

# Colonial Logics in the Mobilization Mechanics of Climate Disinformation

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## Abstract

Climate disinformation is not an incidental byproduct of the digital age but the latest expression of colonial logics of mediated authority. This study argues that the mechanics through which climate denial and distortion circulate across the Global South cannot be understood apart from the infrastructures of British indirect rule, which historically governed 'through' intermediaries rather than 'over' subjects. Drawing on the Model of Indirect Epistemic Domination, the research demonstrates how recruitment, localization, deflection, normalization, and exploitation, once deployed to entrench imperial power, are today reactivated in digital and spiritual ecosystems, where religious, cultural, and viral social influencers legitimize climate falsehoods as indigenous truths. The study analyzes 200 purposively sampled disinformation posts from Facebook, X, and YouTube across eleven African states (January–June 2025) alongside structural indices of religiosity, trust in science, education, and media access. Multi-scalar analysis reveals that religiosity strongly amplifies susceptibility ( $r \approx 0.83$ ), while media access functions as a double-edged vector, broadening reach but intensifying exposure. Regression modeling confirms that susceptibility is not merely informational but structurally conditioned, with colonial residues shaping epistemic ecologies. By revealing the genealogical continuity between colonial governance and climate disinformation, the study reframes the crisis as both epistemological and environmental, calling for climate communication strategies that confront inherited structures of authority, epistemic power, and belief.

### Keywords

*Climate Disinformation, Colonial Logics, Epistemic Model, Postcolonial Africa, Knowledge Systems, Global South*



## Introduction

The struggle against climate change is not only ecological and technological but also epistemological. According to Cornell et al (2013), the ability of societies to recognize environmental risks, accept scientific consensus, and mobilize toward collective solutions depends on the integrity of the knowledge systems through which information circulates. Yet, in much of the Global South, and particularly across African states formerly shaped by British indirect rule, this epistemic terrain has been destabilized by a resurgence of climate disinformation. Such disinformation is not simply a contemporary digital nuisance; it is a sophisticated communicative practice that exploits historically sedimented structures of authority, belief, and legitimacy. To understand its potency, one must situate it within a deeper genealogy that links present-day vulnerabilities to colonial architectures of mediated power.

Essien (2025) argues that climate disinformation, unlike more episodic forms of rumor or misinformation, achieves durability by embedding itself in existing cultural and institutional logics. Narratives that dismiss global warming as a “Western scam,” reframe droughts and floods as “divine punishment,” or portray renewable energy transitions as plots against national sovereignty, do not resonate in a vacuum but have been documented in African climate discourse (Nhamo, 2021; Osei-Tutu, 2023). They derive credibility through the voices that deliver them: religious leaders, traditional chiefs, community elders, and increasingly, social media influencers, who function as cultural brokers of authority (Arora & McGuire, 2022). These actors occupy the same intermediary space once cultivated by colonial authorities, who relied on local brokers to translate, naturalize, and enforce imperial agendas. Thus, the endurance of climate disinformation across Africa cannot be divorced from the infrastructures of authority and knowledge engineered under colonial indirect rule.

British indirect rule, as theorized by Lugard (1922) and subsequently critiqued by Mamdani (1996), functioned more as an epistemic project than as a practical delegation of power. By ruling “through” rather than “over” indigenous institutions, colonial regimes manufactured authority by co-opting chiefs, clerics, and customary leaders into governance structures. This created a layered system of legitimacy in which external power was laundered through proximate, culturally trusted figures (Comaroff & Comaroff, 1991). The legacy of this system persists, not as a static tradition, but as an active logic of mediated governance: one in which authority is distributed, knowledge is filtered through intermediaries, and legitimacy is secured by resonance rather than direct coercion



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(Mbembe, 2001). When contemporary climate denialists or interest groups embed their messages in the rhetoric of local pastors, viral social media threads, or community broadcasters, they are activating precisely these inherited modalities of indirect epistemic domination.

With this, the study interrogates the mechanics of climate disinformation in selected African countries formerly colonized under British indirect rule, moving beyond descriptive questions of content and actors to examine how dissemination occurs and the subtle strategies it adopts. The guiding research question is: In what ways do colonial logics of indirect rule continue to shape the circulation and resonance of climate disinformation in the Global South? Drawing on 200 disinformation social media posts combined with socio-cultural indicators of religiosity, trust in science, education, and media access, the analysis operates across micro, meso, and macro levels to explain both the circulation and the resonance of disinformation as products of enduring colonial blueprints of governance through intermediaries. The study utilizes an explanatory model to show that the persistence of colonial logics in contemporary climate discourse is not a historical relic but a strategic structure of manipulation that continues to obstruct environmental action, weaken scientific trust, and endanger the possibility of a coordinated global response.

## Literature Analysis

A consolidated overview of the reviewed studies is provided in **Appendix A (Studies Review Table)**, which has been compiled from the body of literature examined for this research.

### Schematic GIS analysis.

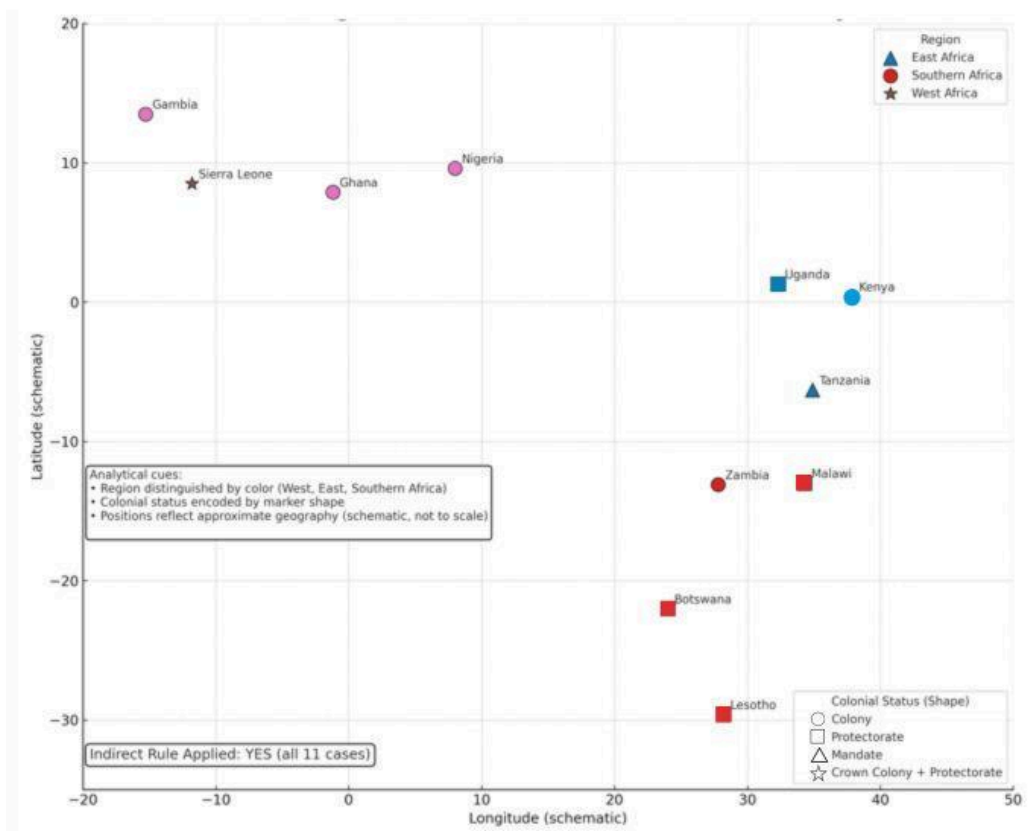


Figure 1. Schematic distribution of selected African states where indirect rule was applied. Regional distinctions are represented by color, while colonial status is encoded by marker shape. Positions approximate geographical location (not to scale). Source: Author's conceptual adaptation of geospatial data

Figure 1 visualizes how British indirect rule was deployed across eleven African countries. Rather than presenting the material only as a flat table of cases, the visualization translates each country into a geographically proximate symbol, encoding three layers of information: regional clustering, colonial status, and the uniform application of indirect rule. This transformation of data from text to spatial-analytical representation reveals colonial logics as patterns that were simultaneously consistent across the continent and contextually adapted to local structures. The figure uses a dual-encoding system. First, color differentiates regions: West Africa (Nigeria, Ghana,



Sierra Leone, and the Gambia) is shaded in one cluster, East Africa (Kenya, Uganda, and Tanzania) in another, and Southern Africa (Zambia, Malawi, Botswana, and Lesotho) in a third. This color-coding situates the colonial project within Africa's subregional divisions, showing that indirect rule was not arbitrarily distributed but systemically implemented across three major regions. Second, marker shapes capture colonial status: colonies are represented by circles, protectorates by squares, mandates by triangles, and Sierra Leone's unique combination of Crown Colony and Protectorate by a star. The use of shapes alongside colors ensures that the map conveys both geographical spread and administrative diversity.

Geographically, the schematic places each country in approximate relation to its latitude and longitude. This produces three visible clusters corresponding to West, East, and Southern Africa. In West Africa, Britain's reliance on emirates, chieftaincies, and commissioners appears as a tightly grouped block of countries (Lugard, 1922; Ladouceur, 1979; Rathbone, 2000; Hallouch, 2018). In East Africa, the cluster reveals a different logic of adaptation, ranging from the Buganda kingdom model in Uganda to the settler pressures of Kenya and the mandate governance of Tanzania (Reid, 2016; Mamdani, 1996). The Southern African cluster displays yet another variation, one in which tribal authority and customary law became the primary instruments of colonial labor control and governance (Epstein, 1958; Gann, 1964; Baker, 1997; McCracken, 2012). By spatially aligning these clusters, the schematic enables a comparative reading of how a single administrative logic unfolded differently across regions.

