

**Between extraction and protection: Public support for natural resource  
regulation and environmental governance across Africa, a continental analysis  
with West Africa as a case study**

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## Abstract

Natural resource extraction is central to development strategies across Africa, yet it generates persistent conflicts over environmental costs, benefit distribution, and governance legitimacy. Public attitudes toward this trade-off have remained largely unmeasured at the continental scale. This paper provides the first cross-national quantitative analysis of citizen preferences for environmental protection versus economic development and of public beliefs about the legitimacy of extraction governance across 39 African countries. Using the Afrobarometer Round 9 Merged Dataset (2021–2023), comprising 53,444 adult respondents, we operationalize four dimensions of extraction legitimacy and examine the development–environment trade-off using binary logistic regression with individual and regional covariates.

Continent-wide, 47.0% of respondents prioritize environmental protection, against 43.4% who prioritize economic development. The most decisive finding is a 35.1 percentage-point extraction legitimacy gap, the difference between demand for stronger regulation (76.4%) and confidence that communities receive equitable benefits (41.3%), which is positive in every single country without exception. Climate change awareness is the strongest independent predictor of pro-environment preference (OR = 1.455,  $p < 0.001$ ), outperforming education, income, gender, and regional affiliation. West Africa is simultaneously the most development-oriented sub-region and the most supportive of extractive regulation. Ghana registers 85.0% support for regulation alongside only 45.9% confidence in equitable benefit distribution.

African citizens broadly favor regulating extraction rather than ceasing it, while expressing widespread skepticism that existing governance delivers equitable outcomes. This is "regulate but reform." Orientation constitutes the dominant public political economy of natural resources on the continent. Climate change awareness must be systematically integrated into environmental governance communication strategies, and West Africa's development orientation demands policies that credibly link the governance reform of extractive industries to tangible community benefit delivery.

**Keywords:** *natural resource extraction; environmental governance; public opinion; Africa; Afrobarometer; social licence; climate change; West Africa; Ghana; resource curse; extraction legitimacy*

## **1. Introduction**

### **1.1 The extraction dilemma in African development**

Natural resource extraction, encompassing mining, oil and gas production, commercial forestry, and large-scale agricultural concessions, sits at the heart of Africa's development dilemma. For governments seeking the fiscal capacity to fund public services, infrastructure, and poverty reduction, extraction represents a critical and often irreplaceable revenue source. For the communities most directly exposed to extraction activity, however, the empirical balance sheet is strikingly different: environmental degradation, displacement, water contamination, loss of agricultural land, and a distribution of benefits so heavily skewed toward central governments, foreign investors, and urban elites that local populations derive little of the wealth generated from beneath or upon their land [1–3].

This tension between the national development rationale for extraction and the local environmental and equity costs it generates is not merely an academic problem. It produces real political conflicts, from illegal small-scale gold mining ("galamsey") in Ghana's forest zones to community protests in Nigeria's Niger Delta, from anti-mining movements in South Africa to forest rights disputes in the Congo Basin. These conflicts are united by a foundational question of governance legitimacy: who determines whether extraction proceeds, who bears the environmental and social costs, and who receives the economic benefits [4,5].

Despite the centrality of this question to African politics and development, systematic empirical measurement of citizen preferences for environmental protection versus economic development, and of public beliefs about the legitimacy of extraction governance, has remained thin. Most existing work on public attitudes toward extraction in Africa is qualitative, small-scale, and geographically limited [6,7]. This paper addresses that gap by analyzing the Afrobarometer

Round 9 survey (2021–2023), the most recent and geographically comprehensive wave, covering 53,444 respondents across 39 countries, to provide the first continental-scale quantitative portrait of African citizens' preferences on natural resource extraction and environmental governance.

### **1.2 The social license framework and the significance of public opinion**

The concept of "social license to operate" (SLO), the informal, ongoing community acceptance of an extraction project that conditions its practical sustainability, has emerged as a central organizing framework in the natural resource management literature [8,9]. Social license theory holds that legal permits are necessary but not sufficient for extraction to proceed without conflict; the broader community, not only directly affected residents, must perceive the project as legitimate, equitable, and well-governed.

At the national level, this translates into whether citizens believe their country's extraction sector is effectively regulated, whether communities receive adequate benefits, and whether citizens have a meaningful voice in extraction decisions. These are precisely the dimensions captured by the Afrobarometer Q73 battery, which this paper systematically analyses at the continental scale for the first time. The findings reveal a continent-wide SLO deficit: high demand for regulatory reform coexists with low confidence that communities benefit equitably, a structural condition that predisposes to extraction conflict across the region.

### **1.3 West Africa and Ghana as analytical anchors**

West Africa is selected as the primary comparative case study sub-region for three reasons. First, it contains the most internally diverse combination of resource-dependent economies on the continent, from Nigeria's oil dominance to Ghana's gold and cocoa combination to Mali's artisanal gold sector, making it an ideal laboratory for examining how resource profiles shape public attitudes. Second, West Africa presents the most analytically compelling tension in the data: it is

simultaneously the sub-region with the highest support for extraction regulation (81.3%) and the most development-oriented on the jobs-versus-environment trade-off (48.3% pro-development). Third, Ghana provides one of the most policy-relevant individual-country cases: the galamsey crisis has made the costs and governance failures of extraction viscerally immediate for Ghanaian citizens, in ways that are clearly legible in the Afrobarometer data.

The hybrid Africa-wide and West Africa structure of this paper reflects a deliberate methodological choice: continental breadth establishes generalizable patterns, while regional and country-level depth provides the political and economic context that renders those patterns meaningful for policy.

## **1.4 Research questions**

This study addresses four research questions. (1) How do African citizens evaluate the development–environment trade-off, and what structural and demographic factors predict pro-environmental preference? (2) What do African citizens believe about the legitimacy of natural resource extraction governance, and is there a systematic gap between demand for regulation and confidence in benefit distribution? (3) How does West Africa compare to other African sub-regions on both the trade-off and the legitimacy dimensions, and what accounts for Ghana's specific position? (4) What roles do climate change awareness, pollution perception, and drought experience play in shaping environmental attitudes and extraction governance preferences?

## **2. Literature review**

### **2.1 The political economy of natural resource extraction in Africa**

The resource curse literature, the paradox whereby natural resource abundance is associated with slower economic growth, weaker institutions, and elevated conflict risk, has

generated several decades of theoretical and empirical debate about the mechanisms linking extraction to development outcomes in low-income countries [10,11]. For Africa specifically, Ross [2] demonstrated that oil wealth is associated with reduced political accountability and weakened democratic institutions, creating the structural conditions in which citizen concerns about extraction governance are systematically marginalized. Arsel et al. [3] extended this analysis to what they term "extractivism": the political economy in which states become dependent on extraction revenues and consequently become resistant to environmental regulations that threaten those revenues.

The distributional dimension of extraction conflict is captured in the resource curse literature's focus on enclave extraction, the phenomenon in which extraction generates wealth that flows primarily to central governments and international investors rather than to local communities [12,13]. In West Africa, this enclave problem is particularly acute: communities in Ghana's gold belt, Nigeria's Niger Delta, and Guinea's bauxite zones have documented decades of environmental degradation with minimal local compensation, generating precisely the social license deficit this paper identifies in survey data at the continental scale [5,14].

## **2.2 Environmental attitudes in sub-Saharan Africa: Prior evidence**

Systematic empirical evidence on environmental attitudes in Africa remains limited. Afrobarometer has produced descriptive analyses of selected questions from prior rounds, including a 2020 analysis of climate change attitudes [6] and a 2022 analysis of perceptions of natural resource governance from Round 8 data [15]. These analyses document rising climate awareness and environmental concern across the continent, but do not systematically examine the determinants of environmental preferences or the legitimacy dimensions of extraction governance analyzed here.

The broader political science literature on environmental attitudes in lower-income contexts suggests that the classic post-materialist hypothesis, that environmental concern rises with income as material needs are met, does not straightforwardly apply in African contexts [16,17]. Franzen and Vogl [18], in a 20-country analysis of the International Social Survey Program, found that education and media access are stronger predictors of environmental concern than income in many non-Western contexts. Aklin et al. [19], in an experimental study across six lower-income countries, found that communities adjacent to extraction projects express greater environmental concern than non-adjacent communities, consistent with direct experience of extraction costs as a primary driver of environmental preference.

For West Africa specifically, Bansah [7] documented that communities in galamsey-affected areas expressed strong preferences for regulation alongside skepticism about government enforcement capacity, a pattern consistent with the legitimacy gap finding of this paper. Hilson [5] similarly identified the "regulate but reform" orientation among Nigerian oil communities: acceptance of extraction in principle combined with demand for stronger governance and more equitable benefit distribution.

