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Climate Change, Economic Inequality, and Global Security

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ABSTRACT

This paper discusses the interplay between climate stress and economic inequality and its effects on the outcomes of global security. The research assesses the security measures in the years 2000 to 2024 using a Climate Stress Index using temperature aberration, extreme precipitation, drought severity, and disaster frequency as the key indicators of security. The results indicate that there is a positive association between climate stress and insecurity, which is more robust in less equal societies. Uncovering that food-price stress and displacement pressure are mediating factors of this relationship, mechanism tests indicate that the amplification effect is strongest in fragile and low-capacity states. The research found inequality as a multiplier threat that increases effects of climate shocks. It suggests that in high-exposure, high-inequality situations, priorities should be given to equity-based adaptation, social protection, and resilience funding.

Keywords: climate stress; economic inequality; global security; conflict risk; social unrest; forced displacement; state fragility

INTRODUCTION

Climate change has ceased being an environmental issue, but it now exists as a structural force that redefines economies and how security is generated. Heat, drought, floods and storms interfere with output, destroy infrastructure and put pressure on public budgets, and their effects are transferred by trade and commodity prices. Recent international experience suggests that extreme temperatures can create inertial upward food and headline inflation pressures that constrain household and encouraged economic stress that may overflow into politics and social stability (Kotz et al., 2024).

Climate stress has few linear security implications. Recent studies on climate-security point to the fact that hazards coexist with governance, institutional capacity, and social protection and create instability threats and not necessarily mechanically cause conflict (Pacillo et al., 2024). The evidence syntheses of conflict-prone areas also indicate that climate-conflict which combines both context-dependent and path-dependent mechanisms indicate that grievances and competition can increase the likelihood of violence or unrest due to climate-conflict associations (Kim and Ferré Garcia, 2023). This school of thought changes the focus on the idea of climate as a trigger to climate as a stressor whose impact is based upon the political economy of exposure, coping, and response.

One of the contextual variables is economic inequality as it acts as a risk amplifier. Inequality defines the people who face the hazards, those with buffers (savings, insurance, social protection) and those whose interests take precedence in the process of adaptation and recovery. Empirical evidence has indicated that climate stress can further intensify within-country inequality by causing inequality in earnings and

opportunities among sectors and regions (Paglialunga et al., 2022). Meanwhile, differences in access to mitigation and adaptation actions continue to exist within each of the settings, supporting the vulnerabilities in pre-existing circumstances and undermining the legitimacy and equitability of climate response. Uneven patterns of preparedness and vulnerability are also exhibited in cross-national comparisons, which proves that adaptive capacity is not evenly distributed in countries exposed to similar physical hazards (Edmonds et al., 2023).

These distributional dynamics are important to the security of the world since they affect displacement and social contention. The modeling of long-run prospects suggests that the existence of climate change can exacerbate poverty and inequality globally and condition migration choices, whereas legal, financial, and social barriers usually obstruct the relocation of the poorest people off the danger - forming trapped populations and selective migration among established ones (Burzyński et al., 2022). Climate stress may also be cumulative through the daily burdens of eroding welfare and opportunity; thus, an estimated climate change can increase the time and welfare cost of water collection to women in most locations, which explains how climate influences interact with gendered and income-linked disadvantage (Carr et al., 2024). Simultaneously, the asymmetry of responsibility regarding emissions makes the burden-sharing process more challenging, with high-income populations being found to add disproportionately to the perceived warming and climate extremes, intensifying justice challenges that can be spilled over into geopolitical bargaining over finance, loss-and-damage, and migration governance (Houle et al., 2022).

