attitudes should be conditional on competition in the government.

Hypothesis 4 – Political Competition Hypothesis:

(a) Respondents who identify with political parties and social movements that oppose extractivist efforts should express greater concern for the environment.

(b) Extractivist debates should lead respondents to have increased environmental concern, but the positive effect of extractivist debates should be less for individuals with high confidence in the government.

Case Selection and Survey Methodology

Ecuador was selected as the site for the survey of dispositions towards the environment for several reasons. First, it is a developing country of the sort needed to test the post-materialist values hypothesis, as it possesses great variance in income levels. Second, Ecuador's widely varying terrains offer a range of ecosystems, and hence a range in vulnerability to environmental degradation, which takes different forms in the country's mountainous terrain and in its low-lying Amazon rainforest ecosystems. Third, given the nation's small size, its overall vulnerability to climate change, and its reliance on extractive industries (oil and minerals), environmental issues are an important part of the national policy dialogue, meaning that at least some people would have a strong knowledge of environmental issues, thus ensuring variance on several key variables.

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 strata: 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 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 represent different theories, and then estimate our models and our findings.

Data and Variables

In order to test the above hypotheses, we use the results of our original survey of Ecuadorians to capture citizens' concern for the environment, as well as the extent of their post-materialist values, their vulnerability to the environment, political competition, and whether their localities experienced extractivist debates. In this section, we describe the measures of our dependent variable and key independent variables that we use to evaluate our hypotheses.

To test all four of our hypotheses, it is necessary to conceptualize citizens' concern for the environment (the dependent variable). We rely on one measure that we developed based on citizen responses during focus groups and field tests of the survey instrument. 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 that asked: "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?"[3] The responses therefore capture citizens' concern for the environment relative to other concerns that, in theory, should be important for individuals with post-materialist values, as well as for more vulnerable populations. The response to the question is ordinal, where 1 represents that the environment is not at all a concern compared to other problems, 3 indicates that it is more of a concern than some of the other problems, and 5 represents that the environment is more worrisome than any other problem. In the sample, the mean response is 2.94, and 25.75% of the citizens indicate they are concerned about the environment more than the majority (4) or more than any other problem (5). 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.[4]

Seven elements of the survey instrument allow us to develop measures of post-materialism. In order to evaluate the Post-Materialist Values Hypothesis, we include a variety of measures that in theory should either directly or indirectly correspond with citizens' greater concern for the environment. First, we include three demographic indicators to assess the post-materialist argument at its most fundamental level: that more affluent, professional, and technologically-integrated 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). According to 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.

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[3] Please see the appendix for the survey question used to create this variable, and all of the survey-based variables outlined hereafter.

[4] While this variable may appear somewhat complicated, we focus group tested it in both rural and urban areas in Ecuador's three climate regions (coast, Andes and Amazon) and found that respondents in focus groups understood the concepts, and that this was a useful indicator of respondent interest in 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 should also have a positive effect on concern for the environment based on classic post-materialism. Around 4.21% of our sample claims to be a professional. Third, the *Social Media* variable indicates whether an individual has used a social media outlet like Facebook or Twitter in the past week (1 if yes, 0 otherwise). Among our respondents, 38.12% said that they had accessed social media in the past week. We argue that social media is a proxy for an individuals' level of involvement in post-materialist society, and therefore should have a positive relationship with environmental concern if post-materialism is indeed the source of such concern.

Finally, according to post-materialist theory, a key expression of such values is a respondent's ability and willingness to donate to a cause. The *Eco Donation* variable indicates whether an individual has ever donated to an ecological organization (1 if yes, 0 otherwise). We expect this donation to have a positive relationship with concern for the environment relative to other problems. In our sample, 3.59% of respondents have ever made such a donation.

Other variables that may also correspond with concern over the environment are those that measure an individuals' propensity to give consideration to what Inglehart (1995, 1999) considers to be higher-order values, such as human rights, equality, and democracy. In an effort to capture these values, we include the variable *Human Rights* which indicates whether a respondent ranks human rights among the six most significant problems facing the country (1 if yes, 0 otherwise); *Indigenous Leader* which codes whether the respondent agrees that the indigenous do not make good leaders (1 if no, 0 otherwise); and *Dem vs Dev* which is coded a 1 if individuals believe that democracy is more important given the choice between democracy and development. The breakdown of these indicators in our sample is as follows: 4.94% rank human rights as one of top six problems; 52.11% disagree that indigenous cannot be good leaders; and 31.33% think that democracy is more important than development. In sum, post-materialism is measured by investigating how hypothesized factors such as demographics (income, profession), behavior (social media, donations) and values (human rights, racial equality, democracy) affect concern over the environment.[5]

We turn now to variables necessary to test the Vulnerability Hypothesis. The key explanatory variables are both objective and subjective measures of individuals' susceptibility to harm from changes in the environment. Specifically, our survey assessed the extent to which individuals are *actually* vulnerable to environmental damage – because they lack regular access to water and are dependent upon subsistence farming – as well as their *perceived* vulnerability to such damage. Survey respondents indicated how often they had water available to use in their home, which we use 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. Similarly, we asked respondents to indicate whether they produced on their land, and if that production was for commercial or familiar consumption. We used this question to create the variable *Subsistence Farming* (coded 1 if they produce for family consumption, 0 otherwise). Around 27.29% of our sample identifies

[5] We created an Index of Post-Materialist Values from these seven variables using principal-components analysis, but the items did not load together well, resulting in a Cronbach's alpha score of 0.19. We therefore decided to analyze them separately.