### **2.3 Climate change, environmental awareness, and extraction attitudes**

A growing literature links climate change awareness and perceived climate impacts to support for environmental regulation and green energy transition [20,21]. In Africa, empirical documentation of this linkage at scale is limited. Afrobarometer's 2020 analysis found that climate change awareness across Africa has increased substantially since 2013 but remains heterogeneous, with urban, educated, and media-connected populations most informed [6]. The finding in this paper that climate change awareness is the strongest independent predictor of pro-environment preference (OR = 1.455,  $p < 0.001$ ) extends this evidence to a 39-country analysis and establishes

the climate–environmental preference relationship as robust to demographic, socioeconomic, and regional controls.

## **2.4 Ghana as a case study: Galamsey, oil, and forest governance**

Ghana provides one of the most policy-relevant individual country contexts for environmental governance research in West Africa. Three interacting extraction crises define the Ghanaian case. First, illegal small-scale gold mining (galamsey) has expanded substantially since 2010, contaminating the Pra, Ankobra, and Offin river systems, destroying farmland, and generating a public health crisis in affected mining communities [22,23]. Multiple military operations since 2017 have produced limited results and remain contested. Second, offshore oil production since 2010 has generated fiscal revenues but also oil spills and degraded artisanal fishing livelihoods in coastal communities [24]. Third, deforestation driven by both galamsey and commercial agriculture has reduced Ghana's forest cover from 8.2 million hectares at independence to under 2 million today [25].

These three crises provide the context within which Ghana's Afrobarometer data acquires its full significance: 85.0% of Ghanaians support stronger regulation of resource extraction. In contrast, only 45.9% believe communities receive fair benefits, and 49.0% prioritise development over the environment. These figures reflect not abstract preferences but the lived experience of governance failure in a resource-rich country.

## **3. Methods**

### **3.1 Data source**

This study uses the Afrobarometer Round 9 Merged Dataset (2021–2023; DOI: 10.25828/bs9k-zy70), a nationally representative public opinion survey of 53,444 adult

respondents (aged  $\geq 18$ ) across 39 African countries, conducted between October 2021 and July 2023. Afrobarometer is a pan-African, non-partisan, independent research network. The dataset is publicly available under a Creative Commons CC-BY-SA license. As this is a secondary analysis of fully anonymized, publicly available data with no individual-level identifying information, ethical approval by an institutional review board was not required. The study is reported in accordance with the STROBE guidelines for cross-sectional observational studies [S1 STROBE Checklist].

### 3.2 Variables

#### Outcome variables

The development–environment trade-off (Q71) is measured as a binary indicator of whether respondents agree with Statement 1 ("Government should create jobs even if the environment suffers") or Statement 2 ("Government should protect the environment even if growth is limited"). The pro-environment stance (coded 1) comprises "Agree" and "Agree very strongly" with Statement 2. Respondents selecting "Agree with neither" or "Don't know" are excluded from regression analyses.

Four extraction legitimacy dimensions are measured from Q73: (Q73A) natural resource extraction needs more regulation; (Q73B) citizens have a voice in decisions about natural resource extraction; (Q73C) communities hosting natural resource extraction receive a fair share of benefits; (Q73D) the benefits of natural resource extraction in the country outweigh the costs. Each is coded as binary: 1 = "Agree" or "Strongly agree"; 0 = "Disagree" or "Strongly disagree." The extraction legitimacy gap is defined as the percentage-point difference between Q73A (demand for regulation) and Q73C (belief in equitable benefit distribution).

#### Predictor variables

Rural location (URBRUR, binary: rural = 1), female gender (Q100, binary: female = 1), age (Q1, continuous), education (Q94, ordinal 0–9 from no formal schooling to postgraduate level), and the Lived Poverty Index (LPI; range 0–4, higher = more deprived [26]) are included as standard sociodemographic controls. West Africa region (COUNTRY.BY.REGION, binary: West Africa = 1) is included to assess sub-regional effects. Three environmental attitude predictors are included as theoretically motivated mediators: climate change awareness (Q67A, binary: has heard of climate change = 1), perceived pollution seriousness (Q72A, binary: very/somewhat serious = 1), and perceived drought worsening (Q66A, binary: much/somewhat more severe = 1).

### **3.3 Statistical analysis**

Weighted descriptive statistics using the `combinwt_ea` variable provide continental and sub-regional estimates. Binary logistic regression estimated by maximum likelihood was conducted for two outcomes: (1) pro-environment stance on Q71; and (2) support for extraction regulation on Q73A. Odds ratios (OR) with 95% confidence intervals (CI) and Wald test p-values are reported. Model fit is assessed using McFadden's pseudo- $R^2$  and the Akaike Information Criterion (AIC). The West Africa case study draws on country-level descriptives and within-region comparative analysis. All analyses were conducted in R.

## **4. Results**

### **4.1 The continental picture: Environmental preference and the extraction legitimacy framework**

Continent-wide, African citizens are almost evenly divided on the development–environment trade-off: 47.0% prioritise environmental protection over economic development, while 43.4% prioritise economic development. This near-equal split conceals substantial sub-

regional heterogeneity examined in Section 4.3. Fig 1 presents the four-dimensional extraction legitimacy framework (Q73A–D) that constitutes this paper's central analytical contribution. The most striking feature is the asymmetry across dimensions: support for regulation is overwhelming (76.4%), while confidence that communities receive fair benefits is substantially weaker (41.3%), a 35.1 percentage-point legitimacy gap. Citizens simultaneously demand more regulation and disbelieve that even existing regulatory mechanisms deliver equitable outcomes. This empirically grounded "regulate but reform" orientation defines African public opinion on extraction governance.

Fig 1. Public attitudes toward natural resource extraction: a four-dimension legitimacy framework. Q73A: extraction needs more regulation (76.4% agree); Q73B: citizens have a voice (50.5% agree); Q73C: community receives a fair share of benefits (41.3% agree); Q73D: benefits outweigh costs (45.5% agree). Afrobarometer Round 9 (2021–2023), N = 53,444, 39 countries.

Table 1 presents the full sub-regional breakdown across all legitimacy and environmental preference indicators.

**Table 1. Extraction legitimacy and environmental preference by sub-region (weighted %).**

Indicator	West Africa	East Africa	Southern Africa	Central Africa	North Africa	Continental
Pro-environment (Q71)	43.7	59.3	41.1	42.4	46.0	47.0
Pro-development (Q71)	48.3	30.8	47.5	49.8	41.6	43.4
Needs regulation (Q73A)	81.3	77.0	68.6	76.8	75.4	76.4
Citizens have voice (Q73B)	56.1	49.5	46.8	51.2	40.7	50.5
Fair share of benefits (Q73C)	50.1	38.5	33.5	39.8	37.0	41.3
Benefits outweigh costs (Q73D)	49.8	44.9	40.0	45.2	45.4	45.5
<b>Legitimacy gap Q73A – Q73C (pp)</b>	<b>31.2</b>	<b>38.5</b>	<b>35.1</b>	<b>37.0</b>	<b>38.4</b>	<b>35.1</b>
CC awareness (Q67A)	50.3	54.4	44.6	60.4	40.6	50.0

Indicator	West Africa	East Africa	Southern Africa	Central Africa	North Africa	Continental
Pollution perceived serious (Q72A)	67.6	56.1	60.8	73.7	82.8	65.1
Government CC performance good	35.7	49.7	30.2	26.8	22.4	35.9
Government environment good	39.4	57.7	35.8	31.3	25.9	41.1

Note. Weighted percentages using combinwt\_ea. Legitimacy gap = Q73A minus Q73C (pp). CC = climate change. Government performance ratings = % responding "fairly well" or "very well."

#### 4.2 The development–environment trade-off: Country-level variation

Fig 2 presents the country-level distribution of pro-development versus pro-environment preferences. A pronounced geographic patterning is evident: East African countries, Kenya (75.2% pro-environment), Uganda (67.4%), and Tanzania (66.3%), are markedly more environmentally oriented than their West African counterparts. At the development-prioritizing extreme, Eswatini (59.9% pro-development), Niger (60.2%), and Congo-Brazzaville (63.3%) register the highest development orientation. Ghana occupies a characteristic West African middle position: 49.0% pro-development versus 40.4% pro-environment, an 8.6 percentage-point tilt toward development that reflects the country's acute dependence on resource-extractive growth trajectories.

Fig 2. Development–environment trade-off by country. Each point represents one country. Countries above the parity diagonal are more pro-environment; countries below are more pro-development. East African countries cluster strongly in the pro-environment quadrant. Afrobarometer Round 9 (2021–2023), N = 53,444.