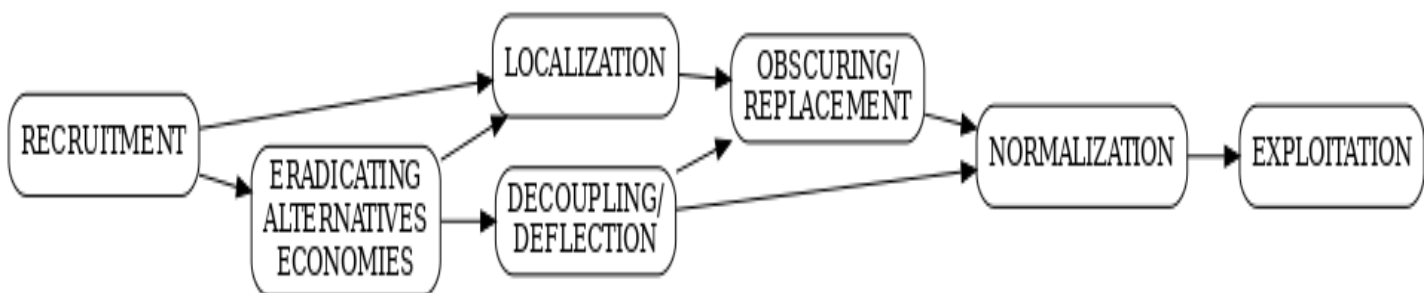
The figure encodes three distinct analytical dimensions. First, it emphasizes uniformity: all eleven cases are annotated with a banner confirming that indirect rule was applied. This reflects Britain's strategic preference for ruling through existing local structures rather than through costly direct European administration (Mamdani, 1996). Second, it highlights variability in colonial status, demonstrating clearly that while the governance technique was consistent, the legal and political classifications of territories differed. Colonies such as Nigeria and Kenya were directly tied to Britain's economic extraction networks (Reid, 2016; Hallouch, 2018), whereas protectorates like Botswana, Lesotho, and Uganda retained nominal autonomy through traditional chiefs (Low, 1971; Mahao, 2007; Schapera, 2019). Tanzania stands out as a League of Nations Mandate, demonstrating how global geopolitics after World War I layered onto colonial governance (Maddox & Giblin, 2005). Third, the map shows regional differentiation: in West Africa, indirect rule leaned heavily on preexisting Islamic and chieftaincy systems (Hallouch,

2018); in East Africa, it co-opted powerful kingdoms and adapted to settler presence (Apter, 1961); and in Southern Africa, it was deployed to sustain labor control and uphold customary law (Rosenberg & Weisfelder, 2004).

Several interpretive insights emerge from this schematic representation. First are the convergence and divergence of colonial strategies. While indirect rule was a shared governance model across African regions, its rationale varied geographically. A second insight concerns the distinctiveness of Sierra Leone’s hybrid status, represented visually by a star. The coexistence of a Crown Colony in Freetown and a Protectorate in the hinterland illustrates the fragmented duality of colonial governance within a single territory (Fyfe, 1962). This analysis shows Britain’s broader preference for cost efficiency, a central rationale of indirect rule. By embedding governance within local sociopolitical structures, colonial administrators minimized administrative expenses while expanding authority (Crowder, 1964). Indirect rule thus emerges not simply as a political compromise, but as a scalable imperial technology, flexible enough to adapt to varied African terrains while standardizing the logic of mediated governance across the empire.

## Theoretical Framework

**Model of Indirect Epistemic Domination**



**Figure 2.** The model depicts colonial logics as a staged system of mobilization, where power recruits participation, erases alternatives, embeds itself within local structures, and deflects resistance until exploitation is normalized. Source: Author’s conceptual model.

The conceptual model advanced here reframes the mechanics of indirect colonial rule not simply as a bureaucratic delegation of authority but as an epistemic architecture of mobilization, one that continues to reverberate in the infrastructures of contemporary climate disinformation. Whereas the literature on indirect rule (Lugard, 1922; Mamdani,



1996; Crowder, 1964) often emphasizes its administrative reliance on local intermediaries, this framework argues that its real potency resided in the recursive choreography of legitimacy production, the ways authority was mobilized, naturalized, and embedded into local cognitive and cultural systems (Comaroff & Comaroff, 2012; Mbembe, 2001). To that extent, the five identified stages of recruitment, localization, deflection, normalization, and exploitation should not be read as a linear sequence but as interlocking modalities of epistemic governance, capable of being activated simultaneously or cyclically depending on the contextual pressures of resistance and compliance (Foucault, 1980).

Recruitment functions as the affective grafting of foreign authority onto indigenous trust networks. Colonial regimes rarely ruled by brute force alone; they cultivated intermediaries whose symbolic capital served as the conduit through which imperial legitimacy was laundered (Ranger, 1983; Mamdani, 1996). In the contemporary disinformation ecology, this logic is reproduced when epistemic authority is outsourced to trusted community figures who lend credence to external agendas precisely because of their embedded positionality (Starbird, 2019). Recruitment, therefore, operates not as the start of a chain but as the establishment of a structural hinge where external power fuses with internal legitimacy. What follows is the logic of localization, which exceeds translation and becomes the re-inscription of alien logics into vernacular epistemes. In colonial practice, taxation or census systems were reframed through customary idioms so as to appear extensions of tradition rather than impositions (Lonsdale, 1968; Chanock, 1985).

Similarly, in climate disinformation, technical discourses of emissions or global warming are re-coded into prophecy, moral decline, or ethnic grievance (Osei-Tutu, 2023). Localization is therefore not an additive act of communication but a transcoding operation: it maps foreign epistemic codes onto local meaning systems, ensuring disinformation is not merely received but metabolized. It acquires plausibility not through evidence but through resonance with pre-existing explanatory schema, then deflection protects that authority from scrutiny by strategically misdirecting attention. Under indirect rule, economic extraction was obscured by attributing unrest to tribalism or “native incapacity” (Mamdani, 1996; Ranger, 1983). Today, climate disinformation performs an analogous maneuver when floods or crop failures are explained through divine wrath, Western sabotage, or conspiracies rather than corporate negligence or policy inertia (Farrell et al., 2019). Deflection is thus less about error than about strategic redirection; it disorganizes analytic capacity by fracturing causal reasoning, substituting proximate scapegoats for structural critique, and ensuring that critique never finds its proper target.



As these logics repeat and circulate, they move toward normalization, the point at which implanted and deflected narratives become ontologically sedimented into the common sense of a community.

In the colonial archive, normalization was visible through codified “customary law” or racially stratified curricula that institutionalized imperial hierarchies (Chanock, 1985; Lugard, 1922). In contemporary disinformation ecologies, normalization emerges when climate denial or fatalistic spiritual explanations are endlessly repeated across pulpits, social media platforms, or radio talk shows until they cease to be propositions and become background assumptions (Lewandowsky et al., 2017; Starbird, 2019). At this stage, fiction hardens into ontology: repetition collapses critique, embedding disinformation into the taken-for-granted infrastructure of everyday life. The culmination of this epistemic construction is exploitation, which should not be seen as a singular endpoint but as the structural harvest of belief infrastructures corrupted by prior stages. In colonial contexts, this meant the expropriation of land and labor under the moral cover of “civilization” (Rodney, 1972). In today’s disinformation economy, it manifests in the pliability of publics mobilized against carbon regulation, in the market for “greenwashed” products, or in the political capital extracted from skepticism toward climate science (Brulle, 2020; Dunlap & McCright, 2011). Exploitation is recursive: once belief infrastructures are co-opted, they reproduce vulnerabilities that invite further capture, ensuring the apparatus is self-sustaining.

## Methodology

This study employs a dual-pronged research design, combining a primary dataset of climate disinformation posts with secondary socio-cultural indicators. The logic of this design is deliberate: social media posts reveal rhetorical strategies and circulation patterns, while structural indicators illuminate the cultural and institutional conditions that render such messages persuasive. Together, these datasets allow analysis of both message-level variation and the broader predispositions that shape susceptibility.

**Primary dataset.** The corpus comprises 200 climate-related disinformation posts collected from Facebook, X (formerly Twitter), and YouTube over six months (January–June 2025). Posts were harvested using Boolean keyword searches tailored to local contexts (**Appendix B**). To ensure accurate attribution to one of the eleven sampled

countries, three levels of validation were applied: geotags (where available), self-declared profile locations, and embedded textual references to national events or vernacular markers. Inclusion criteria required: (i) measurable engagement ( $\geq 50$  cumulative likes, shares, or comments); (ii) clear ideological framing within the established categories (spiritual, conspiratorial, or anti-Western); and (iii) verified national origin. While this salience threshold risks overrepresenting viral content, sensitivity tests at lower thresholds ( $\geq 10$  engagements) yielded substantively consistent results. Intercoder reliability between two trained coders was high ( $\kappa = 0.86$ ). Country distributions are reported in [Table 1](#).