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 an individual 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 the perceptions of individuals. We designed questions on our survey to capture whether or not Ecuadorian citizens perceive themselves to be vulnerable to environmental changes. 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 themselves or their families in the next six months (ordinal scale 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 when asked a more general, overarching question), the more vulnerable they perceive themselves to be to environmental damage, and the more likely they should express concern over the environment. Hence, we also asked respondents a series of questions about whether they have experienced a variety of possible impacts of climate change, including droughts, floods, heat waves, and increase in sunburns over the past five years (for each of the phenomena 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 that more impact individuals have experienced, the more they should be concerned about the environment.[6]

We tested the Extractivist Debate Hypothesis by constructing two sets of indicator variables. The first, based on the Ecuadorian government's list of mining projects and the map of their locations (ARCOM 2012) assigned a value of 1 if the respondent's locality is within about 30 kilometers of an active mine, and 0 if not. 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 (N.d.).

To test the Political Competition Hypothesis, we used several measures to capture individual-level confidence in the government and the belief that the state will keep its promises to use extractivist funds for development purposes. The first variable is whether an individual

[6] The items used to create the *Impact Index* have a Chronbach's alpha score of 0.62.

identifies with the Pachakutik party – a political party that is active in its opposition to government extraction for environmental reasons (1 if identifies with party, 0 otherwise). We therefore expect those who identify with this party to be more concerned about the environment. About 7.24% of our sample identifies with the Pachakutik (opposition) party. We also include a variable that measures trust in the national indigenous movement organization (CONAIE, *Confederación de Nacionalidades Autonomas Indígenas de Ecuador* – Confederation of Indigenous Nationalities of Ecuador). Like the Pachakutik party, the indigenous movement has been critical of the government, and in doing so, has adopted a pro-environment stance against state extractivism (Becker 2012). This variable is coded 0 (no trust) to 3 (high trust), and the mean in the sample is 1.12 (between little and some trust in the movement).

Finally, 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. 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.[7] Furthermore, as the most visible political figure, President Correa is viewed as the chief representative of the state. When it comes to the extractivist debate, Correa has been active at promoting the state's mining and oil policies, discussing them in his weekly Saturday television shows (*sabatinas*), and developing a significant public relations campaign centered around his government's efforts to develop using mining and oil funds. We therefore also include a measure of respondents' trust in the president (0=no trust; 3=high trust), and on average, respondents have between little and some trust in the president (1.66). We expect individuals that identify with PAIS and trust the president to express less environmental concern. Because we expect the effects of *Oil Debate* to be conditional on *Trust in the President*, we also include an interaction term to estimate whether presidential trust mitigates the effects of the extractivist debate on environmental concern.

We also include a number of 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 controlled for *Religion* by 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). 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).

[7] Ecuador has a weakly institutionalized party system, and party identification is correspondingly low. The vast majority of respondents in our sample (77.77%) claimed they did not identify with any political party. The PAIS governing party and the opposition Pachakutik party – as the most established parties – have the highest percentages of party identifiers in the sample.

<FIGURE 1 HERE>

To get a sense of the dependent variable – concern over the environment relative to other significant problems – we have plotted average environmental concern by locality according to a key independent variable for the Extractivist Debate Hypothesis: oil debate. Figure 1 displays the variation in average environmental concern by *parroquia* – the lowest level of aggregation available to identify respondents' location.[8] This plot illustrates the extent to which average environmental concern varies by locality. In addition, it shows that while there is great variation among localities where there is no oil debate, there is relatively less variation in average environmental concern among localities where there is a debate over oil activity. This provides some preliminary support for the Extractivist Debate Hypothesis – on average, respondents in localities where oil is debated care more for the environment (2 or greater, which indicates individuals believe environment is more important than some other problems). It also illustrates the importance of considering variables at the level of locality, given the extent of variation in mean environmental concern across communities. The variation by locality, coupled with the multi-level nature of our data – individual-level variables from the survey and community-level variables measuring the context of extractivism – indicates that our analysis is best conducted using a multi-level model. Below, we further compare the importance of post-materialist dispositions and values when compared to individuals' vulnerability, extractivist debates, and political competition.

Results and Discussion

In order to analyze the relationship between our multi-level independent variables and our ordinal dependent variable of environmental concern, we used mixed effects ordinal logit models. Our results largely support our conjecture that post-materialism does not adequately explain environmental concern in developing countries like Ecuador. Instead, we find substantial support for our hypotheses about the importance of vulnerability, extractivism, and political competition. In this section, we briefly review and discuss the results of our analyses. All of the results discussed here refer to Model 1 in Table 1, unless otherwise stated.

<TABLE 1 HERE>

First, we turn to the analysis of the Post-Materialist Values Hypothesis. Recall that post-materialist theory expects that certain demographics (income, professional status), behaviors (social media, donations), and values (human rights, racial equality, democracy) should lead to greater environmental concern. Controlling for vulnerability, extractivism, political affiliations, and other demographic factors, we find that only one of these variables has a significant effect on environmental concern, and that effect is in the *opposite* of the relationship expected by post-materialist theory. Specifically, we find that valuing democracy over development has a significant and *negative* relationship with concern for the environment. These results suggest that we should question whether environmentalism is a post-materialist value, since those

[8] Ecuador has three levels of administrative divisions – the province (24 in the country), the county (within provinces) and the *parroquia* (within counties).

individuals that seemingly have their needs met and who claim similar "higher-order" values are not those that express the most concern over the environment as a problem.

Instead, it appears that those individuals who are most vulnerable to environmental damage are likely to express the greatest concern over the environment. Returning to Table 1, two of the measures evaluating the Vulnerability Hypothesis are significant and in the expected direction. Among the objective 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 to water is 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.