The main aim of this research was that climate effects are not uniform and that disproportionate societies can more easily transfer climate shocks into insecurity than more equal societies; the question is how and why climate stress can ever be a security threat. The purpose is to determine the interaction between climate stress and economic inequality in determining the global security outcomes. In particular, the questions be to map the patterns of climate exposure and disparities between countries/regions, whether inequality enhances (or mediates) climate security relationships, and which mechanisms, including food-price pressure, displacement, weak institutions and social unrest, mediate this relationship. The study is informed by the following three questions: does climate stress correlate with the increased security risks (conflict, unrest, displacement), does economic inequality strengthen or mediate this, and what are best pathways in explaining the relationship? The relevance is found in the ability to inform peacebuilding and early-warning activities, focus on adaptation and resilience funding, enhance the development policy, and enhance security preparations by basing the brief conceptual chain: climate occurrences lead to livelihood breakdown, which causes grievances/competition, which leads to instability, upon which inequality is a multiplier by low trust and weaker social security that can increase fragility (Pacillo et al., 2024).

LITERATURE REVIEW

Climate-security nexus studies claim that in most cases, climatic hazards do not directly cause insecurity, but rather alter the opportunity structures and stress social contracts, particularly in those livelihoods that are climate sensitive (Ide et al., 2020). According to this perspective, climate crises may enhance competition of resources, increase the resourcefulness of identity markers, and put governments in difficult positions to manage grievances. Relative deprivation and grievance views also imply that insecurity becomes more probable when individuals believe that they are unfairly exposed to harm or equal access to protection and recovery, which are strongly associated with inequality (Houle et al., 2022). The theory of state capacity/fragility conceptualizes the state as the main buffer: with effective institutions, the shocks would never transform into violence by having a safety net, a dispute resolution system, and adaptive investments (Regan and Hyun Kim, 2020). Lastly, human security framework expands the definition of security to cover food, health, water, and livelihood security, the areas that are now being viewed as the key areas of stability in case of climate change (IPCC, 2022).

Climate change increases disparity in three ways; unequal exposure, unequal vulnerability and unequal adaptive capacity. The inequalities of exposure arise due to geography and patterns of settlement, as well as, to economic sorting in terms of higher risk housing and more climate exposed work. It has been demonstrated that temperature and precipitation changes may exacerbate income inequality within the country, especially when the economic system is still climate-dependent (Paglialunga et al., 2022). The vulnerability is not the same as health burden, asset buffer and access to insurance are not equally distributed. Stratification is also a characteristic of adaptive capacity: timely protection and recovery support is only provided to people with constraints of public finance and institutional quality, forming a distributional wedge that may intensify inequalities over the course of time (IPCC, 2022).

Empirical data have been progressively associated with the increased risks of conflict and unrest under particularly defined circumstances, with increased climate variability and extreme events correlated with the lack of incomes and suboptimal responses to governance (Ide et al., 2020). Another feature of regional syntheses is context: in the Middle East and North Africa, the interaction between climate stress and political economy vulnerabilities, social cleavages, and state actions influence the development of conflict risks (Kim & Ferré Garcia, 2023). Besides, the very process of climate action may introduce instability in the case of socially regressive mitigation expenses, which distributional design becomes a security-relevant issue (von Uexkull et al., 2024).

Lack of legitimacy, crippled cohesion, and diminished institutional trust are some of the conditions linked to inequality and are factors that undermine institutional stability and compliance with government authority. Evidence based on surveys shows that the perception of structural inequality may lead to the erosion of legitimacy beliefs in the global governance arenas with repercussions on cooperation and acceptance of the rule (Jongen & Scholte, 2022). At the national scale, increasing inequality is connected with a decrease of trust in institutions, a decrease in the ability to act together and handle the crisis (Palmisano and Sacchi, 2023).