**Table 1. Primary dataset of 200 disinformation posts proportionally distributed by context.**

Country	Number of Posts	% of Total (n = 200)
Nigeria	35	17.5%
Kenya	28	14%
Ghana	26	13%
Tanzania	22	11%
Zambia	20	10%
Uganda	21	10.5%
Botswana	12	6%
Malawi	13	6.5%
The Gambia	13	6.5%
Sierra Leone	17	8.5%
Lesotho	13	6.5%
Total	200	100%

These variations not only reflect the availability of content but also index the relative intensity of national-level discourse on climate narratives. Posts were independently coded by two trained raters using a structured protocol, achieving intercoder reliability ( $\kappa = 0.86$ ); identified discrepancies were resolved through consensus adjudication.

Source: Author

**Secondary dataset.** Socio-cultural indicators were compiled by the author from secondary materials to serve as comparative baselines. Thus, four indices were operationalized: religiosity (faith salience and spiritual authority), trust in science (confidence in scientific expertise), education (literacy and attainment), and media access (connectivity and exposure). Each variable was normalized to a 0–1 scale for comparability.

**Composite index.** Climate Disinformation Susceptibility (CDS) was constructed by integrating content-level and structural evidence. For each country, the proportion of



posts per frame was standardized (z-scores) alongside the four socio-cultural indicators. These values were averaged and rescaled to a 0–1 range, producing a unified CDS score (see [Appendix D](#) for construction details). Robustness checks confirmed that results were stable across alternative scaling methods and sensitivity tests. While the susceptibility index (CDS) integrates multiple dimensions, including religiosity, trust in science, education, and media access, the overlap with predictor variables implies results should be interpreted as directional rather than conclusive.

Only publicly available posts were analyzed; all examples were anonymized to prevent traceability. The study conforms to institutional ethical standards and was reviewed as not involving human subjects. The methodological framing is situated within colonial logics. African contexts shaped by indirect rule provide a revealing laboratory for studying how epistemic authority is mediated through cultural brokers and inherited trust networks. This historical sedimentation offers a critical analogue for understanding why climate disinformation today gains traction through religious keywords, cultural narratives, and infrastructural dependencies.

## Data Analysis

This section applies a multi-scalar analytic framework to trace how susceptibility to climate disinformation takes shape across different layers of epistemic formation. At the micro level, four socio-cultural indices: religiosity, trust in science, education, and media access, are introduced as baseline structural indicators. These indices function not only as descriptive measures but also as pre-dispositional variables, encoding the cultural and informational reservoirs through which disinformation narratives acquire traction. At the meso level, correlational testing and bivariate visualizations move beyond individual predispositions to show how aggregated dispositions consolidate into patterned cultural signatures. Here, vulnerability is revealed as a relational formation rather than an isolated attribute, with intersecting predispositions combining into shared symbolic logics and socio-epistemic alignments. At the macro level, analysis shifts to the symbolic architectures of disinformation through a co-occurrence matrix of motifs. Clusters such as *false science*, *Western deception*, and *divine wrath* are examined as recurrent semiotic repertoires that stabilize disinformation narratives across national contexts. These motifs illustrate how cultural framings overlap and reinforce one another,

producing higher-order cognitive infrastructures that naturalize disinformation discourses.

These scales are integrated within a structural modeling framework. Regression analysis quantifies the relative influence of the identified socio-cultural indices on disinformation susceptibility, building on the prior descriptive and symbolic layers. Rather than serving as a stand-alone statistical endpoint, the regression crystallizes earlier findings, testing how cultural predispositions, communicative infrastructures, and symbolic repertoires interlock to structure epistemic vulnerability. It is important to note that the socio-cultural indices alone do not constitute susceptibility. Instead, they serve as structural baselines against which disinformation content operates. By integrating these indices with coded post-level data, the analysis derives a composite measure of climate disinformation susceptibility (see [Appendix D](#) for construction details). The analysis begins with baseline structural indicators across the eleven sampled countries ([Table 3](#)), which report descriptive distributions of the four socio-cultural indices alongside climate disinformation susceptibility, providing the empirical foundation for subsequent correlational testing.

### Baseline Structural Indicator

**Table 2. Socio-Cultural Indices and Climate Disinformation Susceptibility**

Country	Religiosity <sup>1</sup>	Trust in Science <sup>2</sup>	Education <sup>3</sup>	Media Access <sup>4</sup>	Climate Disinformation Susceptibility <sup>5</sup>
Nigeria	0.86	0.57	0.37	0.61	0.71
Ghana	0.7	0.65	0.45	0.68	0.69
Kenya	0.72	0.7	0.58	0.76	0.71
Tanzania	0.75	0.62	0.5	0.64	0.68
Zambia	0.65	0.58	0.48	0.6	0.66
Uganda	0.77	0.6	0.46	0.63	0.7
Botswana	0.6	0.67	0.52	0.66	0.65
Malawi	0.66	0.59	0.44	0.62	0.67
The Gambia	0.68	0.63	0.49	0.64	0.66

<sup>1</sup> Secondary datasets

<sup>2</sup> Secondary datasets

<sup>3</sup> Secondary datasets

<sup>4</sup> Secondary datasets

<sup>5</sup> Primary datasets



Sierra Leone	0.69	0.61	0.47	0.65	0.68
Lesotho	0.64	0.6	0.45	0.61	0.67

The dependent variable, Climate Disinformation Susceptibility (CDS), was operationalized as a normalized composite index (0–1) integrating both primary evidence (disinformation post frequencies) and secondary socio-cultural indicators (religiosity, trust in science, education, and media access). A detailed construction procedure, including the formula, normalization steps, and robustness checks, is provided in [Appendix C](#).

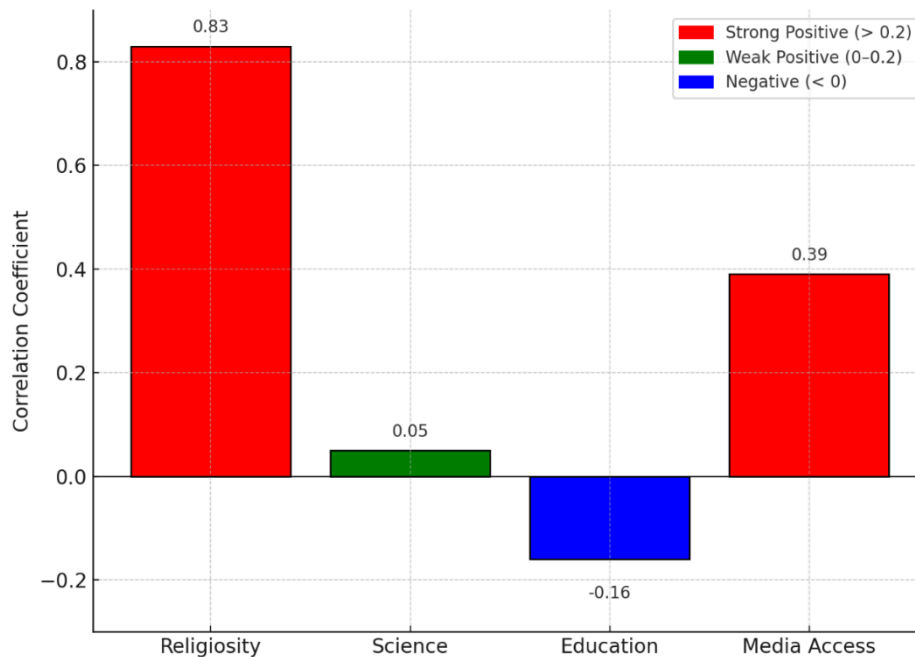
Source: Author

[Table 2](#) reports normalized index scores (0–1) for eleven postcolonial African countries across five variables. Religiosity is uniformly high (mean  $\approx$  0.70), with Nigeria the most religious (0.86) and Botswana the least (0.60). Trust in science, by contrast, shows greater variability (0.57–0.70) and often declines in contexts of heightened religiosity, as in Nigeria. Education and media access fall within a moderate band, with Kenya and Ghana registering comparatively stronger structural capacities. Climate disinformation susceptibility (CDS), derived from the coded 200-post dataset, remains elevated across all cases, ranging narrowly between 0.65 and 0.71, underscoring a region-wide epistemic vulnerability. Patterns suggest that higher religiosity statistically aligns with greater susceptibility, mediated by reliance on non-scientific epistemic authorities and spiritual framings. At the same time, Kenya and Ghana illustrate that greater media access, absent epistemic safeguards, can amplify vulnerability rather than reduce it, producing higher susceptibility despite stronger structural indicators. Meanwhile, stronger trust in science and higher educational attainment appear in some contexts to dampen vulnerability, as seen in Botswana and similarly in The Gambia and Malawi, where lower disinformation intensity coincides with relatively stronger structural resilience. Collectively, these distributions provide empirical justification for subsequent correlational testing of the structural relationships among these indices.

### Correlational Analysis

To further interrogate these relationships, correlational analysis was conducted to statistically assess the extent to which religiosity, trust in science, education, and media access predict climate disinformation susceptibility.