Perceived vulnerability also appears to play a role in environmental attitudes. Concern over climate change has a significant and positive effect on worrying about the environment relative to other problems. For example, those who are not at all worried about climate change have a 4% likelihood of claiming to worry about the environment more than the majority of other problems, compared to the 25% probability of those who are very worried about climate change. Perhaps surprisingly, we find no relationship between perceived impacts of climate change and environmental concern based on the estimated coefficient of our Impact Index. This result suggests that more perceived impacts of climate change (droughts, floods, sunburns, heat waves) do not correspond with greater worry over the environment. One possible conclusion we could draw from this finding is that objective vulnerability is a better predictor of environmentalism than perceived vulnerability. Leaving the Impact Index from the analysis does not change our results on any other variables.

<FIGURE 2 HERE>

Other strong predictors of environmentalism are the presence of mining, oil, and the debate over oil in the locality of the respondent. Mining seems to make individuals much more likely to express concern for the environment over all other problems. Respondents who live in localities with mining are over twice as likely to express such concern for the environment compared to individuals who do not live with mining (15% probability compared with 6%). The dynamic is a bit different for the presence of oil extraction, which has a negative relationship with environmental concern. This coincides with the experience specific to Ecuador, where mining is still relatively new so is highly salient in areas where it is taking place, and 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 extraction, and where the environment is already quite degraded, individuals are much less likely to express concern over the environment. Individuals that 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.

The findings for oil debate are more nuanced. Oil debate alone does not have a significant effect on expressions of environmental concern (see Model 1). However, when we interact oil debate

with trust in the president, we find that oil debate has conditional effects on environmental attitudes, based on whether or not an individual has faith in the president (Model 2). In order to simplify the interpretation of the interaction between oil debate and trust in the president, 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 – and used a logit model with clustered standard errors to estimate the coefficients (see Model 3). In this model, both oil debate and its interaction with trust in the president are both significant, and in the directions we expected. When presidential trust is zero, living in a locality where oil is debated has a positive effect on environmental concern. However, once presidential trust begins to increase, the effect of oil debate is dampened, as given by the negative coefficient on the interaction term.

To further illustrate the effects of oil debate and presidential trust, we plotted the marginal effects of living in a locality where oil extraction is debated across levels of presidential trust (see Figure 2). This figure clearly demonstrates that oil debate is likely to influence whether respondents believe the environment is the greatest concern – but only when presidential trust is very low. As presidential trust increases to about 1.5 (between little and some trust), the effect of oil debate becomes indistinguishable from zero (the confidence intervals split the zero line). Interestingly, once presidential trust reaches the highest level of 3 (a lot of trust), the effect of oil debate actually becomes *negative*, meaning that respondents who live in areas with an oil debate but have a huge amount of faith in the government are actually *less* likely to express the greatest level of concern over the environment.

Qualitative Support for Results: Evidence from the Field

Over 100 open-ended interviews at over a dozen localities throughout Ecuador in June 2014 strongly confirmed these statistical findings. Not only was the post-material argument disconfirmed by the fact that the poor demonstrated stronger "post-materialist" views on the environment than more affluent respondents, but also those in rural communities (indigenous groups and *campesinos*) whose livelihoods depended on the environment and were thus more vulnerable to its shifts. For example, in defiance of the neo-Marxist interpretations of Inglehart, a Sapara leader said, "[f]or us there is no capitalism. Everything is collectivism. Anyone can harvest what they want, but the land belongs to everyone" (Ushigua interview). He further added that money was not important to his people. Rather, what mattered was "living well with the richness of the earth." Indeed, to Ushigua, having lots of money and living well with the environment were almost incompatible. Puyo Mayor de la Torre argued similarly that what matters is development rather than wealth, adding that "development cannot be measured by meters of freeways built . . . It is when one has a way to get up and work in something useful that fills the basic needs of his/her children" (de la Torre interview). In this way, the environment forms an integral part of citizen livelihoods, and is valued for the role that it plays in meeting the most basic needs of rural, indigenous and impoverished citizens.

The rural respondents surveyed, known for living close to nature's volatile fluctuations, were especially vocal in relating their material (and spiritual) outlooks to the environment. According to one Santa Isabel activist, "Ecology has become fashionable . . .But . . . the underlying problem is inequality and we need to focus on that" (Arpe interview). Some, like a federal government

official in Sucumbios, argue that oil and mineral extraction is what will diminish vulnerability to poverty and the elements, even if it does carry some inevitable environmental costs. "There is social remediation," he said (Sallo interview). "Petroleum extraction helps us attend to peoples' basic needs." That sentiment was echoed by dozens of interviewees - that environmental exposure to oil-drilling, in particular, may make people vulnerable to sickness and pollution, but that it does help them meet their basic needs. This argument is highly controversial, however, and scores of interviewees also argued for restricting extractivism, but based on perceived effects of pollution on the economy of poor rural residents more than on any innate post-materialist position in favor of the environment.

Political competition and location on the extractive frontier were also considered to be very important. As has been the case in Ecuador for decades, the Andean indigenous groups, affiliated with the CONAIE indigenous "union" and the Pachakutik political party, opposed the government and also had strong views of the environment. As we explain further below, the situation is more complex when it comes to the debate over oil extraction in the Amazon region.