#### 4.3 The sub-regional comparative picture

Fig 3 presents sub-regional scores across all six key indicators simultaneously. East Africa stands out as the most environmentally oriented sub-region and the most satisfied with government environmental performance (57.7% rating government handling of the environment as good). This reflects both the relative absence of large-scale industrial extraction in several East African

countries and the heightened salience of climate change impacts, particularly severe drought in the Horn of Africa and recurrent flooding in the Great Lakes region, which translate climate exposure directly into environmental preferences.

North Africa presents the most critical governance picture: only 22.4% rate government climate change handling as good, and 82.8% report pollution as a serious problem, the highest pollution concern on the continent, yet 40.6% have not heard of climate change at all. This pattern reveals a significant disconnect between lived environmental experience and climate policy discourse. Central Africa, home to the Congo Basin forest, one of two remaining large tropical carbon sinks, records the highest climate change awareness (60.4%) but among the lowest government performance ratings on climate and environment (26.8% and 31.3%, respectively), reflecting acute governance capacity constraints in a region of globally critical ecological importance.

Fig 3. Regional comparison across six environmental and extraction governance indicators. Q71 = pro-environment; Q73A–D = extraction legitimacy dimensions; Q67A = climate awareness. Afrobarometer Round 9 (2021–2023).

#### **4.4 The extraction legitimacy gap across all 39 countries**

Fig 4 presents the extraction legitimacy gap, defined as the difference between support for regulation (Q73A) and belief in equitable community benefit distribution (Q73C), for all 39 countries. This gap is positive in every single country: nowhere in Africa do more citizens believe communities receive fair benefits than believe extraction requires stronger regulation. The range extends from 13.9 percentage points (Mauritania, the smallest gap) to 52.1 percentage points (Morocco, the largest), with Ghana at 39.1 percentage points, in the upper third of the distribution. This universal legitimacy deficit is the single most important finding of this paper for governance:

it implies that wherever extraction operates across the continent, a pre-existing structural deficit of public confidence confronts operators and governments that must be addressed proactively rather than reactively.

Fig 4. The extraction legitimacy gap: demand for regulation (Q73A) versus belief that communities receive a fair share (Q73C). The gap is positive in every country. Ghana is annotated. Afrobarometer Round 9 (2021–2023), N = 53,444.

#### **4.5 Predictors of pro-environment preference: Regression results**

Table 2 and Fig 5 present the binary logistic regression results for the two outcomes: pro-environment preference (Q71) and support for extraction regulation (Q73A).

In Model 1 (pro-environment preference; n = 47,854), climate change awareness is the dominant predictor: respondents who had heard about climate change were 45.5% more likely to prefer environmental protection (OR = 1.455, 95% CI: 1.401–1.511,  $p < 0.001$ ). Rural respondents were 14.2% more likely to be pro-environment (OR = 1.142, 95% CI: 1.098–1.188,  $p < 0.001$ ), consistent with rural populations' greater direct exposure to environmental degradation from extraction activity. Higher poverty (LPI) was negatively associated with pro-environment preference (OR = 0.877, 95% CI: 0.860–0.895,  $p < 0.001$ ), reflecting the material precarity that leads economically marginalized citizens to prioritize immediate development. West Africa was independently associated with lower pro-environment preference (OR = 0.759, 95% CI: 0.730–0.789,  $p < 0.001$ ), confirming a sub-regional effect that persists after controlling for individual-level covariates.

For support for extraction regulation (Model 2; n = 48,409, with 83.6% supporting regulation), West Africa was positively associated with regulatory support (OR = 1.333,  $p < 0.001$ ), more development-oriented toward the abstract trade-off, yet more supportive of extraction

governance reform when specifically queried about regulatory mechanisms. Education was similarly positively associated (OR = 1.075,  $p < 0.001$ ), indicating that more educated respondents are more likely to recognize the need for institutional oversight of extraction. Notably, the poverty effect reversed direction: higher LPI was negatively associated with support for regulation (OR = 0.858,  $p < 0.001$ ), suggesting that the most economically marginalized citizens, while inclined toward development over the environment in principle, are more ambivalent about regulatory frameworks they may perceive as constraining economic opportunity.

**Table 2. Binary logistic regression: predictors of pro-environment preference and support for extraction regulation.**

Predictor	Model 1 OR (95% CI)	p	Model 2 OR (95% CI)	p
Rural location	1.142 (1.098–1.188)	<0.001***	1.178 (1.118–1.241)	<0.001***
Female gender	1.020 (0.983–1.058)	0.304	1.137 (1.082–1.194)	<0.001***
Age (per year)	1.001 (1.000–1.002)	0.103	1.008 (1.006–1.010)	<0.001***
Education (0–9)	1.008 (0.998–1.017)	0.111	1.075 (1.061–1.088)	<0.001***
Lived Poverty Index	0.877 (0.860–0.895)	<0.001***	0.858 (0.835–0.881)	<0.001***
West Africa region	0.759 (0.730–0.789)	<0.001***	1.333 (1.264–1.406)	<0.001***
Climate change awareness	1.455 (1.401–1.511)	<0.001***	1.420 (1.350–1.494)	<0.001***
Pollution perceived serious	1.040 (1.000–1.081)	0.049*	0.917 (0.870–0.967)	0.001**
Droughts perceived worsening	1.047 (1.009–1.086)	0.015*	1.026 (0.976–1.077)	0.316
<b>Model fit</b>	<b>N=47,854; pseudo-R<sup>2</sup>=0.013</b>	<b>AIC=65,405</b>	<b>N=48,409; pseudo-R<sup>2</sup>=0.016</b>	<b>AIC=42,479</b>

OR = odds ratio. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ . Model 1 outcome: agree that the government should protect the environment (Q71, Statement 2). Model 2 outcome: agree extraction needs more regulation (Q73A). Reference categories: urban; male; non-West Africa; not climate change aware; pollution not serious; droughts not worsening. All analyses were weighted using `combinwt_ea`.

Fig 5. Forest plot: predictors of pro-environment preference (Q71). Point estimates with 95% confidence intervals from binary logistic regression ( $n = 47,854$ ). Climate change awareness is the strongest predictor. Shaded rows = statistically significant predictors. Afrobarometer Round 9 (2021–2023).

#### 4.6 West Africa: A regional case study

Fig 6 presents the West Africa regional analysis. The left panel shows the development–environment trade-off for all 15 West African countries in the Afrobarometer Round 9 sample; the

right panel presents the full legitimacy heatmap for extraction. Within-region variation is substantial. Liberia (63.6% pro-environment) and Mali (56.8%) display strongly environmentally oriented preferences despite being among the sub-region's poorest countries, consistent with high direct exposure to extraction costs in both contexts. At the development-prioritizing end, Niger (60.2% pro-development), Benin (36.1% pro-environment), and Burkina Faso (38.2%) register the most marked development orientation, countries in which economic precarity is most acute and the material imperatives of development are most immediate.

Ghana's position is analytically significant. With 49.0% pro-development versus 40.4% pro-environment, Ghana tilts more toward development than the continental mean, a finding that reflects the country's extraction-dependent growth model and the substantial informal sector that depends on artisanal mining livelihoods. Yet on the legitimacy dimensions, Ghana presents a paradox: 85.0% believe extraction requires more regulation (the highest in West Africa). In comparison, only 45.9% believe communities receive fair benefits, and only 29.7% rate government environmental performance as good. The galamsey crisis has rendered the costs of extraction governance failure visible and immediate in ways that drive high regulatory demand even among citizens who prioritize development over environment in the abstract trade-off.

Fig 6. West Africa regional analysis: development–environment preferences by country (left panel) and extraction legitimacy heatmap (right panel). Ghana is highlighted. Afrobarometer Round 9 (2021–2023).

#### **4.7 Climate governance perceptions and environmental issue priorities**

Fig 7 presents climate change awareness by country and government environmental performance ratings by sub-region. Continent-wide, 50.0% of respondents have heard of climate change; among those who have, 71.8% believe it is worsening their country's situation, a strikingly high perceived-impact rate that underscores the salience of climate as an environmental

governance issue. Government performance on both climate change and environmental protection receives negative majority ratings in most sub-regions: 46.4% rate climate handling as bad or very bad; 50.9% rate environmental protection handling as bad or very bad. East Africa is the sole sub-region breaking this pattern, with positive majority ratings on both dimensions.

Fig. 8 presents perceptions of pollution and environmental issue priorities. Waste and plastic disposal (27.0%), deforestation (20.0%), water source pollution (16.9%), and sanitation (16.8%) collectively dominate the environmental agenda, indicating that for most African citizens, environmental concerns most proximate to daily life take precedence over abstract climate change framings. This has direct implications for how environmental governance, communication, and advocacy for extraction regulation should be framed at the community level.