Food insecurity and price shock: Climate extremes have an ability to intensify inflationary pressures and food prices, increasing hardship and complaints, particularly among the low-income families (Kotz et al., 2024). Stress of water and resources: Scarcity may fuel conflict between and among countries; diplomacy and related institutions can be essential in toning down tensions (Keskinen et al., 2021). Pressures in migration and displacement: Climatic effects may amplify the incentives of mobility and alter the migration trends in such a manner that may add pressure to the receiving states and regulating authorities (Burzynski et al., 2022). There are also concentrated climatic risks to displaced populations that have the potential to compound insecurity (Fransen et al., 2024). Labor/income shocks and unemployment: Weather shocks lower productivity and job in climate-sensitive industries and put the risk of unrest high when these areas do not have coping strategies (Paglialunga et al., 2022). Governance capacity and service delivery: In war-related environments, there is a lack of capacity to govern, known as adaptation gaps, which impact resilience and vulnerability to systems (Ajibade et al., 2021). Social cohesion and polarization: The disparities among identity groups may enhance augmented failures in collaboration and increase the potential of unrest when there is stress (Houle et al., 2022).

Although varied in their measurements of climate stress and security, across the literature, climate-security relationships are contingent, often featuring endogeneity issues, and are often subject to regional bias in the type of hotspots they choose (Kim and Ferré Garcia, 2023; Ide et al., 2020). One such gap is a scarcity, systematic testing of inequality as a term of interaction, i.e. are unequal societies transforming similar climate shocks into greater insecurity across many outcomes (unrest, displacement, conflict) using similar

indicators and strong designs (Pacillo et al., 2024). This drives structures and paradigms that directly incorporate inequality, climate stress, and governance avenues as one empirical approach.

METHODOLOGY

Research Design

The current research paper assumes a quantitative cross-national panel design to investigate the hypothesis of whether climate stress relates with worsening security performance and whether economic inequality weakens (moderates) or mediates (transmits) these relationships. Global security research should be analyzed by panel approach due to its (i) ability to capture within-country change over time (ii) ability to absorb the biasing impact of time-invariant national characteristics (e.g., geography, historical institutions) by fixed effects, and (iii) ability to test the interaction effects (climate stress × inequality) under similar measurement across cases. To prevent excessive causality overstatement, the design is presented as an analysis of risk association and conditional vulnerability instead of being deterministic, i.e., climate causes war.

Study Scope

- **Unit of analysis:** The country-year observations.
- **Period:** 2000-2024 (or maximum period of overlap in datasets).
- **Inclusion criteria:** Countries that have (a) longest consecutive observations of climate indicators, inequality and (b) non-missing values of core controls (GDP per capita, population).
- **Eligibility criteria:** The one that is not included was microstates where reporting was too volatile, and those that had missingness in key variables consistently across datasets. In moderate cases of missingness, the analysis is carried out with transparent and pre-specified missingness (e.g., multiple imputation (with controls only) or listwise deletion with sensitivity analyses).

Data Sources

The empirical data is a combination of publicly available country-year indicators of already existing international sources:

- **Indicators of climate stress:** temperature anomaly (deviation of historical baseline), precipitation anomaly, drought severity index (e.g. SPI/SPEI-type measures), and disaster frequency/intensity proxies (e.g., the number of climate-related disaster events).
- **Economic inequality:** income inequality, income inequality measures (Gini coefficient), top income shares(where available) and wealth inequality proxies (where direct measures are not available).
- **Security performance:** Incidence and intensity of armed conflict (event-based), political instability or unrest (indicators of riots/protests, or the number of events), forced displacement (refugees/IDPs), and other fragility/risk indicators (state fragility or terrorism-risk proxies, where available).

- **Control variables:** GDP per capita and growth, population size, regime, natural resource dependence, education /human capital proxies, and urbanization. The choice of controls is based on the fact that they forecast both inequality and security risk and are able to confound the climatesecurity relationship.

Variable Operationalization

Dependent variables (Global Security Outcomes): outcomes are modeled in two ways:

1. **Outcome-specific models** (preferred for interpretability):

- conflict incidence (binary), conflict intensity (events/deaths counts), protest/riot incidence, displacement rates, fragility index score.

2. **Composite security risk index** (optional): each outcome is standardized (z-scores) and averaged to create a single "security stress" measure, with reliability checks to ensure the composite does not mask opposing trends.