In the Amazon region, interviewees were much more divided regarding their views of the environment, and those living near the already-exploited northern oilfields had much more sanguine views. Further to 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. The Waorani indigenous group, centered in Lago Agrio, strongly criticized the central government's failure to attend to environmental degradation, but divided over whether to further explore and drill for oil. Indeed, the national president and vice president of this group openly disagreed in a joint interview over whether they should allow the national or provincial governments to extract more oil from Waorani land (Cahauigia and Moi interviews), although others, like the Andwa peoples, said they would accept reasonable compensation for oil drilling on their lands (Proano interview). Further south in Coca and Puyo, where oil concessions are more recent, and in some cases still being negotiated, Kichwa, Shuar, and Waorani leaders conveyed ambivalence about whether to cooperate with further oil extraction efforts (Ampush, Grefa, Omentoque interviews). 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 (Callera, Paes, Tibi, Wachapa Atsau interviews). The geographic relativity of community positions was summarized by a Sapara leader near Lago Agrio, "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 (Ushigua interview)."

Having demonstrated statistically that rational explanations – vulnerability, political competition, and location along the extractive frontier - are more important to Ecuadorians than post-material "values-based" arguments for their valuation of environmental issues, we have also offered at least an introduction to the public debates – revealed extensively to us in interviews - which strongly corroborate our causal claims. In the concluding section, we briefly discuss Ecuadorian intellectuals' efforts to create a materialist argument, but on a different premise from that of Inglehart and his colleagues. The formulation of a "good living" philosophy (referred to most often by its Quichua name, *sumak kausay*, in Spanish *buen vivir*) seeks to better define a "pre-

materialist" pro-environmental worldview which also involves elements of vulnerability and development (to diminish vulnerability). Most formulations of sumak kausay tend to shun the influence of internationals, be they multinational corporations or environmental NGOs, but a more contemporary formulation of *sumak kausay* is emerging which seeks to engage fully with the international community.

Conclusions and Implications: *Sumak Kawsay* as Indigenous Synthesis of Anti-Materialist Environmentalism, Vulnerability Theory, and Anti-Extractivism

Over the last decade, a movement to synchretize a strong position on environmental rights has emerged in Ecuador and elsewhere in the Andes, based loosely on Quichua worldviews. A few of the movement's features will be briefly delineated here, as they address the need for a new non-materialist representation of environmental issues within worldviews of the poor, the rural, and those vulnerable to environmental catastrophes and human development setbacks. Giving better framing to the issue than survey respondents, dozens of interviewees offered perspectives on the meaning of *sumak kausay*, and which relate to the claims we articulate above. We wish to offer a composite of how indigenous respondents crafted their own articulation of a pre-materialist worldview revolving around environmental issues, but which strongly contradicts post-materialism, and reaffirms vulnerability theory. We briefly present the autarkic version, focused entirely on inward-looking dynamics, but then mention a more internationalist variant. Normatively speaking, the international variant holds the greatest hope for the protagonism of indigenous peoples in helping resolve environmental degradation in their lands, which are among the most biologically varied, resource rich, and unspoiled lands remaining in the world.

The purist view holds that *sumak kawsay* is based on ancestral views; people find their place in nature, and this generates personal harmony and well-being in relation to other natural living entities in the forest, and with Mother Earth (Pacha Mama) as a whole. As tersely summarized: "El *buen vivir* is to live with our own riches, the waterfalls, nature and [ancestral] knowledge. Any development has to be consistent with these times" (Tibi). Outsider involvement interferes with the direct bond between humans and nature. The western introduction of money, carcinogens in food, and environmental degradation have caused the links between human beings, the forest, and nature more broadly, to uncouple. "Growing up with chemicals in your body is not good," said one *sumak kausay* adherent. "I grew up without pain or sickness, but everything is changing . . . now we have to buy everything with money . . . we have to raise only corn and then sell it on the market" (Chimbo interview).

Some advocate for a modernizing of sumak kausay to allow Ecuadorians to compete also with the outside world. For example, one indigenous government official argued that: "We have to meld traditional health practices with Western ones, just as in justice there is a uniting of indigenous and state forms of law. However, the ancestral knowledge does not have human talent [to give it full expression]. We need to develop that talent" (Tumink interview). Others accuse *sumak kausay* practitioners of using that philosophy as an excuse to undermine deals with the state and extractive companies which would give poor communities clinics and schools, even at the expense of an ethereal link between people and their natural environment. Those arguing that indigenous communities accept contracts for oil extraction on their lands view *buen vivir* in more conventional development terms: "Here you have to buy [things] and if you don't have