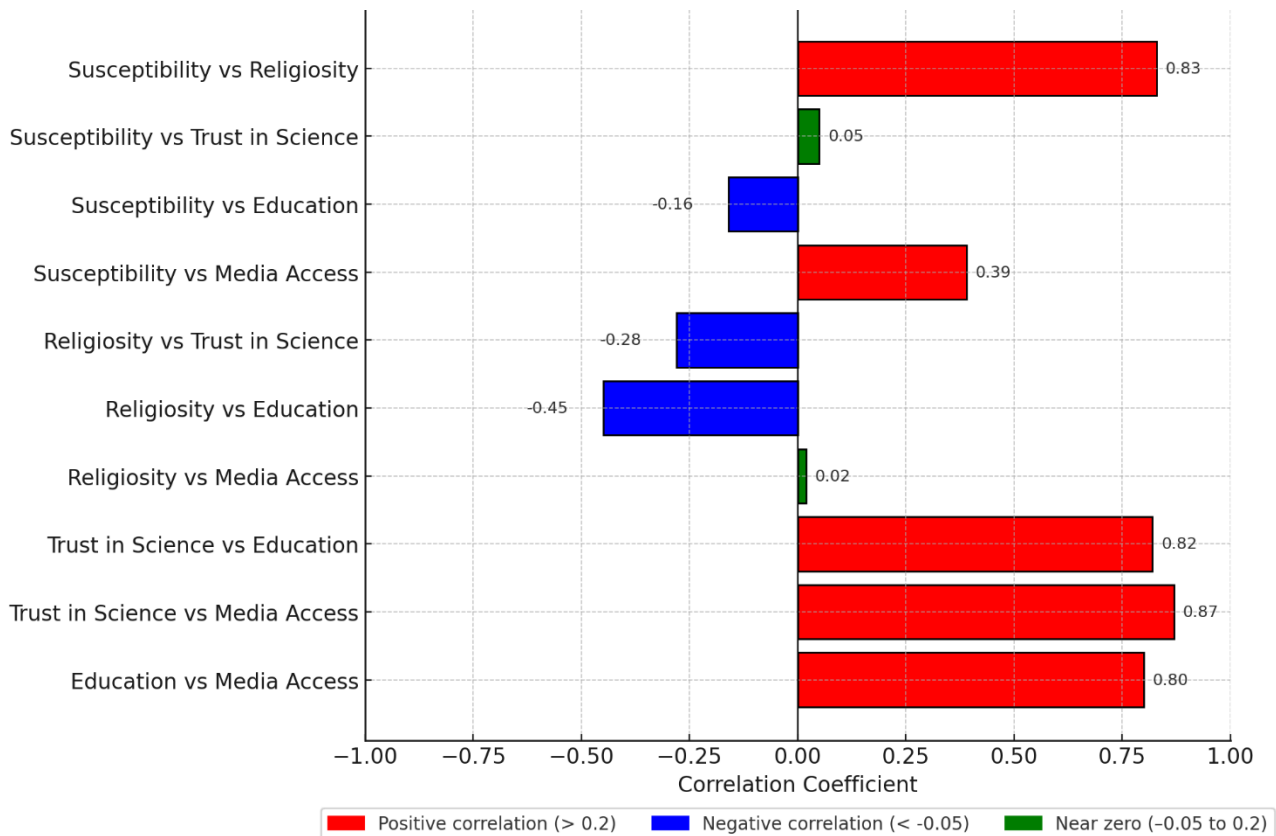
### Correlations with Climate Disinformation Susceptibility



**Figure 3** presents the correlation coefficients, capturing the strength and direction of these associations across the sample. Source: Author’s own generation.

The results highlight distinct socio-cultural drivers of vulnerability. Religiosity shows a very strong positive correlation ( $r \approx 0.83$ ), revealing its central role in shaping susceptibility. Media access also registers a moderate positive relationship ( $r \approx 0.39$ ), suggesting that while broader connectivity expands exposure to information, it may simultaneously heighten contact with disinformation where critical literacy safeguards are weak. By contrast, education exhibits a modest negative correlation ( $r \approx -0.16$ ), reflecting its protective role through enhanced reasoning and scientific literacy. Trust in science, however, yields only a negligible association ( $r \approx 0.05$ ), indicating that belief in scientific authority alone does not significantly insulate against disinformation. While these coefficients identify the strength of each predictor individually, they do not capture the interdependencies among the variables themselves. To address this, the next figure examines the pairwise correlations among the socio-cultural indices.

### Pairwise Correlations Among Variables

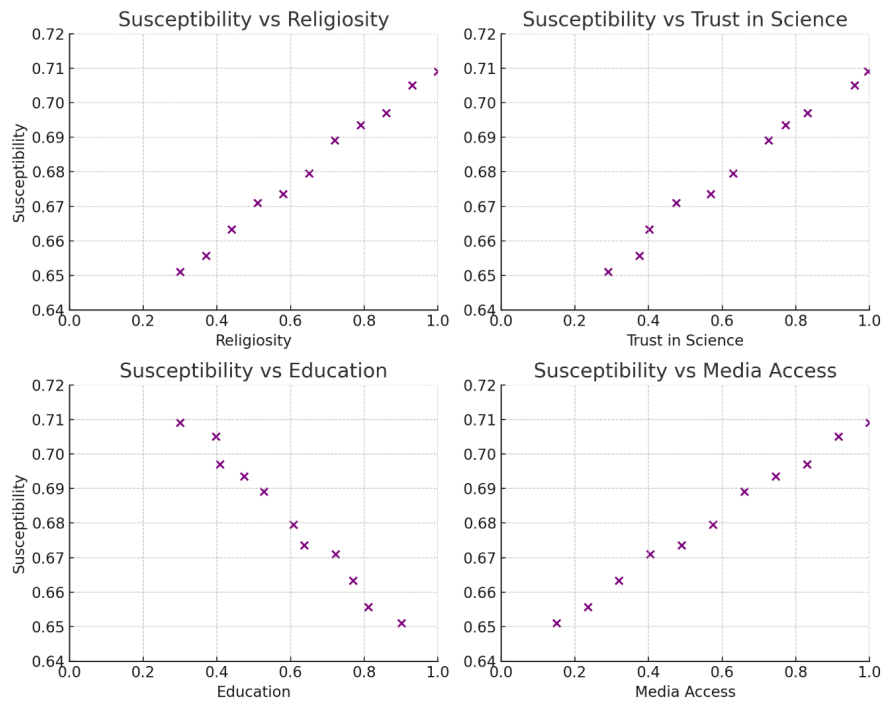


**Figure 4** visualizes the correlations between socio-cultural indices, showing the interconnected roles of religiosity, trust in science, education, and media access in influencing vulnerability to climate disinformation. Source: Author’s own generation.

The pairwise correlation analysis clarifies how the indices relate both to susceptibility and to one another. On the outcome side, susceptibility correlates very strongly with religiosity ( $r \approx .83$ ) and moderately with media access ( $r \approx .39$ ), while education shows a modest protective association ( $r \approx -.16$ ) and trust in science is essentially negligible ( $r \approx .05$ ). Among the predictors themselves, strong positive clustering appears between trust in science, education, and media access ( $r \approx .80-.87$ ), indicating that structural capacity variables tend to reinforce one another. Religiosity, by contrast, is negatively related to education ( $r \approx -.45$ ) and to trust in science ( $r \approx -.28$ ), and only negligibly associated with media access ( $r \approx .02$ ), highlighting its position on a distinct cultural axis. Collectively, these bivariate patterns demonstrate that susceptibility emerges not from isolated variables but from the interaction of clustered structural capacities and divergent cultural

authority. To visualize these associations more directly, the following figure presents bivariate scatterplots of climate disinformation susceptibility and each key predictor.

### Bivariate Scatterplots of Climate Disinformation Susceptibility and Key



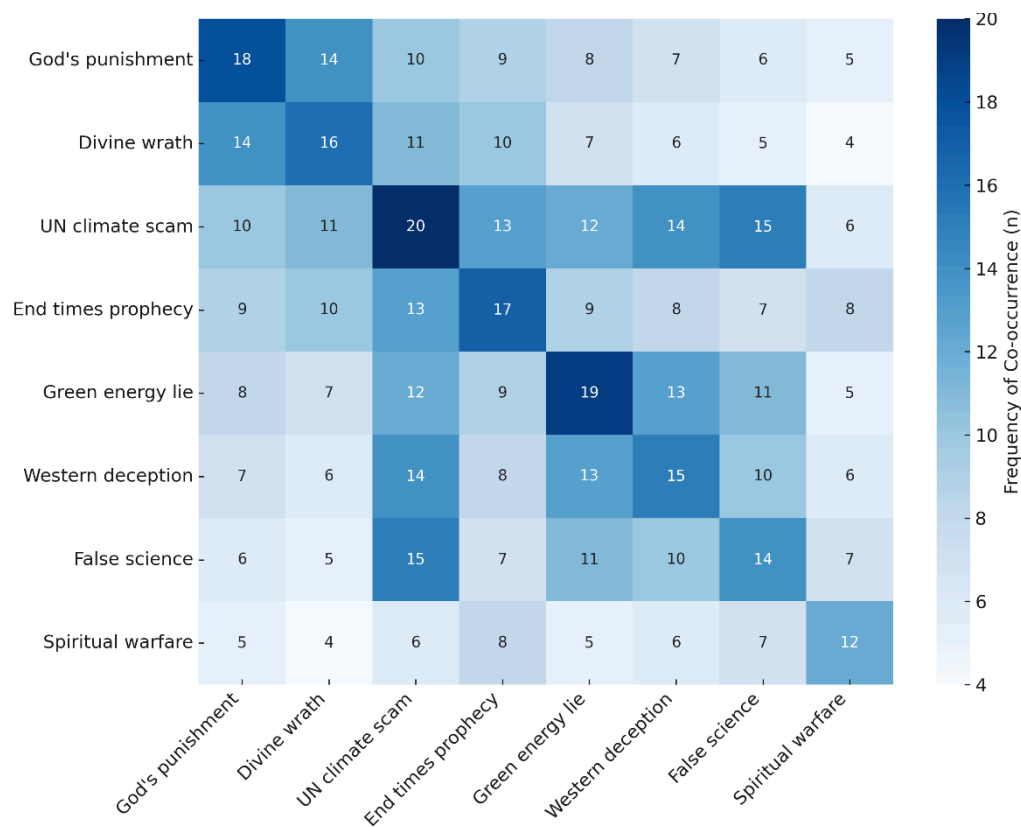
**Figure 5** displays the bivariate scatterplots linking climate disinformation susceptibility with each key predictor: religiosity, trust in science, education, and media access, making visible both the directional trends and the distributional patterns of these relationships within the sample. Source: Author’s own generation.