Fig 7. Climate change awareness by country and government environmental performance ratings by sub-region. Left: proportion who have heard about climate change (Q67A). Right: diverging bars showing positive versus negative performance ratings for environment (Q46Q) and climate change (Q46P). Afrobarometer Round 9 (2021–2023).

Fig 8. Pollution severity perceptions by sub-region (left panel) and the most important environmental issue in the community (right panel, Q72B). Waste and plastic disposal, deforestation, and water pollution dominate the environmental agenda. Afrobarometer Round 9 (2021–2023), N = 53,444.

## 5. Discussion

### 5.1 The "regulate but reform" disposition: A framework for African extraction politics

The most consequential contribution of this paper is the empirical identification of what we term the "regulate but reform" disposition as the dominant public political economy of natural resources in Africa. This disposition, high support for extraction regulation coexisting with low

confidence that existing governance mechanisms deliver equitable outcomes, is not a logical contradiction but a coherent political stance: citizens across the continent favor continued extraction but want it governed demonstrably better, and they do not trust governments or companies to reform voluntarily without sustained external pressure. The 35.1 percentage-point legitimacy gap between regulatory demand (76.4%) and fair-benefit confidence (41.3%) represents not opposition to extraction per se but a structural deficit of governance legitimacy that operators and governments must address proactively.

This finding has direct implications for how the social license concept should be applied in African contexts. The SLO literature has frequently treated community acceptance as binary: a project either has a license or does not [8,9]. The Afrobarometer data suggest a considerably more nuanced reality: Africans broadly accept the principle of extraction, but conditionally and with deep reservations about governance grounded not in abstract principle but in accumulated experience with failed regulatory regimes and inequitable benefit distribution. The pathway to social license is accordingly not just community consultation; it is demonstrable governance reform and visible benefit delivery, consistently sustained over time.

## **5.2 The East–West divide and its interpretation**

The finding that East Africa is significantly more pro-environment than West Africa (59.3% versus 43.7%) demands careful interpretation. It would be tempting to attribute this to income differences, since East Africa includes several economies with faster-growing middle classes and putatively more post-materialist preferences. However, the regression results demonstrate that higher poverty is associated with a lower, not a higher, pro-environment stance, which would, if anything, push East Africa's income profile toward greater environmentalism. The more credible explanation is that East Africa's higher pro-environment orientation reflects the sub-

region's distinctive exposure to climate change impacts: East Africa has experienced some of the most severe and visible climate-related crises on the continent, including the 2022 Horn of Africa drought, the worst in four decades, and repeated flooding in Uganda, Tanzania, and Kenya. These experiences translate directly into environmental concern in ways that abstract climate communication does not replicate.

West Africa's development orientation, by contrast, reflects genuine material urgency. Given some of the continent's highest rates of food insecurity, unemployment, and economic precarity, documented in this same Afrobarometer dataset, West African respondents are not indifferent to environmental protection; they are making rational prioritizations under severe material constraints. The policy implication is that West Africa's development orientation cannot be addressed solely through environmental communication campaigns. It requires a credible demonstration that environmental protection and economic development are not zero-sum, and that better-governed extraction can deliver genuine, visible community benefits.

### **5.3 Ghana: The galamsey paradox quantified**

Ghana's data profile, high regulatory demand (85.0%), low fair-benefit confidence (45.9%), a slight development tilt (49.0% versus 40.4%), and the lowest government environmental performance ratings in West Africa outside Mauritania (29.7%), constitutes what we term the galamsey paradox: a population that has experienced the severest consequences of extraction governance failure is simultaneously the most articulate about what better governance would require and the most sceptical about the state's capacity to deliver it. This is precisely the crisis of expectations that Gyapong [23] and Hilson et al. [22] documented qualitatively in Ghanaian mining communities: citizens who understand the regulatory problem, support the

regulatory solution in principle, and have lost confidence in the regulatory institution through sustained negative experience.

For Ghana specifically, the policy implication is clear: regulatory reform of the extraction sector will generate sustained public legitimacy only if accompanied by visible, community-level benefit delivery, not merely revenue flows to the national budget, but demonstrable environmental quality improvement, meaningful compensation for affected communities, and genuine participation in governance decisions. The 52.4% of Ghanaians who believe citizens have a meaningful voice in extraction decisions, while above the continental mean, still represents nearly half the population that experiences meaningful exclusion from decisions directly affecting their livelihoods and environments.

#### **5.4 Climate change awareness as the key policy lever**

The finding that climate change awareness is the strongest independent predictor of both pro-environment preference (OR = 1.455) and support for extraction regulation (OR = 1.420), stronger than education, age, gender, or poverty, has immediate policy implications. With only 50.0% of respondents continent-wide having heard about climate change, the 50.0% who have not represent a large latent constituency for environmental governance reform whose preferences are not yet anchored to the climate framework. Strategic investment in climate change communication, framed not as abstract atmospheric science but as the concrete local manifestations of climate impacts (drought, flooding, displacement, crop failure), is likely to be the most cost-effective strategy for building the public constituency for stronger extraction regulation and environmental protection that African governments require.

#### **5.5 Limitations**

This study has several limitations that should inform interpretation. The Afrobarometer Q71 question presents a stylized trade-off between two abstract statements, and responses may not fully capture the nuanced, context-specific preferences revealed by qualitative research among communities directly affected by extraction. The Q73 battery measures generic attitudes toward extraction "in the country" rather than toward specific projects, which may differ substantially from community-level responses to particular extraction decisions. The cross-sectional design precludes causal inference; the relationship between climate change awareness and pro-environment preference cannot be assumed causal without experimental or longitudinal data. Finally, the analysis uses countries as the subnational units for descriptive comparisons. In contrast, extraction impacts and attitudes may vary sharply within countries between mining and non-mining regions, a within-country heterogeneity that the continental dataset cannot resolve.

## **6. Conclusion**

This paper provides the first continental-scale quantitative analysis of African citizens' preferences regarding natural resource extraction and environmental governance. Three findings stand out for their theoretical and policy significance.

First, the "regulate but reform" disposition, 76.4% demanding stronger regulation, only 41.3% believing communities receive equitable benefits, is universal across all 39 countries and represents the defining structural feature of the public political economy of African extractivism. This is not citizen opposition to extraction but a conditional acceptance whose conditions, meaningful governance reform and visible benefit delivery, are not currently being met.

Second, climate change awareness is the strongest driver of pro-environment preference and of support for extraction regulation, creating a clear strategic priority for environmental

governance advocates. Investing in locally grounded climate communication is the most direct lever available for building public support for governance reform.

Third, West Africa's development orientation reflects material economic precarity rather than environmental indifference, and demands policy responses that credibly demonstrate the compatibility of better-governed extraction with genuine community economic benefit.

For Ghana and West Africa specifically, the galamsey paradox, high regulatory demand, low confidence in state delivery, and sustained development orientation despite severe extraction costs define an urgent governance reform agenda. Communities that have experienced extraction governance failure are not anti-development; they are demanding a form of development that does not come at the cost of rivers, forests, and farmland, and with benefit distribution so skewed toward central governments and foreign investors that local communities receive a negligible share of the wealth generated beneath their feet.

The broader implication concerns how the international development community frames the relationship between extraction governance and environmental protection in Africa. The dominant framing, which frequently positions environmental protection as a constraint on development, is empirically contested by the citizens whose preferences this paper documents. Africans broadly support both development and regulation; they do not want to choose between them. What the data reveal as profoundly insufficient are the institutions, governance frameworks, and political will required to deliver that combination.

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### **Data availability statement**

The Afrobarometer Round 9 Merged Dataset (2021–2023) is publicly available at <https://www.afrobarometer.org/data/merged-data/> under a Creative Commons CC-BY-SA license. DOI: 10.25828/bs9k-zy70. All analysis code is available from the corresponding author upon reasonable request.

### **Author contributions**

Conceptualization: GAA. Data curation: GAA. Formal analysis: GAA. Investigation: GAA. Methodology: GAA. Visualization: GAA. Writing, original draft: GAA. Writing, review, and editing: GAA.