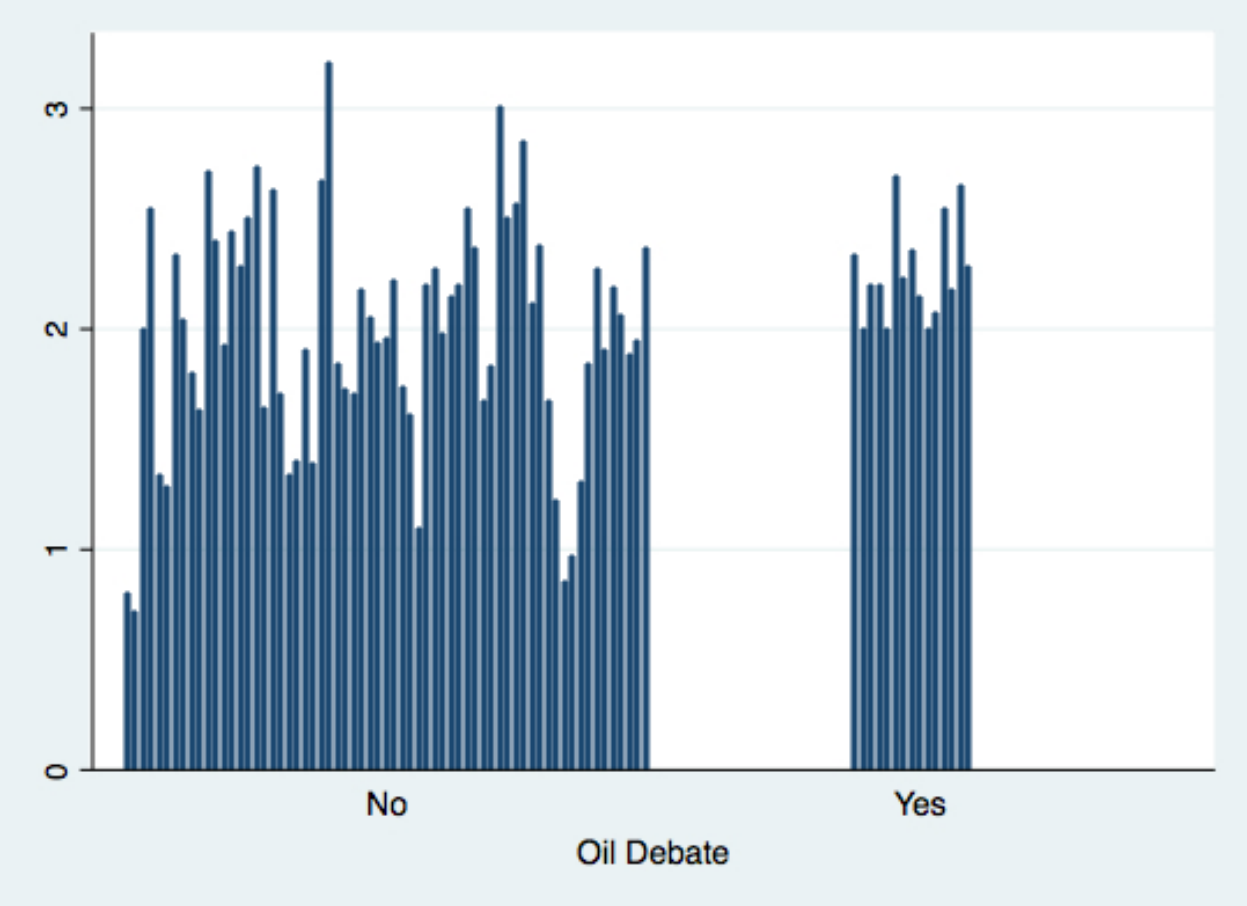
money, you die of hunger. That is poverty. . . *Vivir bien* means to have nutrition, health, and live in a collaboration between man and nature" (Santi interview).

While our analysis of survey results could not offer nuanced casual explanations, we have found that it identified key problems in prior interpretations of interest in environmental issues. Field research showed that these attitudes are outward manifestations of values formed in relation to critical and even acerbic debates in many parts of Ecuador (and in the Andean region more broadly), relating to the role of the state in mitigating damage as it simultaneously tries to protect the nation's people living in or near its fragile and unique ecosystems. The state propels economic growth, and, more importantly, a strong boom in public spending, by staking the nation's public spending on oil royalties and those that can be derived from extracting other resources like hydroelectric power and gold and copper mining. The oil frontier in Ecuador, moving south and east from the heavily damaged area contaminated in the past by egregious oil spills from wells run by Texaco (now Chevron) and the Ecuadorian state into virgin rainforests, polarizes citizen attitudes strongly as it extends, giving even greater credence to the vulnerability explanation for their positions.

From a normative standpoint, environmentalists worldwide have followed Ecuador's strongly pro-environment positions, from the unprecedented mention of the "human rights" of nature in the 2008 constitution to the now-aborted several-year campaign to save parts of the biodiverse and unspoiled Yasuni National Park from oil drilling. It seems the government has backpedaled on its environmental commitment, leaving Ecuadorians, including our survey respondents and interviewees, to take stewardship of the nation's unspoiled natural areas into their own hands. Parting from a variant of the *sumak kausay* worldview, some Ecuadorian indigenous leaders are adopting much more internationalist and scientific variants of environmentalism, which may help pressure for international agreements and strong national environmental enforcement. For example, in a counter to the United Nations Reducing Emissions from Deforestation and [Forest] Degradation program (REDD), which seeks to offset carbon dioxide emissions by polluter companies through the preservation of carbon dioxide-absorbing forest lands, Tuntiak Katan of the COICA (Amazon Basin indigenous peoples), has sought to expand the definition of REDD. To Katan (interview), the integral conservation of the forest should also involve a role for the humans who live there, if they can manage eco-system-friendly services and the practice of cultural traditions which pre-date REDD's commencement in recent years.