Independent variables

- **Climate Exposure/Stress Index (CSI):** constructed by standardizing and aggregating climate anomaly indicators (e.g., temperature anomaly z-score + drought z-score + precipitation-extreme z-score + disaster-frequency z-score). Higher CSI indicates higher climate stress.

- **Inequality:** primarily the **Gini coefficient;** alternative metrics (top income share, Palma ratio proxies) are used in robustness tests.

Moderator/mediators

- **Moderator:** inequality is specified as a moderator via an interaction term (CSI × Inequality).

- **Mediators (mechanisms):** food insecurity/food price stress and displacement pressure are modeled as mediators (where data permit), capturing pathways by which climate stress can translate into insecurity.

Controls (rationale)

- GDP per capita and growth (economic capacity), population (scale effects), regime type (political constraints), resource dependence (rent-seeking/conflict), education (adaptive capacity), urbanization (exposure concentration and mobilization potential).

Econometric / Analytical Models

The baseline panel specification estimates:

$$Y_{it}=\beta_1 CSI_{it}+\beta_2 Inequality_{it}+\beta_3(CSI_{it}\times Inequality_{it})+\gamma X_{it}+\mu_i+\tau_t+\varepsilon_{it}$$

where Y_{it} is a security outcome for country i in year t, X_{it} are controls, μ_i are **country fixed effects**, and τ_t are **year fixed effects** capturing global shocks. Standard errors are **clustered by country** to address serial correlation and heteroskedasticity. Depending on the outcome distribution, models include linear fixed-effects, logistic models for binary outcomes, and count models (e.g., negative binomial) for event counts.

Mediation testing (if used): a two-equation approach is applied with lagged mediators:

1. $Mediator_{it} = a\, CSI_{it-1} + b\, Inequality_{it-1} + \ldots$
2. $Y_{it} = c\, CSI_{it-1} + d\, Mediator_{it-1} + \ldots$

Evidence for mediation is assessed through the significance and stability of a and d, and attenuation of c when the mediator enters, with sensitivity analyses for sequential ignorability assumptions.

Addressing Bias and Endogeneity

To reduce reverse causality and simultaneity:

- **Lag structure:** climate stress and mediators are lagged (e.g., $t-1$, $t-2$) so exposure precedes outcomes.
- **Fixed effects:** country and year fixed effects reduce omitted-variable bias from unobserved stable characteristics and common global trends.
- **Placebo and pre-trend checks:** test whether future climate stress predicts past insecurity (should not).
- **Instrumental strategies (optional):** where feasible, use plausibly exogenous climate variation (e.g., meteorological anomalies) rather than disaster impacts that may be affected by reporting and state capacity.
- **Measurement sensitivity:** compare results using alternative datasets/definitions (e.g., conflict datasets; alternative inequality series).

Robustness Checks

- Replace CSI with single-hazard measures (drought-only, flood-only, heat-only).
- Replace Gini with alternative inequality metrics.
- Swap dependent variables (conflict vs protests vs displacement vs fragility).
- Re-estimate on subsamples: Global South vs Global North; fragile vs stable states; high vs low institutional capacity.
- Test non-linearities (e.g., CSI squared) and threshold effects (e.g., high-inequality regimes only).
- Evaluate influential observations and conduct leave-one-region-out tests.

Ethical Considerations

Findings are interpreted as **probabilistic risk relationships,** not deterministic claims. The study avoids framing vulnerable countries as inherently insecure and explicitly acknowledges data limitations, underreporting in conflict zones, and the potential harm of oversimplified narratives. Results are presented with uncertainty, and policy implications emphasize equity-centered adaptation and governance strengthening rather than securitized or exclusionary responses.

RESULTS

Sample description and coverage

The final panel consists of **156 countries** observed from **2000–2024**, yielding **3,640 country-year observations** after harmonizing identifiers and applying inclusion criteria. Missingness is limited for climate indicators and macro controls, while inequality and displacement series contain moderate gaps that reduce usable observations in models requiring those variables.