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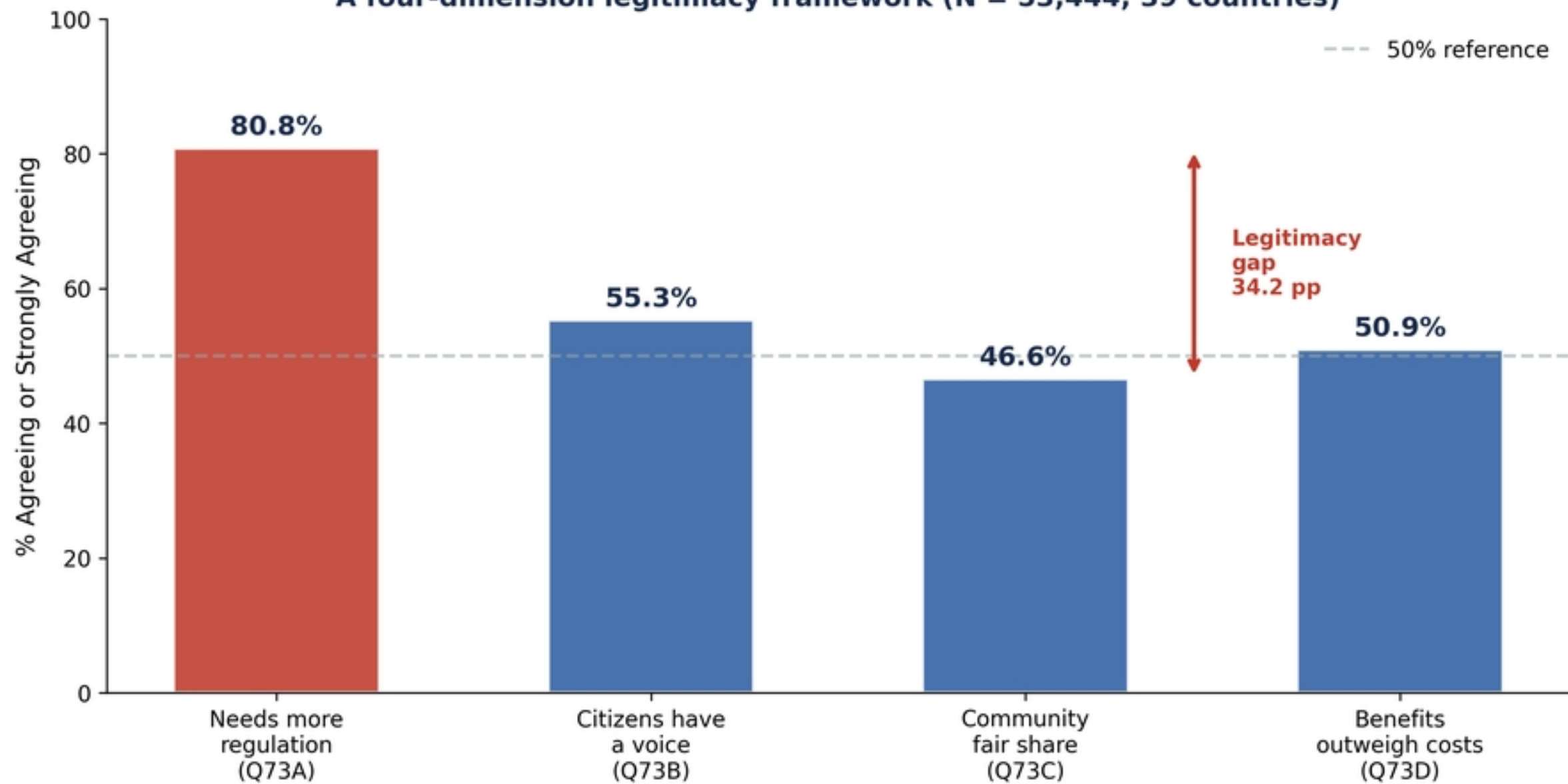
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### **Competing interests**

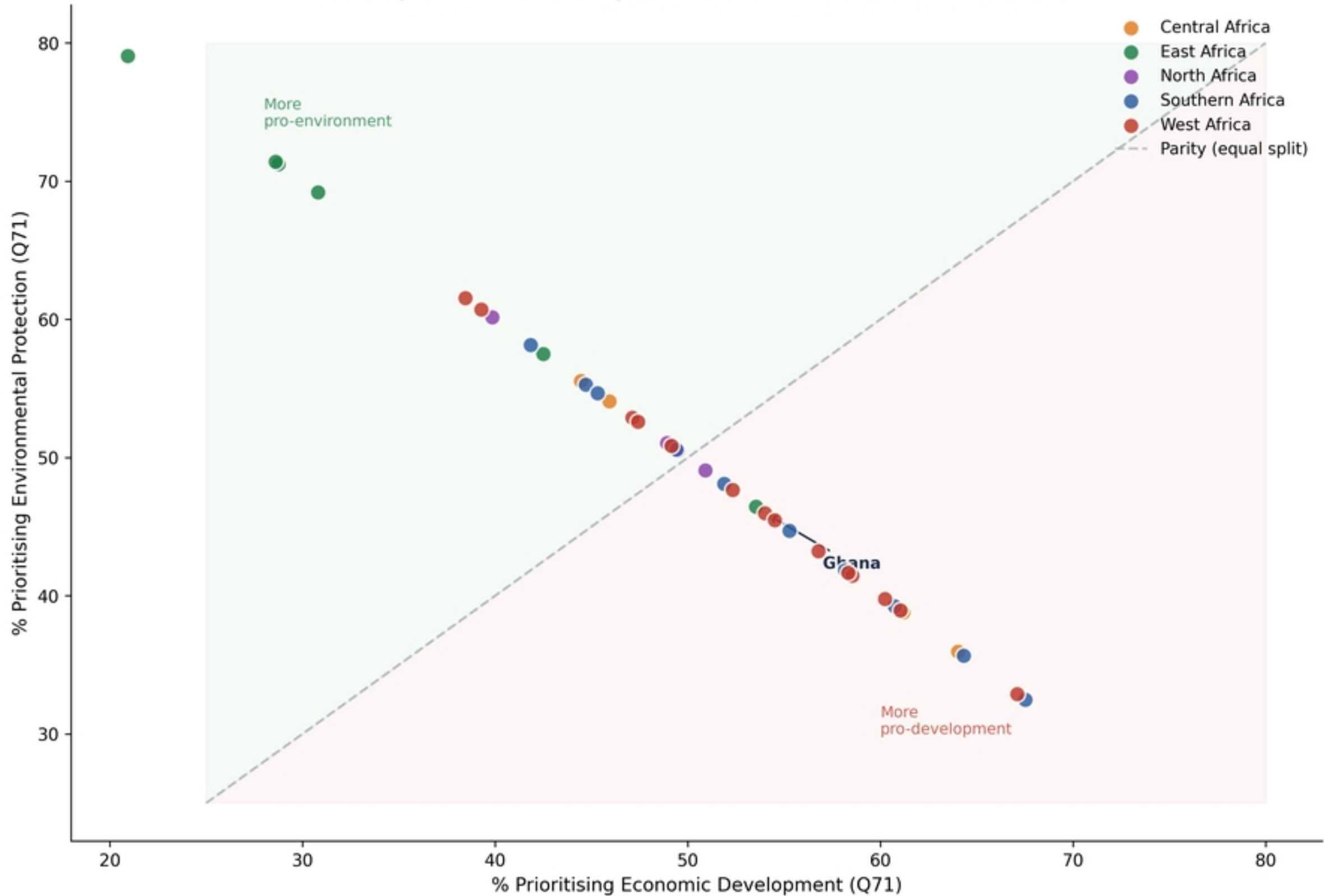
I have declared that no competing interests exist.

**Fig 1. Public attitudes toward natural resource extraction:  
A four-dimension legitimacy framework (N = 53,444; 39 countries)**