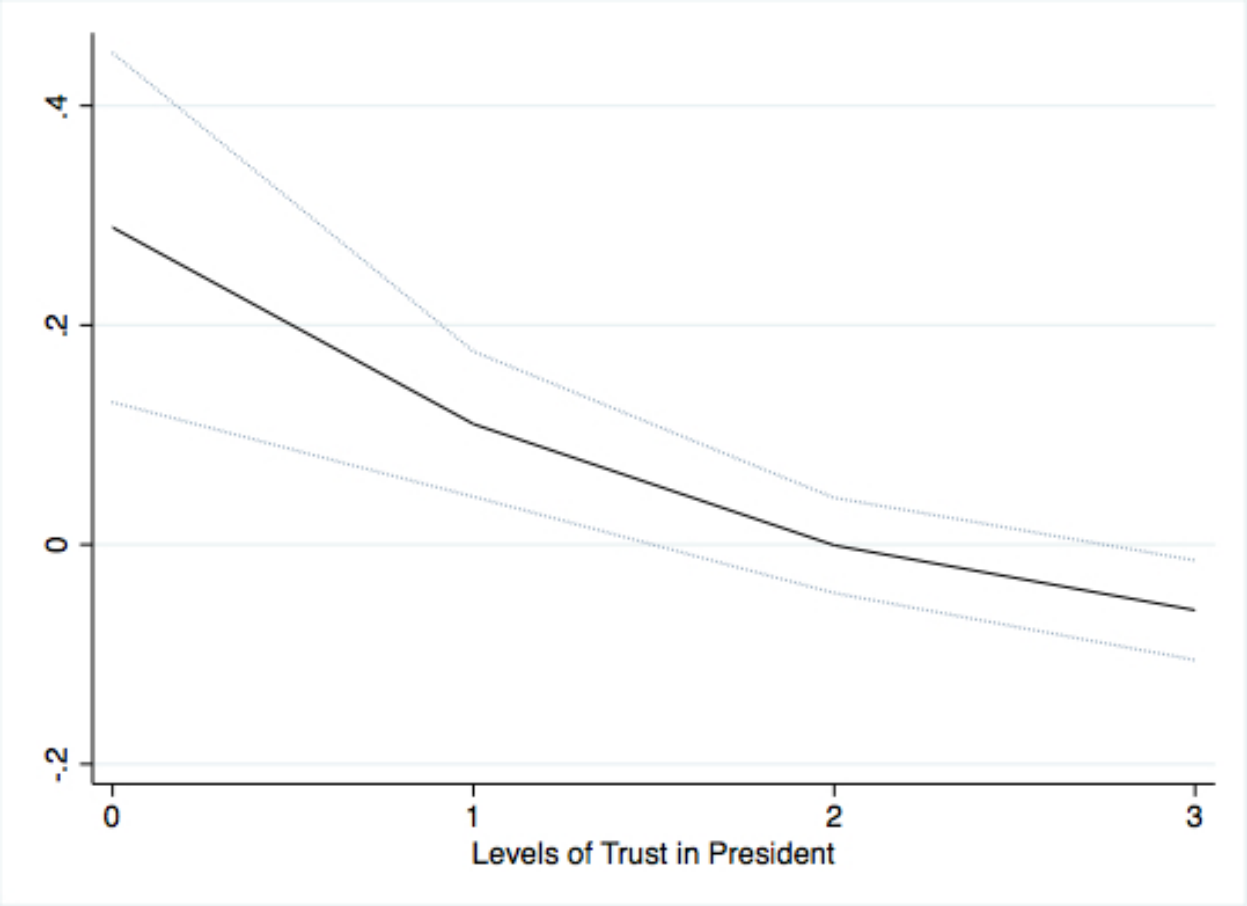
Reconciling respondents' inward-looking need to address vulnerability to environmental changes which could worsen poverty with an outward-looking effort to insert their communities into regional, national, and global debates about climate change and the equities related to this, may be the attitude-defining debate of the next decade. Even the poorest and most remote Ecuadorians have positions on these issues, and their perceptions of the urgency of these matters may in the future offer even further evidence of the need to bring vulnerability theory into political science. 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.

Figure 1. Mean Environmental Concern Across Localities by Presence of Oil Debate in Nationwide Survey Sample of Ecuador



Note. Environmental Concern measure is ordinal, where 0 = environment is not at all a concern compared to other problems, 2 = environment more of a concern than some other problems, and 4 = environment is more worrisome than any other problem.

Figure 2. Marginal Effects of Oil Debate on the Probability of Highest Level of Environmental Concern Across Levels of Presidential Trust



Note. This figure is based on Model 3. Levels of trust in president is coded 0 = none, 1 = little, 2 = some, 3 = a lot. The dashed lines are the 95% confidence intervals.

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

	1 (All Levels)	2 (All Levels)	3 (Highest Level)
Post-Materialist Hypothesis			
Income	-0.039	-0.037	-0.132
	(0.037)	(0.037)	(0.069)*
Professional	0.225	0.193	0.746
	(0.265)	(0.266)	(0.401)*
Social Media	0.034	0.037	0.134
	(0.129)	(0.129)	(0.273)
Eco Donation	-0.238	-0.218	0.246
	(0.268)	(0.268)	(0.443)
Human Rights	-0.304	-0.309	-0.726
	(0.232)	(0.232)	(0.580)
Indigenous Leader	0.171	0.172	0.259
	(0.105)	(0.105)	(0.180)
Dem vs Dev	-0.289	-0.298	-0.392
	(0.112)***	(0.112)***	(0.294)
Vulnerability Hypothesis			
Water Scarcity	0.318	0.303	0.322
	(0.185)*	(0.185)	(0.310)
Subsistence Farming	0.164	0.173	-0.060
	(0.133)	(0.133)	(0.294)
Climate Change Concern	0.726	0.731	0.673
	(0.073)***	(0.073)***	(0.173)***
Impact Index	0.007	0.007	-0.043
	(0.045)	(0.045)	(0.067)
Ecotourism	0.348	0.348	0.255
	(0.150)**	(0.150)**	(0.243)
Extractivist Debate Hypothesis			
Mining	0.296	0.309	0.274
	(0.169)*	(0.170)*	(0.179)
History of Oil Extraction	-2.629	-2.655	
	(0.460)***	(0.461)***	
Oil Debate	0.240	0.643	2.396
	(0.268)	(0.378)*	(0.478)***
Political Competition Hypothesis			
Pachakutik (Opposition) Party ID	0.425	0.413	-0.503
	(0.207)**	(0.207)**	(0.492)
PAIS (President) Party ID	0.087	0.091	0.242
	(0.181)	(0.181)	(0.274)
Trust in Indigenous Movement	0.132	0.131	0.064
	(0.066)**	(0.066)**	(0.132)
Trust in President	-0.147	-0.112	0.220
	(0.058)**	(0.063)*	(0.157)
Oil Debate*Trust in President		-0.231	-1.299
		(0.153)	(0.281)***
Controls			
Media	0.009	0.012	-0.066
	(0.057)	(0.057)	(0.121)
Religion	0.025	0.028	0.408
	(0.075)	(0.075)	(0.209)*
Popular Knowledge	0.100	0.100	0.017
	(0.029)***	(0.029)***	(0.055)
Indigenous	-0.141	-0.127	-0.443
	(0.191)	(0.192)	(0.383)