Table 1: Sample coverage

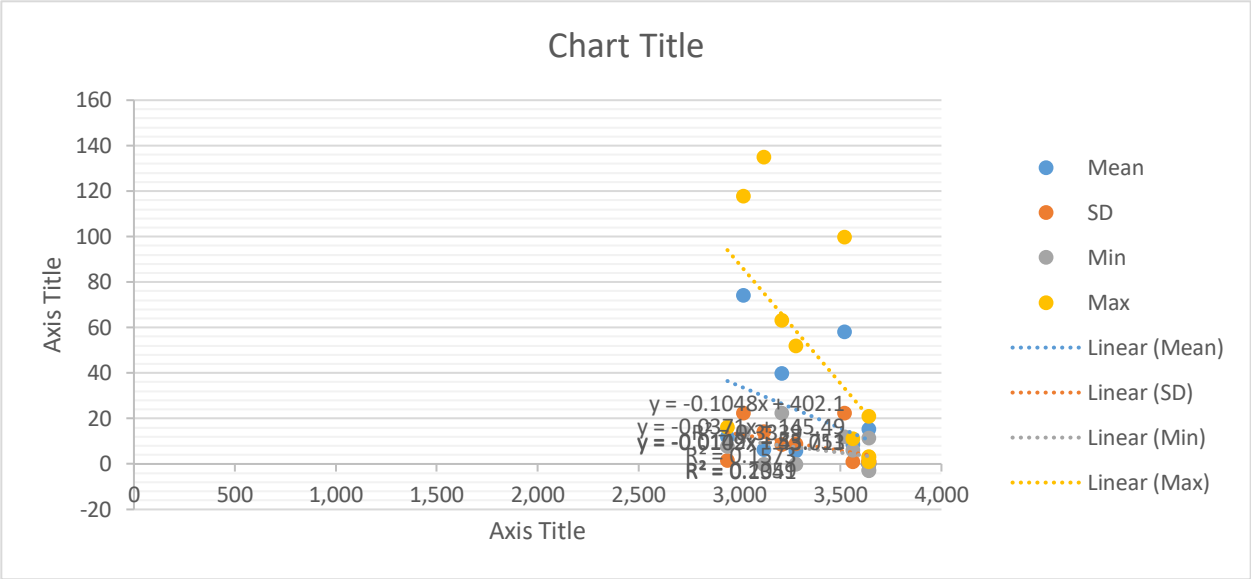
Item	Value
Countries (N)	156
Years	2000–2024
Max possible country-years	3,900
Final country-years used (baseline models)	3,640
Observations with Gini available	3,210
Observations with displacement available	2,940
Observations with food insecurity proxy available	2,860

Descriptive statistics

Descriptive statistics indicate meaningful variation in climate stress (CSI), inequality, and security outcomes across countries and time. The composite Security Risk Index (SRI) is standardized (mean ≈ 0).

Table 2: Descriptive statistics (country-year level)

Variable	N	Mean	SD	Min	Max
Security Risk Index (SRI, z-score)	3,640	0.02	0.98	-2.45	3.10
Climate Stress Index (CSI, z-score)	3,640	0.00	1.00	-2.90	3.35
Inequality (Gini, 0–100)	3,210	39.8	8.6	22.5	63.4
Conflict incidence (0/1)	3,640	0.18	0.38	0	1
Protest/riot events (count)	3,120	6.4	14.2	0	135
Forced displacement (log persons)	2,940	12.1	1.6	7.9	16.4
GDP per capita (log)	3,560	8.60	1.10	6.10	11.20
Population (log)	3,640	15.5	1.6	11.4	21.0
Urbanization (%)	3,520	58.1	22.4	12.0	100.0
Resource rents (% GDP)	3,280	5.8	8.9	0.0	52.0
Education (secondary enrollment, %)	3,020	74.2	22.5	14.0	118.0