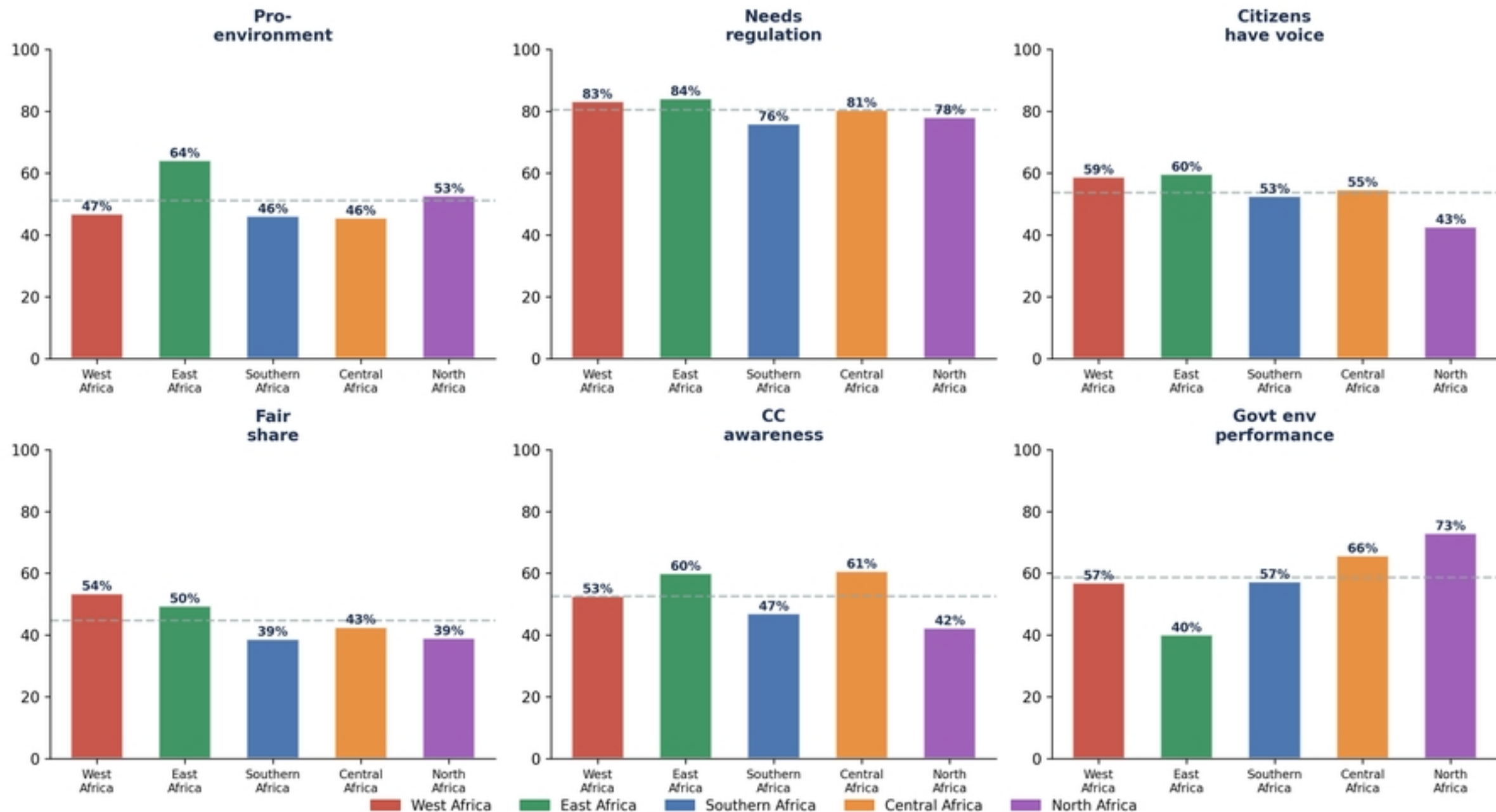
Source: Afrobarometer Round 9 (2021-2023). Weighted estimates using combinwt\_ea.

**Fig 2. Development-environment trade-off by country**  
(Each point = one country; Afrobarometer Round 9, N = 53,444)



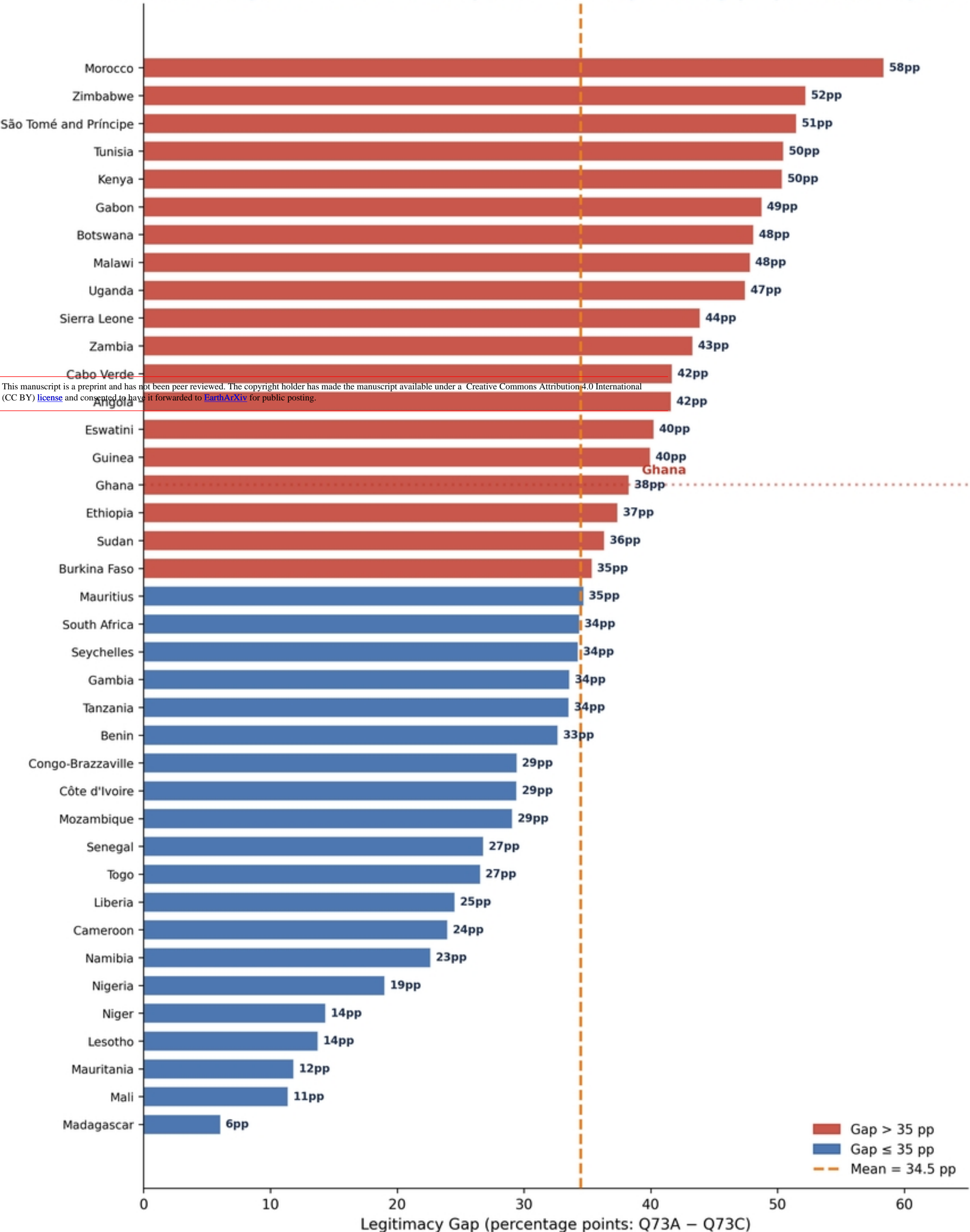
Source: Afrobarometer Round 9 (2021-2023).

**Fig 3. Regional comparison across six environmental and extraction governance indicators (Afrobarometer Round 9, 2021-2023; dashed line = continental mean)**



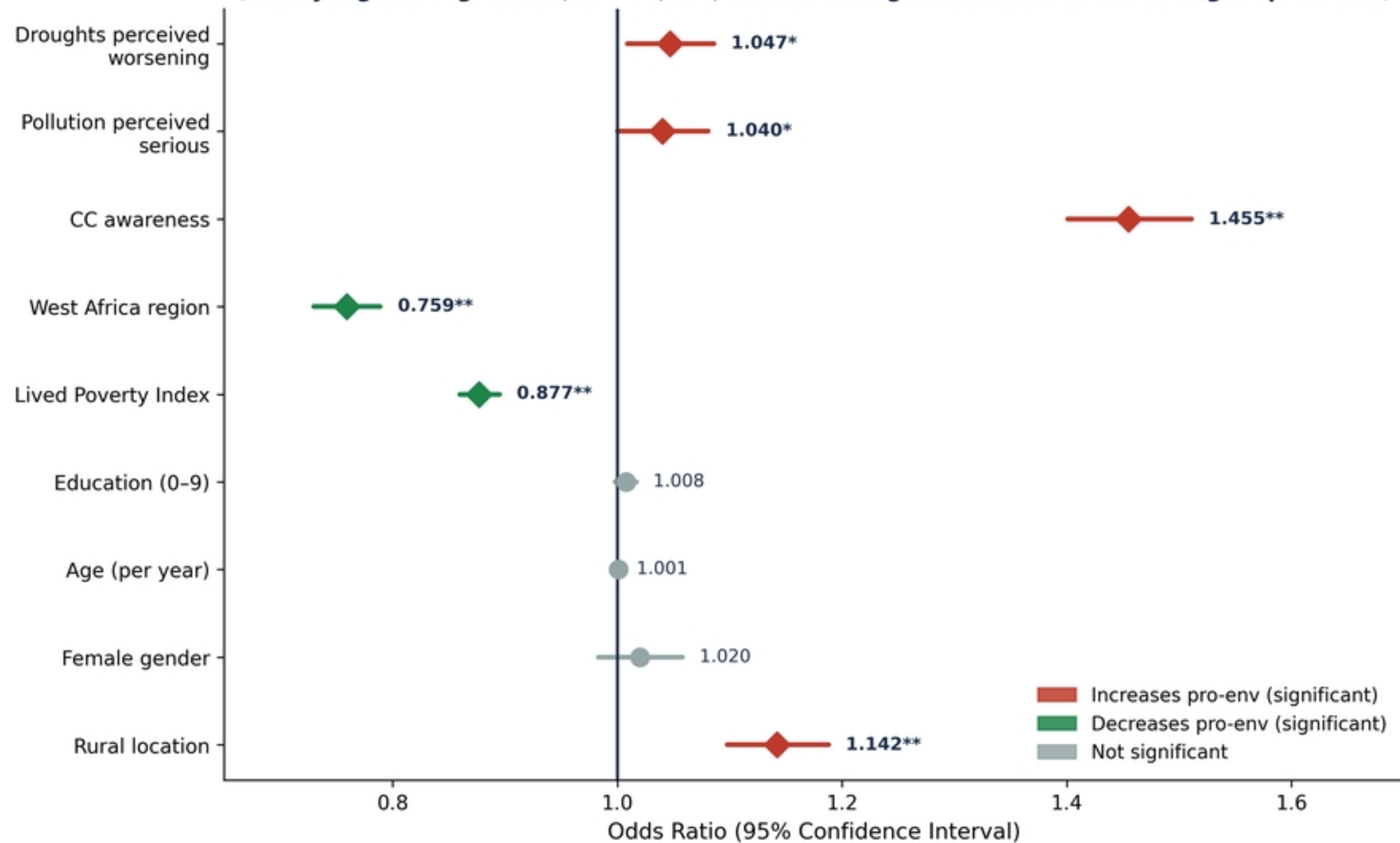
Source: Afrobarometer Round 9 (2021-2023).