Education	0.110	0.113	0.056
	(0.049)**	(0.049)**	(0.096)
Age	-0.002	-0.003	-0.007
	(0.004)	(0.004)	(0.008)
Constants			
Cut 1/Constant	-1.858	-1.754	-5.926
	(0.553)***	(0.557)***	(1.324)***
Cut 2	1.951	2.055	
	(0.533)***	(0.538)***	
Cut 3	4.035	4.140	
	(0.542)***	(0.547)***	
Cut 4	5.682	5.792	
	(0.552)***	(0.558)***	
Variance Component			
	0.493	0.493	
	(0.130)***	(0.130)***	
N	1,538	1,538	1,443

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

APPENDIX A

Table A1. Description of Variables Used in Analysis

Variable	Survey Label	Coding	Question Wording
Environmental Concern	PREOC9	1 None; 2 Less than many of the problems; 3 More than some of the problems; 4 More than the majority of the problems; 5 More than any other problem	*Tomando en cuenta lo anterior, ¿Qué tanto la preocupa a usted el medio ambiente?*
Human Rights	PROB1	1 if human rights one of top six problems in Ecuador, 0 otherwise	*En su opinión ¿Cuáles son los 6 problemas más graves que está enfrentando el PAÍS?*
Indigenous Leader	ID19	1 if in disagreement, 0 otherwise	*Algunos dicen que los indígenas no son buenos líderes políticos. ¿Está usted de acuerdo o en desacuerdo?*
Dem vs Dev	DEM5	1 if democracy, 0 otherwise	*Cual es para usted más importante: ¿La democracia o el desarrollo?*
Social Media	MEDIA2	1 if yes have used in past week, 0 otherwise	*En la última semana, ¿ha utilizado alguna red social del Internet como Twitter o Facebook?*
Professional	OCUP2	Coded 1 if professional, intellectual, scientist, technician or mid-level professional, 0 otherwise	*¿Cuál es la ocupación o tipo de trabajo que realiza?*
Water Scarcity	WATER3	1 if never, few times a month or few times a week; 0 otherwise	*Aquí en su casa tienen agua disponible para usar…(1) Nunca; (2) Algunas veces al mes; (3) Algunas veces a la semana; (4) Casi siempre; (5) Todo el tiempo y todos los días*
Impact Index	IMPACT2, IMPACT3, IMPACT4, IMPACT5	Calculated first component of the four variables using principle component analysis	*¿Han habido sequias en esta zona en los últimos cinco años? ¿Han habido inundaciones en esta zona en los últimos cinco años? ¿Han habido olas de calientamiento fuertes en esta zona en los últimos cinco años? ¿Ha notado un aumento de quemaduras a su piel durante la parte mas caliente del*

			dia en los últimos cinco años?
Climate Change Concern	DISASTER1	1 not worried, 2 slightly worried, 3 somewhat worried, 4 very worried	*¿Qué tanto le preocupan los eventos relacionados con cambios dramáticos de clima, tales como sequías o inundaciones que puedan afectarlo a usted y a su familia en los próximos seis meses?*
Media	MEDIA1	1 never, 2 rarely, 3 few times a month, 4 few times a week, 5 daily	*¿Con qué frecuencia sigue las noticias, ya sea en la televisión, la radio, los periódicos, o el Internet?*
Religion	REL9	1 not important at all; 2 not very important; 3 somewhat important; 4 very important	*Por favor, podría decirme ¿Qué tan importante es la religión en su vida?*
Knowledge Index	AI1 AI2 AI3 AI4 AI5 AI6 AI7 AI8 AI9 AI10 AI11 AI12 AI13 AI14	Calculated first component of the fourteen variables using principle component analysis	*En relación con lo que uno oye o comenta, podría decirme si ha oído hablar de…* *AI1. ALBA (agrupación de gobiernos latinoamericanos)* *AI2. La movilización de las comunidades indigenas en Bolivia* *AI3. Compañías de envío/recibo de dinero como Western Union* *AI4.El Parque Nacional Yasuní* *AI5. Los Grupos No Contactados* *AI6. Biodiversidad* *AI7. El Convenio 169 de la Organización Internacional de Trabajo (OIT)* *AI8. La Capa de Ozono* *AI9. La Organización de Estados Americanos (OEA)* *AI10. La CONAIE* *AI11. La Universidad Yachay* *AI12. Los Pesticidas* *AI13. El Programa Socio Bosque* *AI13. La corriente del Niño*
Education	EDUC2	1 is none; 2 incomplete primary; 3 primary; 4 incomplete secondary; 5 secondary; 6 incomplete	*¿Cuál fue el máximo nivel de estudios que usted alcanzó?*