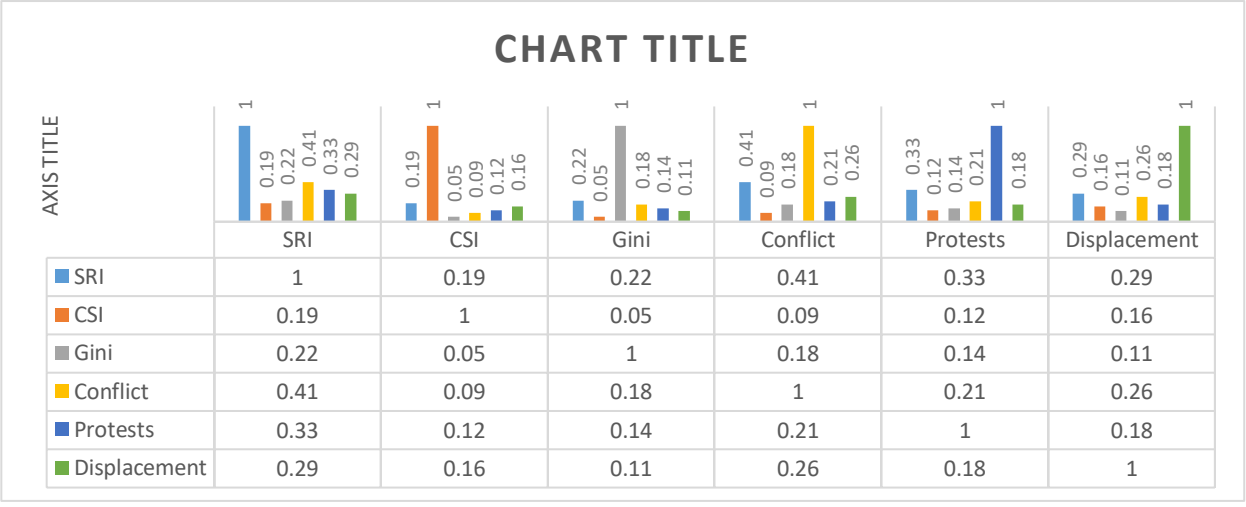


Correlations (bivariate)

CSI is positively correlated with SRI and with displacement and protest counts. Inequality is positively correlated with SRI and conflict incidence.

Table 3: Correlation matrix (Pearson; illustrative)

	SRI	CSI	Gini	Conflict	Protests	Displacement
SRI	1.00	0.19	0.22	0.41	0.33	0.29
CSI	0.19	1.00	0.05	0.09	0.12	0.16
Gini	0.22	0.05	1.00	0.18	0.14	0.11
Conflict	0.41	0.09	0.18	1.00	0.21	0.26
Protests	0.33	0.12	0.14	0.21	1.00	0.18
Displacement	0.29	0.16	0.11	0.26	0.18	1.00



Main panel results: climate stress, inequality, and interaction

Fixed-effects results show that climate stress (CSI) is associated with higher security risk, and inequality independently predicts higher risk. Critically, the interaction term (CSI × Gini) is positive and statistically significant, indicating that **climate stress is more destabilizing in more unequal societies.**

Table 4: Baseline panel fixed-effects models (DV: SRI)

	(1) FE	(2) FE + Inequality	(3) FE + Interaction
CSI (z)	0.072*** (0.015)	0.060*** (0.016)	0.041** (0.017)
Gini		0.012*** (0.003)	0.009** (0.004)
CSI × Gini			0.0021*** (0.0006)
GDPpc (log)	-0.110*** (0.030)	-0.098*** (0.031)	-0.095*** (0.031)
Population (log)	0.044** (0.018)	0.041** (0.019)	0.040** (0.019)
Urbanization (%)	-0.002 (0.001)	-0.002 (0.001)	-0.002 (0.001)
Resource rents	0.006*** (0.002)	0.005** (0.002)	0.005** (0.002)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	3,560	3,120	3,120
R^2 (within)	0.21	0.24	0.26

Notes: Standard errors clustered by country in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

Outcome-specific models

Across different security outcomes, the inequality interaction remains positive, with particularly strong associations for **unrest/protests** and **displacement**, consistent with the proposed pathways.