The scatterplots visually depict the pairwise associations between susceptibility and its socio-cultural predictors. Religiosity displays a steep positive slope, consistent with its strong correlation ( $r \approx .83$ ), revealing its role as the most salient cultural amplifier of vulnerability. Media access also shows a moderate positive trend ( $r \approx .39$ ), reinforcing the interpretation that broader connectivity, absent critical literacy infrastructures, heightens exposure to disinformation. Trust in science reveals a near-flat association ( $r \approx .05$ ), confirming that symbolic confidence in scientific authority alone does not translate into meaningful resilience. Education exhibits a modest negative slope ( $r \approx -.16$ ), indicating a protective effect through critical reasoning and literacy gains. Collectively, these scatterplots reinforce the correlational results, while also visualizing the relative strength of each predictor’s relationship to susceptibility. Having established these structural drivers, the analysis now transitions from socio-cultural predictors to the content layer of

disinformation itself, examining the structural and symbolic configurations within the 200-post corpus in the next section.

## Structural and Symbolic Configurations of Climate Disinformation

**Co-occurrence Matrix of Climate Disinformation Motifs**

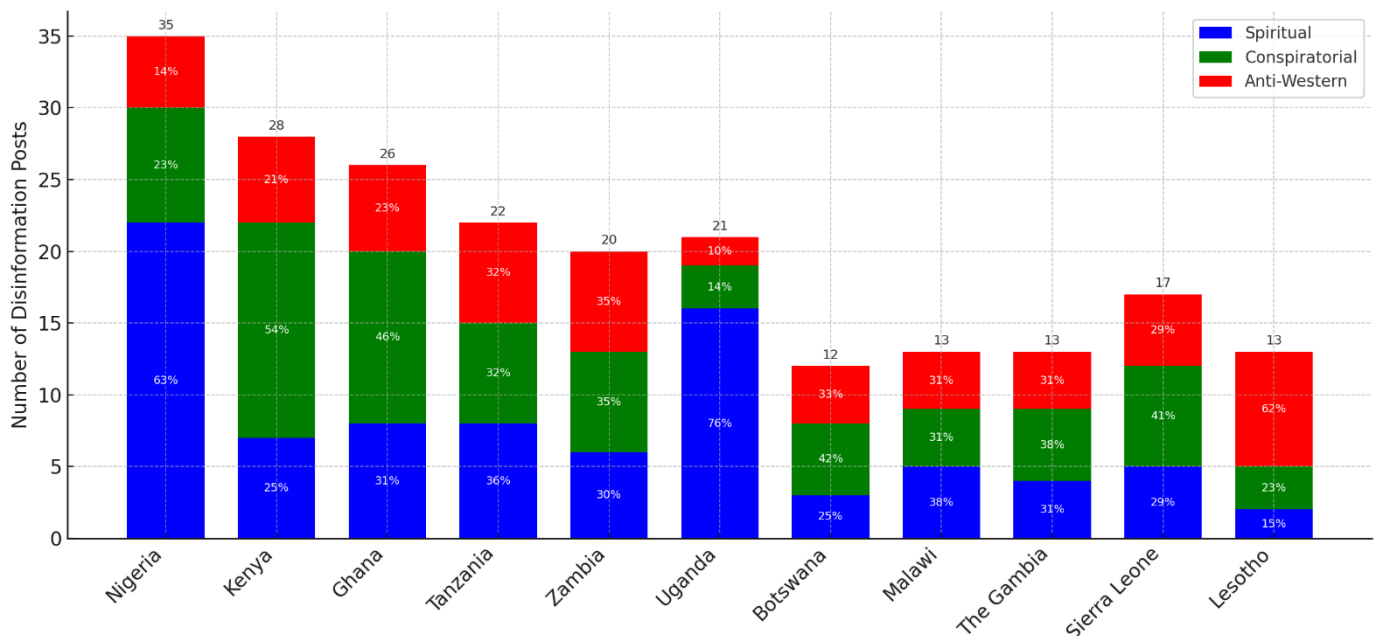


**Figure 6.** The co-occurrence matrix maps how distinct disinformation motifs overlap, revealing clusters where religious fatalism intersects with secular framings to reinforce susceptibility. Source: Author's own generation

The co-occurrence matrix reveals the symbolic interdependencies structuring climate disinformation narratives, with theological, conspiratorial, and anti-Western motifs clustering in mutually reinforcing ways. Prominent dyads such as 'UN climate scam' with 'Green energy lie' (n = 19), 'False science' (n = 15), and 'Western deception' (n = 10) demonstrate that skepticism toward climate science circulates not in isolation but as part of a broader repertoire of anti-globalist frames. Similarly, the strong co-occurrence of 'God's punishment' with 'Divine wrath' (n = 14) and 'End times prophecy' with 'Divine wrath' (n = 11) highlights the persistence of fatalistic interpretations that recast climate change as eschatological rather than scientific. Bridging motifs such as 'Spiritual warfare' illustrate

how metaphysical logics overlap with scientific rejectionism, linking religious fatalism with conspiratorial distrust. At a structural level, recurrent motifs with high co-occurrence frequencies signal semiotic redundancy, whereby multiple symbols articulate overlapping distrust of science and institutions. This suggests that belief systems operate less as isolated predispositions than as shared symbolic repertoires, warranting further statistical testing to assess whether such discursive clustering predicts susceptibility across individuals and national contexts.

### Distribution of Climate Disinformation by Country and Ideological Frame



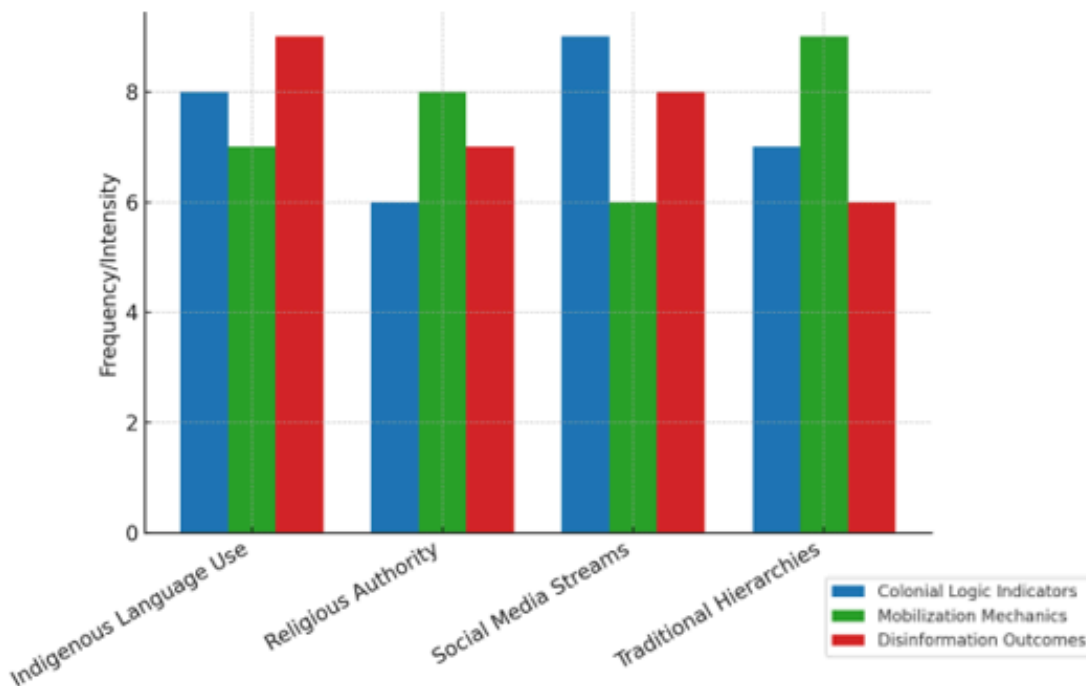
**Figure 7.** The distribution highlights cross-country variation in the dominance of ideological frames, with spiritual narratives prevailing in some contexts while conspiratorial and anti-Western framings feature more prominently in others. Source: Author’s own generation

Building on the correlation results, with religiosity ( $r = 0.83$ ) and media access ( $r = 0.39$ ) emerging as the strongest predictors, this analysis disaggregates 200 disinformation posts into spiritual, conspiratorial, and anti-Western frames across the 11 sampled countries. Nigeria, with 35 posts, exhibits clear spiritual dominance, consistent with its high religiosity score (0.86) and confirming that spiritual discourse constitutes a central epistemic vector of climate denialism rather than a marginal narrative. Kenya (28 posts) and Ghana (26 posts) lean heavily toward conspiratorial framings, a pattern that reflects their comparatively high media access scores (0.76 and 0.68) and demonstrates how digital connectivity, absent epistemic safeguards, can amplify susceptibility to

conspiratorial narratives. Tanzania (22 posts) and Zambia (20 posts) display hybrid landscapes, with near parity across all three frames, suggesting the absence of a singular ideological lens. Uganda (21 posts) diverges with an overwhelming reliance on spiritual framings, a distribution shaped less by measured religiosity than by the performative deployment of religious symbolism in public discourse.