**Fig 4. The extraction legitimacy gap across 39 African countries (Demand for regulation minus belief in equitable community benefit; gap is positive in every country)**



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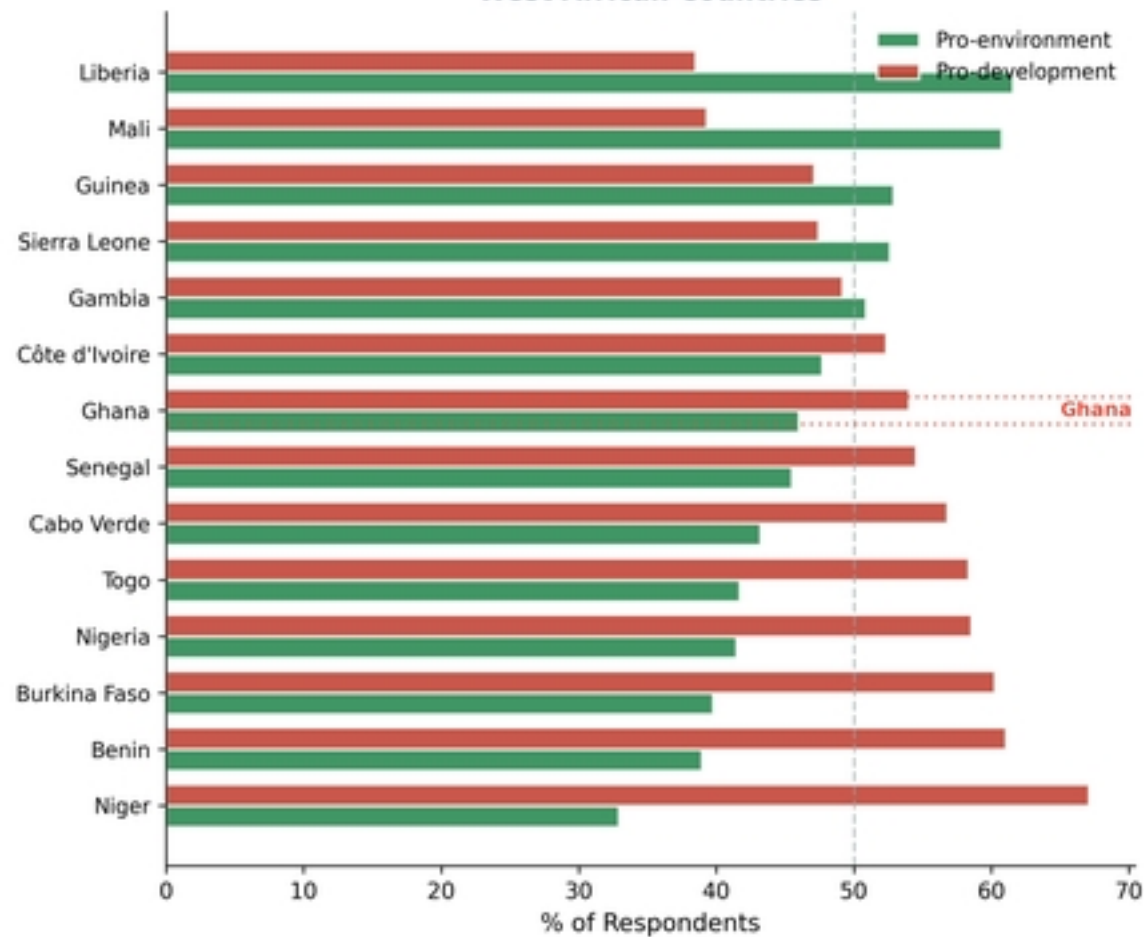
**Fig 5. Forest plot: predictors of pro-environment preference (Q71)**  
 (Binary logistic regression, n = 47,854; climate change awareness is the strongest predictor)



Source: Afrobarometer Round 9 (2021-2023). \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

**Fig 6. West Africa regional analysis: development-environment preferences and extraction legitimacy heatmap (Ghana highlighted in red; Afrobarometer Round 9, 2021-2023)**

**(a) Development-Environment Trade-off  
West African Countries**



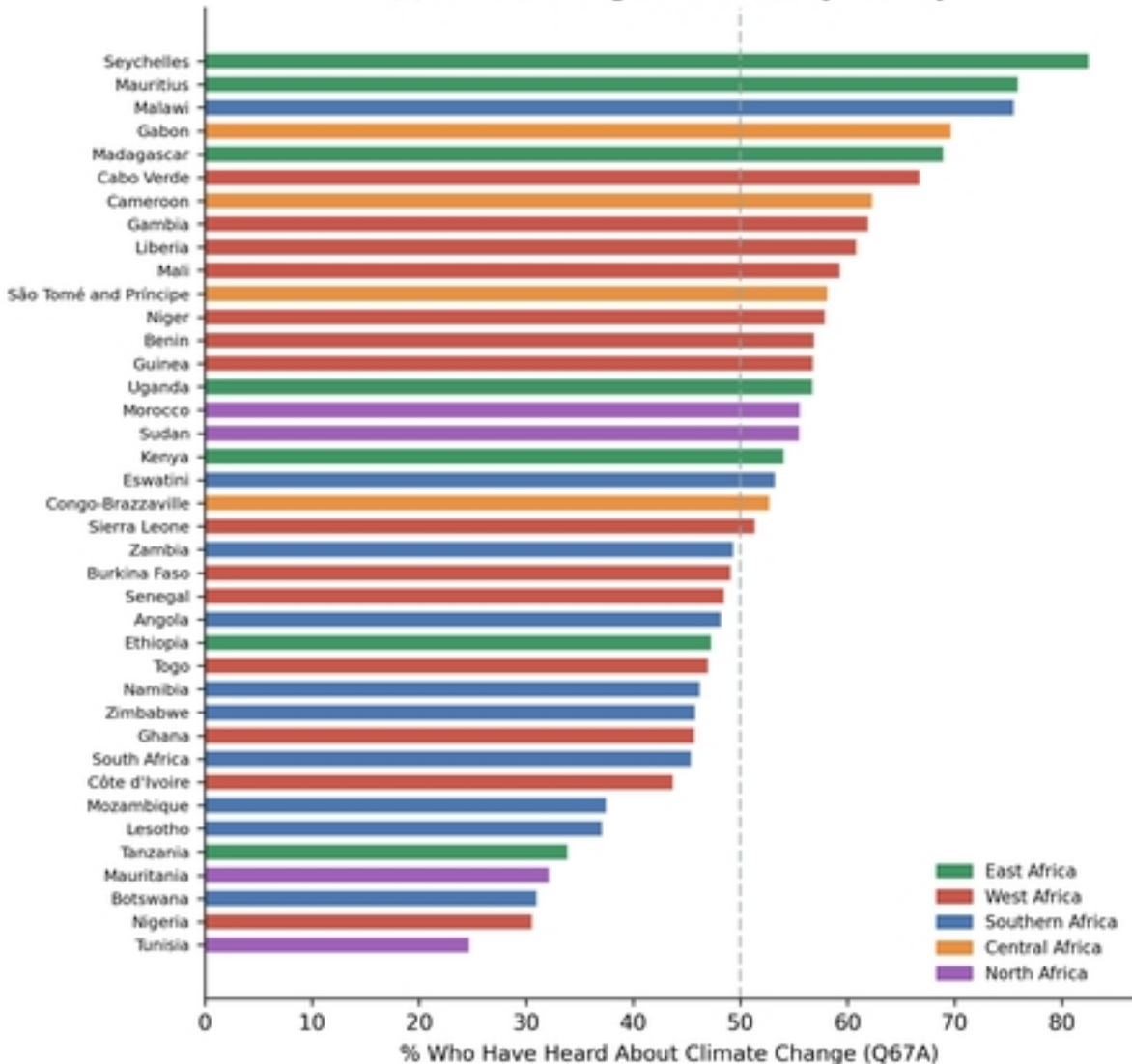
**(b) Extraction Legitimacy Heatmap  
West African Countries (% agreeing)**