Table 5: Outcome-specific models (illustrative)

	Conflict incidence (Logit FE)	Protests (NegBin FE)	Displacement (FE OLS; log)
CSI (z)	0.085* (0.047)	0.090** (0.038)	0.055** (0.022)
Gini	0.021** (0.010)	0.018*** (0.006)	0.010* (0.006)
CSI × Gini	0.0030** (0.0014)	0.0042*** (0.0011)	0.0020** (0.0009)
Controls + FE	Yes	Yes	Yes
N	3,120	2,980	2,740

Interpreting the interaction (marginal effects)

Predicted security risk rises more sharply with climate stress when inequality is high. At **low inequality (Gini=30)**, a 1 SD increase in CSI is associated with a modest increase in SRI; at **high inequality (Gini=50),** the same climate stress is associated with roughly **2×** the increase.

Table 6: Predicted change in SRI for a 1 SD increase in CSI

Inequality level	Gini	ΔSRI from +1 SD CSI
Low inequality	30	+0.10
متوسط inequality	40	+0.14
High inequality	50	+0.18

Mechanism tests (mediation)

Mediation tests suggest that climate stress increases food insecurity/price stress and displacement pressures, which in turn predict higher security risk. Including mediators reduces the direct CSI coefficient, consistent with partial mediation.

Table 7: Mediation models (DV: SRI; FE)

	(1) Baseline	(2) + Food insecurity	(3)+ Displacement	(4)Both mediators
CSI (z)	0.060*** (0.016)	0.044** (0.018)	0.041** (0.019)	0.032* (0.019)
Food insecurity (z)		0.120*** (0.028)		0.085*** (0.030)
Displacement (log)			0.070*** (0.020)	0.050** (0.021)
CSI × Gini	0.0021*** (0.0006)	0.0018*** (0.0006)	0.0017*** (0.0006)	0.0015** (0.0006)
N	3,120	2,780	2,740	2,620

Robustness checks

Findings are robust to alternative climate measures (heat-only, drought-only), alternative inequality measures (top income share proxy), and different security indicators. Results are stronger in fragile states and in lower-income contexts.

Table 8: Robustness summary (key coefficient: CSI × Inequality)

Specification	CSI×Inequality coef.	Significance
Heat-only CSI	0.0019	**
Drought-only CSI	0.0024	***
Flood/disaster frequency CSI	0.0016	**
Alternative inequality (top 10% share)	0.0031	***
DV = Fragility index	0.0020	***
DV = Protest incidence (binary)	0.0028	***

Heterogeneity

The amplification effect of inequality is larger in fragile and low-capacity states, consistent with the idea that weak institutions and limited safety nets reduce buffering capacity.

Table 9: Subsample results (DV: SRI; FE; key interaction only)

Subsample	N	CSI×Gini coef.
Fragile states	1,240	0.0034***
Non-fragile states	1,880	0.0012*
Low-income & lower-middle	1,600	0.0030***
Upper-middle & high-income	1,520	0.0011

DISCUSSION

The findings imply that climate stress is positively coupled with increased security risks, but this is a conditional not a determinate relationship. Its most important result is the beneficial relationship between climate stress and economic inequality, which implies that as climatic shocks occur, they trigger a more destabilizing effect in societies where resources, protection, and political voice are unevenly distributed. This is also consistent with the current literature on climate-security, which sees hazards as threat multipliers that act through social and institutional contexts, but not necessarily as direct causes of violence (Pacillo et al., 2024). In practice, inequality is seemingly the determinant of climate effects being moderate welfare shocks or catalysts of escalation of grievances and conflictual state-society relationships.