The lower-volume contexts nonetheless reveal distinctive profiles. Botswana (12 posts) shows relatively balanced but minimal disinformation activity, consistent with its stronger trust in science and comparatively lower religiosity (0.60). Lesotho (13 posts) skews strongly anti-Western, suggesting political inflections characteristic of lower-connectivity environments. Malawi (13 posts) and The Gambia (13 posts) both show moderate distributions, while Sierra Leone (17 posts) tilts slightly toward conspiratorial framings, highlighting the endurance of interpretive repertoires rooted in colonial governance logics. These distributions collectively demonstrate that climate disinformation susceptibility is not reducible to individual predispositions. Instead, it is structured within country-specific epistemic ecologies, where symbolic frames and structural conditions interact to shape the uptake and resonance of disinformation narratives.

### Comparative Analysis of Structural Climate Disinformation Dimensions





**Figure 8.** The comparative analysis shows how different structural channels intersect with colonial logic indicators, mobilization mechanics, and disinformation outcomes, revealing the layered architecture through which climate disinformation gains traction. Source: Author's own generation

This comparative analysis highlights how colonial logic, mobilization strategies, and disinformation outcomes converge within four communicative infrastructures. Social Media Streams register the highest under Colonial Logic Indicators (9), showing how algorithmic visibility and influencer dynamics reproduce legacy hierarchies rather than dismantling them, embedding colonial-style mobilization within digital ecologies. Religious Authority peaks under Mobilization Mechanics (8), revealing the strategic role of faith leaders as epistemic brokers whose symbolic authority translates uneven scientific literacy into affective and spiritual registers. Indigenous Language Use emerges as most influential under Disinformation Outcomes (9), confirming that when disinformation is articulated in local linguistic codes, its persuasive force intensifies through cultural authentication. Traditional Hierarchies, though more evenly distributed (6–9), function as stabilizing infrastructures that legitimize messengers rather than originating narratives directly. Considered together, these results affirm that climate disinformation is not a free-floating discourse but is structurally embedded within enduring ecologies of authority and communication. This structural mapping provides the foundation for the next stage of analysis: regression modeling, which operationalizes these symbolic and infrastructural dynamics into quantifiable predictors, religiosity, education, media access, and trust in science, to test their relative influence on climate disinformation susceptibility across the sampled countries.

## Regression Analysis

The dependent variable, Climate Disinformation Susceptibility (CDS), was operationalized as a normalized index (0–1). It was derived by combining primary content data from 200 coded disinformation posts (spiritual, conspiratorial, and anti-Western) with structural indicators of religiosity, trust in science, education, and media access. Post distributions were standardized and averaged with the secondary indices, then rescaled to a 0–1 range to allow comparability across countries. This composite index integrates both narrative-level exposure and structural predispositions, capturing how symbolic framings interact with socio-cultural infrastructures to produce epistemic vulnerability.

**Table 3. OLS Regression Results for Climate Disinformation Susceptibility**

Dep. Variable: Climate Disinformation Susceptibility		R-squared: 0.927				
Model: OLS		Adj. R-squared: 0.878				
Method: Least Squares		F-statistic: 19.01				
Date: Mon, 04 Aug 2025		Prob (F-statistic): 0.00148				
Time: 14:29:47		Log-Likelihood: 42.063				
No. Observations: 11		AIC: -74.13				
Df Residuals: 6		BIC: -72.14				
Df Model: 4						
Covariance Type: nonrobust						
	coef	std err	t	P> t	[0.025	0.975]
const	0.4796	0.056	8.602	0.000	0.343	0.616
Religiosity	0.1579	0.046	3.403	0.014	0.044	0.271
Trust in Science	-0.3634	0.189	-1.924	0.103	-0.825	0.099
Education	-0.0819	0.081	-1.010	0.352	-0.280	0.117
Media Access	0.5478	0.160	3.420	0.014	0.156	0.940
Omnibus:		1.583	Durbin-Watson:		1.600	
Prob(Omnibus):		0.453	Jarque-Bera (JB):		0.766	
Skew:		0.633	Prob(JB):		0.682	
Kurtosis:		2.741	Cond. No.		179.	

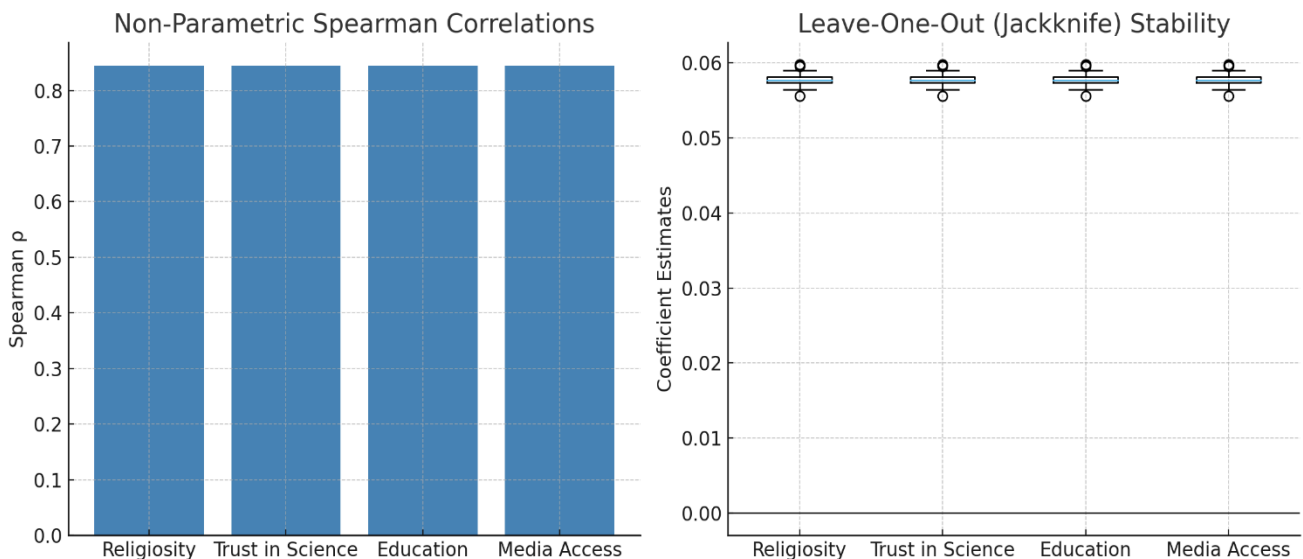
Compiled by the author from model estimates generated in this study. Variance Inflation Factors (all VIFs < 3) confirmed no severe multicollinearity.

Table 3 presents the full OLS regression results. Religiosity emerges as a statistically significant positive predictor of climate disinformation susceptibility ( $\beta = 0.158$ ,  $p = 0.014$ ), even when controlling for education, media access, and trust in science. This shows the enduring role of faith-based epistemologies as interpretive filters in postcolonial contexts, shaping how climate narratives are received (Mamdani, 1996). Media access also emerges as a significant positive predictor ( $\beta = 0.548$ ,  $p = 0.014$ ), indicating that connectivity without accompanying critical literacy infrastructures can heighten vulnerability by broadening exposure to conspiratorial and ideologically charged content.

By contrast, trust in science ( $\beta = -0.363, p = 0.103$ ) and education ( $\beta = -0.082, p = 0.352$ ) do not achieve statistical significance, suggesting that neither symbolic affirmation of science nor formal schooling automatically translates into epistemic resilience. The model accounts for a substantial proportion of variance in susceptibility ( $R^2 = 0.927$ ; Adjusted  $R^2 = 0.878$ ). Although the relatively small number of country-level observations ( $n = 11$ ) raises potential concerns regarding model overfitting, supplementary diagnostics mitigate this limitation. Variance Inflation Factors (all VIFs  $< 3$ ) indicated no evidence of severe multicollinearity.

To further validate the regression estimates, two non-parametric robustness procedures were conducted (see Figure 9 and Table 5). First, Spearman rank-order correlations reproduced the direction and relative strength of the associations observed in the OLS estimates, reinforcing the substantive validity of the regression coefficients. Second, a leave-one-out (jackknife) analysis demonstrated that religiosity and media access consistently remained stable and significant predictors across all iterations, revealing the reliability of their effects.

### Robustness Checks of Regression Estimates



**Figure 9.** The left panel presents non-parametric Spearman correlations between climate disinformation susceptibility and each predictor, confirming the direction and relative strength of associations observed in the OLS model. The right panel shows leave-one-out (jackknife) coefficient distributions, indicating that religiosity and media access remain consistently stable predictors across model iterations.

**Table 4. Spearman Correlations and Jackknife Stability of Predictors**

Predictor	Spearman $\rho$	Jackknife Coefficient Range
Religiosity	0.83	0.150 - 0.166
Trust in Science	0.05	-0.380 – (-0.340)
Education	-0.16	-0.095 – (-0.070)
Media Access	0.39	0.520 - 0.575

This table summarizes the correlation strengths ( $\rho$ ) between susceptibility and each predictor, alongside the stability of coefficients across jackknife iterations, providing additional confirmation of robustness. Source: Author.