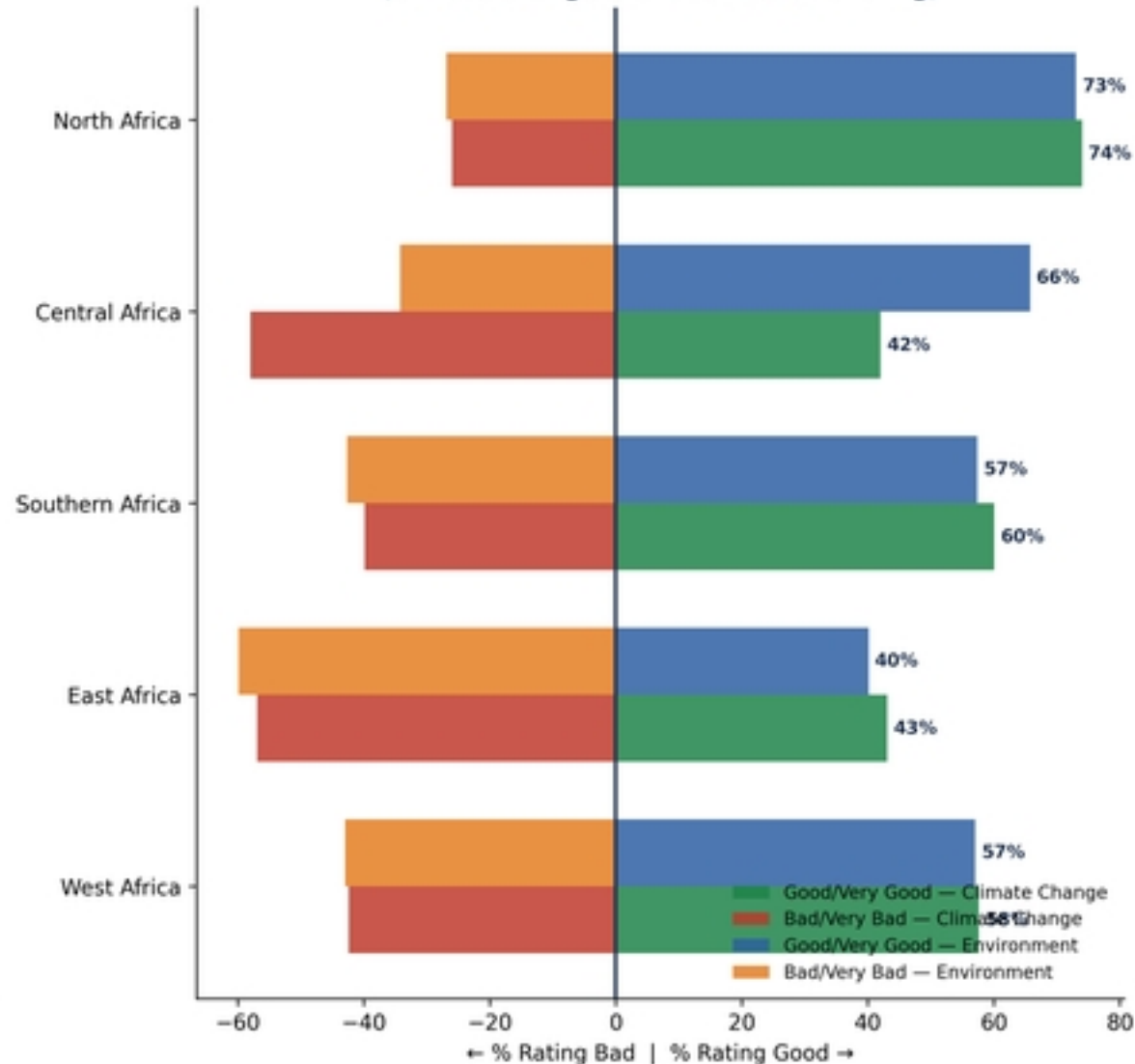
Source: Afrobarometer Round 9 (2021-2023).

**Fig 7. Climate change awareness by country and government environmental performance ratings by sub-region (Afrobarometer Round 9, 2021-2023)**

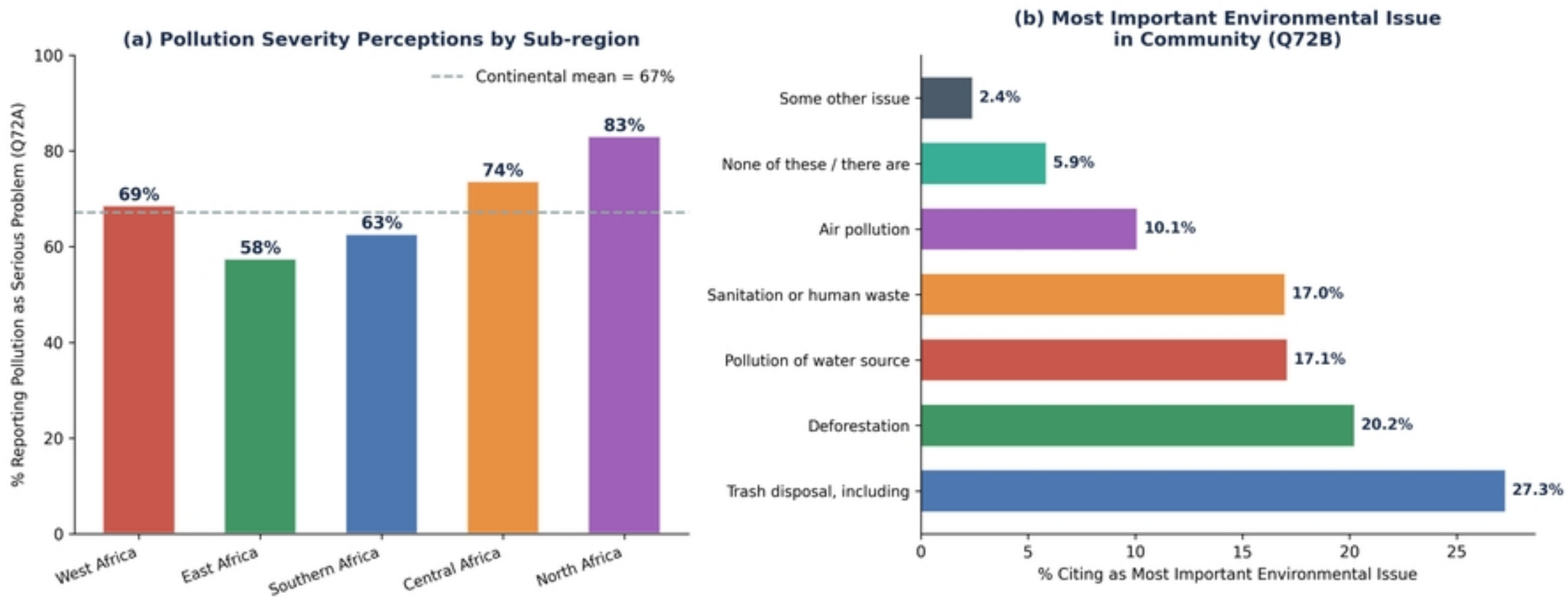
**(a) Climate Change Awareness by Country**



**(b) Government Performance Ratings by Sub-region (Climate change & environment handling)**



**Fig 8. Pollution severity perceptions by sub-region and most important environmental issue priorities (Afrobarometer Round 9, 2021-2023, N = 53,444)**



Source: Afrobarometer Round 9 (2021-2023).