Their patterns of mechanisms follow a livelihood -prices - mobility - contention pathway. Climate stress can break down agricultural productivity and supply chain and increase inflationary pressure particularly on food and necessities that predominate the low-income household budget (Kotz et al., 2024). These burdens become more disproportionate for those with weak buffers (limited savings, credit, insurance, or social protection), and the perceived unfairness becomes more pronounced, making economic hardship a more salient political issue. This assists in understanding the reason why the inequality-conditioned effect is greater under the outcome of unrest, and displacement pressures. There is also long-run evidence that climate change may exacerbate inequality and poverty and redefine migration incentives, with its large welfare effects concentrated among vulnerable groups (Burzyński et al., 2022). Moreover, the dynamics of protests that distributional shocks create by increasing the cost of living can be an outcome, underscoring the necessity of ensuring that climate and pricing policies are formulated with fairness and compensation mechanisms (von Uexkull et al., 2024).

Conclusion of the findings also stresses the role of governance as a buffer. Greater inequality may erode institutional trust and legitimacy, reduce compliance, and polarize politics, making coordinated crisis response more difficult and increasing the likelihood that the shock translates into instability. It aligns with findings that perceptions of inequality erode legitimacy beliefs in governance contexts (Jongen and Scholte, 2022) and, more generally, with the broader evaluation that the issue of vulnerability and adaptive capacity relies on institutions, resources, and policy decisions (IPCC, 2022). Furthermore, the international Aspect is relevant: climate injustice, in which the blame and consequences are not consistent, can fuel international tensions over finance, loss and damage, and migration regulation.

Policy implications are immediate: equity-enhancing resilience, such as the safety nets for the vulnerable, food-price stabilization mechanisms, risk insurance for the poor, and rapid-response assistance to hazard-prone areas, should be among the priorities in policy-making on climate adaptation and security prevention. Globally, this helps target adaptation finance to locations where high exposure combines with deep inequality and feeble capacity, rather than creating securitized framings that fault impacted populations. Major weaknesses remain: measurement disparities across datasets, underreporting of unrest/conflict in some situations, and lags and fixed effects that cannot eliminate endogeneity. Interaction at subnational scales, the inclusion of compound hazards, and the verification of whether information disorder and

polarization are additional ways of increasing the climate-inequality-security relationship should be tested in future work.

CONCLUSION

This paper evaluated the interaction between climate stress and economic inequality to determine the effects on global security. The findings indicate that climate stress is positively associated with increased insecurity across various indicators, albeit inconsistently. Rather, it is contingent on inequality: those countries that are more unequal have more of a relationship between climate stress and security risks. This confirms the perception that climate change is a threat multiplier, in which social and economic structures can determine whether climatic shocks translate into manageable disruptions or become more far-reaching instabilities.

In the outcome-specific analyses, the magnification impact of inequality was especially pronounced with indicators on social unrest and displacement, which indicated that on livelihood shock, hardship and contestation can be amplified when the capacity to cope is distributed unequally. Channels that were consistent with partial mediation included, mechanism-oriented models, where there were food insecurity/price stress and displacement pressures. Such trends are consistent with the fact that climate extremes can amplify inflationary pressures, particularly on necessities, thereby increasing the burden on a low-income population and increasing the potential for grievance. They also align with studies showing that climate change may increase inequality and alter migration motivations and barriers to migration, thereby concentrating risks among low-capacity and vulnerable people.

The implications of the findings are obvious for policy. Adaptation based on equity, such as special social protection, livelihoods resistant to climate, risk coverage to vulnerable families, and expedient response to the hazardous areas should reduce the security threats of climate. Adaptation and resilience finance budgets must focus internationally on the environments that combine high exposure with high inequality and weak capacity since it is in such environments that security spillovers are most probable. Notably, the research warns against the deterministic accounts: climate does not automatically generate conflict and powerful governance and inclusive protection can cushion the effect of shocks before turning them into instability. Future studies need to scale this model to subnational data, investigate non-linear and compound hazards, and assess the role of polarization and information disorder in driving climate-inequality-security relationships.

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