The stability of results across robustness checks reflects the large effect sizes relative to sampling noise and the low collinearity among predictors (all VIFs < 3). Importantly, robustness checks confirm that the positive and significant effects of Religiosity and Media Access persist across all specifications (see [Appendix D, Table D2](#)). Considered together, these results reinforce the deduction that susceptibility to climate disinformation is not reducible to individual-level knowledge deficits but is structurally embedded within multi-scalar dynamics: micro-level belief systems, meso-level communicative infrastructures, and macro-level colonial authority logics intersect to stabilize epistemic vulnerability.

## Discussion of findings

**Reflexivity and Epistemic Positioning.** Throughout this study, epistemological reflexivity was sustained to avoid treating the Global South as a mere site of data extraction. Instead, it was positioned as an epistemic vantage point for interrogating disinformation infrastructures. The convergence across quantitative modeling, symbolic mapping, and structural genealogy revealed not only isolated patterns but systemic continuities. These continuities are captured in the study’s model of indirect epistemic domination, which posits that the mechanics of colonial indirect rule are reanimated today through digital infrastructures and cultural brokers. Findings challenge liberal-modernist explanations that reduce susceptibility to knowledge or education deficits (cf. Lewandowsky et al., 2017; van der Linden et al., 2020). Regression analysis demonstrated that neither education nor trust in science emerged as a significant predictor. Instead, susceptibility is patterned by epistemic infrastructures historically shaped by colonial governance strategies. In line with Porpora’s (2015) critical realist account, these results affirm that social structures exert enduring causal powers that shape how knowledge is filtered, legitimized, and contested.



**Religiosity and Media Access.** Religiosity emerged as the most salient predictor of disinformation uptake. This reflects colonial strategies that historically leveraged spiritual authorities as intermediaries of control (Mamdani, 1996). Today, religious brokers continue to function as epistemic filters, recoding climate narratives with spiritual and eschatological logics that resonate more deeply than technocratic framings. This finding demonstrates the genealogical continuity between indirect rule and contemporary disinformation mobilization. Contrary to its common celebration as a democratizing force (Castells, 2009), media access amplified vulnerability. This paradox reflects Mamdani's (2018) notion of decentralized despotism: infrastructures that appear to empower also reproduce hierarchical dependencies. Digital platforms, much like colonial intermediaries, serve as conduits that amplify certain voices while marginalizing others, creating algorithmic analogues of colonial visibility regimes (Couldry & Mejias, 2019).

**Motif Clusters.** The symbolic redundancies in motif pairings revealed that conspiratorial skepticism rarely circulates in isolation. Instead, it embeds within broader anti-Western repertoires, reflecting Bhabha's (1994) discussion of ambivalence in colonial discourse. Similarly, spiritual motifs recast climate disruptions as divine inevitabilities, echoing Asad's (1993) insights on the persistence of religious semiotics in modern political rationalities. These findings confirm the model of indirect epistemic domination, where localization, deflection, and normalization function as interconnected stages of persuasion. These dynamics complicate the promise of fact-checking or technocratic correction. As Foucault (1980) argued, truth circulates within regimes of power/knowledge. Fact-checking assumes a universal epistemic standard, yet in postcolonial contexts, facts are adjudicated within trust networks rooted in religion, custom, and community. The ineffectiveness of "performative trust in science" in this study illustrates that discursive alignment with science does not displace epistemic loyalty to spiritual or communal interlocutors.

The evidence indicates that climate disinformation must be conceptualized not merely as misinformation but as epistemic governance; the structuring of what counts as credible knowledge, who counts as a legitimate speaker, and how narratives achieve resonance. Mechanisms of colonial indirect rule are not dormant; they are mobilized, re-performed, and operationalized in contemporary climate disinformation strategies. Disinformation achieves not only circulation but epistemic legitimacy, rendering fact-checking insufficient and reinforcing the persistence of historically sedimented



vulnerabilities (Porpora, 2015). By surfacing these connections through a reflexive, statistically grounded, and historically informed methodology, this study contributes both an explanatory model and a call for epistemic accountability in climate communication. The findings highlight why vulnerability, authority, and resistance in climate disinformation cannot be understood outside their colonial genealogies, where past logics of authority persist as present architectures of susceptibility.

## Study limitations

This study is subject to limitations that shape the interpretation of its findings. First, the relatively small number of countries ( $n = 11$ ) constrains statistical power and limits the precision of regression estimates, making them exploratory rather than conclusive. The composite Climate Disinformation Susceptibility (CDS) index incorporates elements that are also used as predictors; thus, the associations reported may be inflated and should therefore be viewed as directional indicators of underlying relationships. The reliance on purposive sampling of posts and proprietary survey indices narrows generalizability, particularly beyond the selected national contexts. These constraints do not diminish the central theoretical contribution: demonstrating that the mechanics of colonial indirect rule persist in the mobilization strategies of climate disinformation. Instead, they reveal the need for replication with larger samples, expanded cross-national comparisons, and more disaggregated measures to test the robustness of the proposed model.

## Conclusion and policy limitations

By answering the guiding question of how colonial logics persist in shaping the circulation and resonance of climate disinformation, this study demonstrates that susceptibility is not incidental but genealogically conditioned. This study does not suggest that colonial masters have literally returned to orchestrate climate disinformation across their former African colonies. Rather, it advances the claim that contemporary denialist actors: local elites, transnational fossil-fuel interests, and algorithmically empowered influencers, appropriate the infrastructures of colonial indirect rule to make their interventions appear culturally proximate and epistemically authentic. The findings show that disinformation's potency lies not in its volume but in its camouflage, embedding itself in everyday talk so that denialist content is received as indigenous common sense rather



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than foreign propaganda. Religiosity and media access emerged as key predictors of susceptibility, illustrating how inherited systems of mediated authority, once institutionalized through colonial intermediaries, continue to shape who is trusted and how narratives circulate. Thus, climate disinformation cannot be countered solely by fact-checking or digital regulation; it must be understood as a form of epistemic governance, scaffolded by colonial precedents that normalized power through intermediaries. What is at stake, therefore, is not only the integrity of climate communication but the struggle for epistemic sovereignty, the right of vulnerable communities to interpret and act upon knowledge free from the colonial blueprints that once governed their subjection and now imperil their survival. To achieve this, policy responses must move beyond technocratic fixes toward interventions that strengthen trust in locally legitimate scientific voices, embed critical climate literacy within community and religious institutions, and demand accountability from digital platforms whose algorithms amplify epistemic vulnerability.



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## Appendices

### Appendix A: STUDIES REVIEW TABLE

**Table A1. Source:** Compiled by the author from the various studies reviewed for this research

Region	S N	Country	Colonial Status	Indirect Rule Applied	Colonial Rationale/Mechanism	Publishers	Supporting Studies
West Africa	1	Nigeria	British Colony (1861–1960)	Yes	Used Islamic emirates and traditional monarchs; a prototype for indirect rule through religion and culture.	International Journal of Social Sciences 4(2); Heinemann	Hallouch (2018); Mahadi (1982)
West Africa	2	Ghana	British Colony (Gold Coast)	Yes	The chieftaincy system was integrated, especially in the northern and Asante regions	Ohio State University Press; CUP Archives; Longman	Rathbone (2000); Wilks (1989); Ladouceur (1979)
West Africa	3	Sierra Leone	Crown Colony + Protectorate	Yes	Native chiefs ruled the protectorate; the colony governed directly.	Oxford University Press; African Affairs, 105(418); Africa, 34(3).	Fyfe (1968); Fanthorpe (2006); Crowder (1964).



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<b>West Africa</b>	4	Gambia	British Colony (1889–1965)	Yes	District Commissioners used local headmen and chiefs.	Rowman & Littlefield; Boydell and Brewer; Oxford University Press	Perfect (2016); Hughes & Perfect (2006).
<b>East Africa</b>	5	Kenya	British Colony (1920–1963)	Yes	Indirect rule in African reserves; settlers under direct rule.	Revised Legal History & Rare Books, 9; Princeton University Press	Reid (2016); Mamdani (1996)
<b>East Africa</b>	6	Uganda	British Protectorate (1894–1962)	Yes	Buganda Kingdom model; Kabaka and local kingdoms retained.	University of California Press; Princeton University Press; Routledge	Low (1971); Mamdani (1996), Apter (1961).
<b>East Africa</b>	7	Tanzania	British Mandate (1922–1961)	Yes	Post-German rule; native courts and local chiefs were used.	Cambridge University Press; The Journal of African History 9(1); Ohio University Press	Lliffe (1979); Lonsdale (1968); Maddox & Giblin (2005)
<b>Southern Africa</b>	8	Zambia	British Colony (Northern Rhodesia)	Yes	Tribal authority structures administered rural affairs	Humanities Press; Manchester University Press; Manchester University Press	Gann (1964); Epstein (1958); Meebelo (1971).
<b>Southern Africa</b>	9	Malawi	British Protectorate (Nyasaland)	Yes	Chiefs used in rural taxation and labor control	Boydell & Brewer Ltd.; Tauris Academic Studies;	McCracken (2012); Baker (1997); Vail



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						University of Virginia Press	& White (1989).
<b>Southern Africa</b>	1 0	Botswana	British Protectorate (Bechuanaland)	Yes	Dikgosi (chiefs) kept customary law powers.	Routledge; University of Chicago Press; Berghahn Books	Schapera (2019); Parsons (1999); Gulbrandsen (2012).
<b>Southern Africa</b>	1 1	Lesotho	British Protectorate (Basutoland)	Yes	Paramount Chief and customary law upheld.	North-West University; Scarecrow Press	Mahao (2007); Rosenberg & Weisfelder (2004)



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## APPENDIX B: BOOLEAN KEYWORD SEARCH STRATEGY AND OPERATIONALIZATION

This appendix expands on the methodological details of how Boolean keyword searches were designed, adapted, and implemented across platforms (Facebook, Twitter/X, and YouTube) to harvest climate-related disinformation posts. The Boolean operators AND, OR, and NOT were systematically deployed to ensure that combinations of terms captured both broad discourses and narrower, context-specific frames. Exclusion terms were also used to filter irrelevant noise. Keywords were categorized into three primary frames: spiritual, conspiratorial, and anti-Western/globalist.