		university; 7 complete university; 8 postgraduate	
Income	Q1	0 is no income; 5 is $301 to $500; 10 is $2001 or more	*¿En cuál de los siguientes rangos se encuentran los ingresos familiares mensuales de este hogar, incluyendo las remesas del exterior y el ingreso de todos los adultos e hijos que trabajan?*
Eco Donation	ENVIRO15	1 if yes, 0 otherwise	*¿Ha donado dinero a una organización ecológica?*
Ecotourism	ENVIRO18	1 if yes, 0 otherwise	*¿Beneficia Ud. directamente del ecoturismo en esta comunidad/barrio?*
Subsistence Farming	LAND4	1 if yes, 0 otherwise	*De lo que usted produce en su tierra, diría que: (1) Es principalmente para consume familiar; (0) Es principalmente para comercializarla o no produce*
Pachakutik ID; PAIS ID	POLITICS2	1 if yes, 0 otherwise	*Se identifica con algún partido político o movimiento? Con cuál partido político o movimiento?*
Trust in Indigenous Movement; Trust in President	INST2; INST23	0 is none; 1 is little; 2 is some; 3 is a lot	*Cuánta confianza tiene en cada uno de los grupos e instituciones? El presidente y la CONAIE.*

APPENDIX B – Survey Sample Design

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 sampling method, designed by the Ecuadorian survey company CEDATOS which also administered the survey, consisted of a three-stage procedure. The three strata were organized based on three criteria. The first criterion dictated the selection of cases in the following national geographic areas: 1. Sierra, 2. Costa, 3. Oriente. The second criteria designated cases between urban and rural areas, and the third criteria designated cases in the following fields: 1. Quito, 2. Guayaquil, 3. Cities with more than 100 thousand inhabitants, 4. Cities with 25 thousand to 100 thousand inhabitants, 5. Cities with fewer than 25 thousand inhabitants, and 6. Rural parishes. Probability sampling was used at all stages: stratified, multistage, by cluster, with the random selection of the units in each stage, including the final selection of the adult to be interviewed in the household sample selected.

Sampling was stratified by region (Coast, Highlands and East) and areas (urban and rural) and was multistage because of the selection of the Primary Sampling Units (PSU, cantons); followed by secondary units in each PSU formed by census sectors (using 2010 National Population and Housing Census data as processed by CEDATOS); then Third Stage Units (blocks or segments) and Final Sampling Units (FSU) formed into clusters sizes of 6 to 8 in urban areas and 10 to 12 in rural areas and dispersed populations. In each of these clusters' housing units, a single household unit will be selected as the unit of observation and then, as a Final Unit of Study; one and only one adult of voting age was selected by a random process (Cordova). At the final stage, a quota system was used to probabilistically select the adult in each household, in a manner that considered gender categories and three age groups. The probabilistic selection rule did not support the substitution or replacement of the selected units.

The national probability sample design was of voting-age population (over 16 years old), with a total size (n) of 1,781 persons. Data was conducted via face-to-face interviews conducted in Spanish as well as in other languages, as the study included a booster sample of 640 indigenous people, representing the following groups: Kichwa (Sierra), Shuar, Achuar, Andoa, Chibuleos, Salasacas, Cachas/Coltas, and Otavalos). CEDATOS included on its interviewer team monolingual as well as bilingual and trilingual speakers (Spanish and other indigenous languages). The confidence level expected for the entire national sample is 95% (Z .95 = 1.965) with a margin of error of + / - 2.33%, assuming a 50/50 ratio (P = 0.50, Q = 1 - P); for the dichotomous variables, in the worst of cases.

The sample design considered stratification, clustering, and weighting procedures. The sample is composed of six strata representing the three main geographical regions: coast, highlands, and the Amazon; as well a sub-stratification by urban and rural areas. Since the Amazon region has a small population, a larger sample of respondents from this region is drawn, and sample weights will be incorporated to reflect the actual known distribution of the population between the three regions. The sample was weighted to produce representative national results.

The sample consists of 285 primary sampling units (PSUs), with a stratification according to their condition of urban and rural areas (PSU: 114 urban and 109 rural), and 12 identified strata.

This sample will be selected in 23 provinces that represent the country in total. The insular province of Galapagos is not included in the survey. A total of 685 respondents were surveyed in urban areas and 445 in rural areas. A booster sample of indigenous population of size of 640 was drawn to have deep information regarding this particular population. The total sample size of the study is 1,780 which draw an estimated margin of error for the survey of ± 2.3%. Indeed, the confidence level expected for the entire national sample is 95% (Z .95 = 1.965) with a margin of error of + / - 2.33%, assuming a 50/50 ratio (P = 0.50, Q = 1 - P); for the dichotomous variables, in the worst of cases. It assumes a DEF of 1.022 by the system of cluster sampling for the highlands and coast, and a DEF of 1.011 for the East, which had been internally stratification by north and south.

To ensure the efficiency, adequacy and accuracy of the sample, an “Adjust for non-coverage” sample system was adopted, ensuring the implementation of the sample sizes as minimum estimates within the confidence levels and maximum allowable error. Additionally, the system ensures the elimination of bias resulting from the substitution or replacement of units that are unable to be survey subjects. While this system presented a significant cost for CEDATOS, it ensured the quality of the information. The method is possible by the knowledge that CEDATOS has regarding "No Coverage" observed in similar studies in national, urban and rural areas. The non-response rate was 26 percent, and non-responses were substituted by other cases after the third interviewer visit to a given household.

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