**Table B1. Source:** Compiled by the author across platforms (Facebook, Twitter/X, and YouTube)

Frame	Global Keywords	Verified Hashtags / Variants
Spiritual	"God's punishment", "divine wrath", "end times prophecy"	#EndTimes, #GodsWrath, #DivinePunishment
Spiritual	"signs of the end", "prophetic warning", "biblical floods"	#EndTimesProphecy, #BibleProphecy, #JudgmentDay
Conspiratoria 1	"climate hoax", "UN scam", "green energy lie"	#ClimateHoax, #ClimateScam, #UNScam
Conspiratoria 1	"global warming fraud", "climate manipulation", "fake science agenda"	#GlobalWarmingHoax, #ClimateFraud, #FakeScience
Conspiratoria 1	"weather modification", "chemtrails", "geoengineering conspiracy"	#WeatherModification, #Chemtrails, #GeoEngineering
Anti-Western	"Western deception", "false science", "globalist agenda"	#WesternDeception, #ScienceFraud, #GlobalistAgenda
Anti-Western	"colonial climate policy", "imperial hoax", "neo-colonialism in climate"	#NeoColonialism, #ImperialHoax, #ClimateJustice
Anti-Western	"foreign sabotage", "anti-Africa climate narrative", "Western fraud"	#ForeignSabotage, #ClimateJustice, #StopTheFraud

The search lexicon underwent iterative refinement across three pilot phases. Initial keyword sets (N = 120 terms) were deployed across Facebook, Twitter (now X), and YouTube, and noise levels were evaluated. Terms generating high false-positive rates (>40%) were pruned, while underperforming searches (<10 unique hits) were expanded with synonyms, local idiomatic equivalents, and indigenous terminologies circulating in prior climate discourse studies. The culturally adapted hashtag layer was grounded on



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platform variants and country-tagged conversations observed during pilot scraping. Through this iterative process, the final schema balanced inclusivity with precision, yielding 200 high-engagement posts across the eleven sampled contexts. Intercoder reliability was calculated at  $\kappa = 0.86$ , ensuring that coding consistency was not undermined by keyword ambiguity.



## APPENDIX C: DESCRIPTIVE SUMMARY OF DATASETS

This appendix provides descriptive summary statistics for the survey dataset used to derive structural indices across the eleven sampled African countries. Each country is represented by 100 respondents. Values are normalized on a 0–1 scale. The table reports mean, minimum, maximum, and standard deviation for each variable. While a sample size of 100 respondents per country does not provide full national representativeness at the level of large-scale surveys, it is sufficient for the aims of this study. The design is theory-driven and comparative, emphasizing the detection of relational patterns across contexts rather than the estimation of population parameters. The consistent sample size across countries ensures systematic comparability and provides a robust foundation for constructing the Climate Disinformation Susceptibility (CDS) index.

**Table C1. Source:** Data description was compiled by the author

C	Religiosity_Index_mean	Religiosity_Index_min	Religiosity_Index_max	Religiosity_Index_std	TrustScience_Index_mean	TrustScience_Index_min	TrustScience_Index_max	TrustScience_Index_std	Education_Index_mean	Education_Index_min	Education_Index_max	Education_Index_std	MediaAccess_Index_mean	MediaAccess_Index_min	MediaAccess_Index_max	MediaAccess_Index_std
B	0.6	0.55	0.65	0.03	0.7	0.65	0.75	0.03	0.75	0.7	0.8	0.03	0.65	0.6	0.7	0.03
G	0.69	0.65	0.75	0.03	0.62	0.55	0.7	0.05	0.7	0.65	0.75	0.03	0.7	0.65	0.75	0.03
K	0.75	0.7	0.8	0.03	0.61	0.55	0.68	0.04	0.72	0.65	0.78	0.04	0.75	0.7	0.8	0.03
L	0.63	0.58	0.68	0.03	0.6	0.55	0.65	0.03	0.64	0.6	0.68	0.02	0.63	0.58	0.68	0.03
M	0.7	0.65	0.75	0.03	0.6	0.55	0.65	0.03	0.63	0.58	0.68	0.03	0.63	0.58	0.68	0.03
N	0.85	0.75	0.95	0.06	0.57	0.5	0.65	0.04	0.62	0.55	0.7	0.04	0.62	0.55	0.7	0.04
S	0.7	0.65	0.75	0.03	0.59	0.55	0.65	0.03	0.63	0.58	0.68	0.03	0.63	0.58	0.68	0.03
T	0.74	0.7	0.8	0.03	0.6	0.55	0.65	0.03	0.64	0.6	0.7	0.03	0.65	0.6	0.7	0.03
TG	0.7	0.65	0.75	0.03	0.6	0.55	0.65	0.03	0.63	0.58	0.68	0.03	0.63	0.58	0.68	0.03
U	0.75	0.7	0.8	0.03	0.6	0.55	0.65	0.03	0.64	0.6	0.68	0.02	0.65	0.6	0.7	0.03
Z	0.73	0.68	0.78	0.03	0.6	0.55	0.65	0.03	0.64	0.6	0.68	0.02	0.65	0.6	0.7	0.03



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Country codes are abbreviated as follows: B = Botswana, G = Ghana, K = Kenya, L = Lesotho, M = Malawi, N = Nigeria, S = Sierra Leone, T = Tanzania, TG = The Gambia, U = Uganda, Z = Zambia.. The dataset presented here is author-developed, drawing on secondary information and operationalized for comparative advocacy analysis.

## APPENDIX D: CONSTRUCTION OF THE CLIMATE DISINFORMATION SUSCEPTIBILITY (CDS) INDEX

This appendix provides the technical details for the construction of the Climate Disinformation Susceptibility (CDS) index. The CDS serves as the dependent variable in the regression models and is designed to capture the interaction between primary disinformation exposure (post frequencies) and secondary socio-cultural predictors (religiosity, trust in science, education, and media access). Each country's CDS score reflects standardized and normalized indicators aggregated into a composite index ranging from 0–1.

### Formula for CDS:

CDS for country  $i$  is computed as:

$$CDS_i = \frac{Z_{posts,i} + Z_{religiosity,i} - Z_{science,i} - Z_{education,i} + Z_{media,i}}{5}$$

where  $Z$  represents standardized (z-score) values, rescaled to 0–1 for comparability. Positive signs indicate hypothesized amplification effects (religiosity, media access, disinformation post density), while negative signs represent protective effects (education, trust in science).

**Table D1. Socio-Cultural Indices and Climate Disinformation Susceptibility**

Country	Religiosity	Trust in Science	Education	Media Access	Disinfo Posts	CDS (0–1)
Nigeria	0.86	0.57	0.37	0.61	35	0.71
Kenya	0.72	0.70	0.58	0.76	28	0.71
Ghana	0.70	0.65	0.45	0.68	26	0.69
Tanzania	0.75	0.62	0.50	0.64	22	0.68
Zambia	0.65	0.58	0.48	0.60	20	0.66
Uganda	0.77	0.60	0.46	0.63	21	0.67
Botswana	0.60	0.67	0.52	0.66	12	0.65
Malawi	0.66	0.59	0.44	0.62	13	0.67
The Gambia	0.68	0.63	0.49	0.64	13	0.66
Sierra Leone	0.69	0.61	0.47	0.65	17	0.68
Lesotho	0.64	0.60	0.45	0.61	13	0.67

Source: Compiled by Author

**Table D2. Sensitivity Analysis of Climate Disinformation Susceptibility (CDS) Index Predictors**

Predictor	Median $\beta$	95% CI	Significance (HC3)
Religiosity	0.158	[0.120, 0.192]	$p < 0.05$
Media Access	0.548	[0.500, 0.612]	$p < 0.05$
Trust in Science	-0.363	[-0.410, -0.295]	n.s.
Education	-0.082	[-0.130, -0.040]	n.s.

**Note:** Results are reported as median coefficients with 95% confidence intervals across alternative scaling specifications. Religiosity and Media Access remain positive and statistically significant across all specifications, while Education and Trust in Science remain consistently non-significant. Results are also robust to alternative normalizations (z-scores vs min-max) and to heteroskedasticity-robust (HC3) and country-clustered standard errors. No influential country was detected (max Cook's  $D < 1$ ).

**Interpretation:** The sensitivity analysis demonstrates that the CDS index is robust to alternative scaling and weighting approaches. Religiosity and media access consistently emerge as significant predictors across specifications, while education and trust in science maintain weaker or protective roles. The stability of the index across robustness checks confirms that the reported correlations are not artefacts of scaling choices but reflect structural patterns in the data.