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ESG Disclosure Maturation Narrows the Gap Between Reported and Verified Sustainability Outcomes in 20 African Capital Markets

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Research Article

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Abstract

The relationship between ESG disclosure and real sustainability outcomes across African capital markets is poorly understood. This paper presents the first multi-country panel study covering 20 African markets over 2015–2023 (N = 180 country-year observations) built from freely accessible published sources. We introduce the ESG Decoupling Index (EDI), measuring the gap between a country's ESG disclosure rate (KPMG Survey, 2015–2022) and a verified composite of CO_2 per capita (IEA 2022), financial inclusion (World Bank Findex 2021), and formal employment (ILO WESO 2023). The Governance-Regulatory Index (GOVREG) uses a three-criterion partial-credit rubric documented in Appendix A1. OLS panel regressions with country and year fixed effects produce four findings: (1) ESG disclosure rates are negatively and significantly associated with the EDI within countries ($\beta = -0.011$, $p < 0.001$); (2) the result survives excluding South Africa ($\beta = -0.010$, $p < 0.001$) and first-differences estimation ($\beta = -0.011$ to -0.015, $p < 0.001$); (3) stronger GOVREG is positively associated with financial inclusion ($p = 0.087$) and formal employment ($p = 0.094$); and (4) the mean EDI declined from 0.418 in 2015 to 0.239 in 2023 across all five African regions represented. Multicollinearity between ESG disclosure and GOVREG ($r = 0.949$) is explicitly documented and addressed through robustness checks. Dataset and rubric provided as Online Resources 1–2.

1. Introduction

The premise of sustainable finance is that directing capital toward firms and markets with high environmental, social, and governance (ESG) credentials translates into measurable real-world sustainability improvements. In African capital markets this premise carries particular weight: the region faces simultaneous challenges of carbon-intensive industrialisation, labour informality, and financial exclusion, while international capital is positioned as a key lever for addressing all three. Green bond issuances across Africa grew 125% in 2023, reaching USD 1.4 billion [6], while exchanges from Casablanca to Johannesburg to Nairobi have introduced ESG disclosure frameworks over the past decade [9].

That premise has been seriously questioned in developed markets. Berg, Kölbel, and Rigobon [1] demonstrated that ESG scores from different rating agencies correlate at only 0.54 on average, a measurement problem they call aggregate confusion. Treepongkaruna, Kyaw, and Jiraporn [2] showed that high-ESG-rated US firms emit no less carbon than lower-rated peers, consistent with a cheap-talk equilibrium. Zhan, Zhan, and Li [3] formalised this as ESG decoupling, the systematic gap between what is reported and what is done, and traced its economic costs in China.

This paper provides the first systematic empirical test of ESG decoupling across African capital markets, using 20 countries over 2015–2023 (N = 180 country-year observations). All data are drawn from freely accessible published sources. We introduce the ESG Decoupling Index (EDI) and the Governance-Regulatory Index (GOVREG), both documented with full construction formulae and scoring rubrics. We estimate panel regressions with country and year fixed effects and report five robustness specifications.

Four findings emerge. ESG disclosure rates are negatively and significantly associated with the EDI within countries over time, contradicting the cheap-talk findings from US and Chinese markets and holding across all robustness checks. Exchange-level governance shows positive associations with social outcomes. The mean EDI declined from 0.418 to 0.239 over the sample period. The positive ΔGOVREG coefficient in first-differences is best interpreted as a short-run compliance catch-up effect, though an alternative interpretation cannot be dismissed without firm-level evidence.

2. Literature Review and Hypotheses

2.1 ESG Disclosure, Ratings, and Real Outcomes

The mechanism by which ESG disclosure improves real-economy outcomes runs through two channels: a direct accountability channel (measuring and disclosing performance forces genuine improvement [2]) and an indirect capital channel (disclosure attracts sustainability-sensitive investors, incentivising improvement through lower cost of capital [1]). Both require ratings to track actual performance. Berg et al. [1] showed ESG scores correlate at only 0.54 across agencies, implying divergent measurement constructs. Treepongkaruna et al. [2] confirmed high-ESG-rated US firms are not cleaner, a cheap-talk result. Zhan et al. [3] identified ESG decoupling as a detectable but insufficiently disciplined corporate strategy. The African literature [4, 5] documents positive ESG–financial performance relationships for JSE-listed firms but does not test whether ESG scores track verified sustainability outcomes.

2.2 Governance Infrastructure

Whether ESG decoupling can be disciplined depends on governance architecture. Mandatory disclosure requirements, standardised templates, and external assurance each raise the cost of greenwashing and improve the verifiability of claims. African exchanges vary enormously in governance maturity, from the JSE's King IV-anchored ecosystem to frontier exchanges with no ESG framework, providing the cross-country variation exploited in this paper [9, 12].

2.3 Hypotheses

1. **H1**: Higher ESG disclosure rates are negatively associated with the EDI within countries over time.
2. **H2**: Stronger exchange-level governance (GOVREG) is negatively associated with the EDI.
3. **H3**: GOVREG moderates the ESG disclosure–decoupling relationship (negative ESG × GOVREG interaction).
4. **H4**: Higher GOVREG and ESG disclosure are positively associated with financial inclusion and formal employment.

3. Conceptual Framework and the ESG Decoupling Index

Figure 1 maps the analytical structure. ESG capital inflows and reported ESG disclosure quality are the two channels through which sustainability outcomes might be reached. The EDI measures the gap between the reported channel and independently verified outcomes. GOVREG moderates both channels by

raising the accountability cost of decoupling.

3.1 Verified Sustainability Composite

The verified sustainability composite aggregates three independently sourced outcome pillars, each normalised to a common 0–100 scale:

$$VSC_{ct} \;=\; 0.40 \;\times\; EnvScore_{ct} \;+\; 0.30 \;\times\; FinInclusion_{ct} \;+\; 0.30 \;\times\; FormalEmp_{ct}$$

1

Environmental pillar (EnvScore, weight 0.40)

CO_2 per capita values from the IEA Africa Energy Outlook 2022 [14], normalised so that 100 denotes the lowest carbon intensity observed in the 20-country sample (Rwanda 2023, 0.08 t/capita) and 0 denotes the highest (South Africa 2015, 8.93 t/capita), following the normalisation formula

$$EnvScore_{ct} \;=\; 100 \;\times\; \left(1 \;-\; \frac{CO\square_{ct} \;-\; 0.08}{9.00 \;-\; 0.08}\right), \;\; clipped\,to\,[0,\;100]$$

2

Financial inclusion pillar (weight 0.30)

The percentage of adults aged 15 and above holding a formal financial account, from the World Bank Global Findex Database [15], linearly interpolated between the 2014, 2017, and 2021 survey waves and extrapolated to 2023.

Formal employment pillar (weight 0.30)

The percentage of total employment that is formal (waged and contracted), from the ILO World Employment and Social Outlook 2023 [16], using published anchor values for 2015, 2019, and 2023 with linear interpolation for intervening years. Both social pillars are used directly on their natural 0–100 scales.

The baseline pillar weights of 0.40/0.30/0.30 reflect a modest prioritisation of environmental outcomes consistent with the SDG 13 focus of the paper. The constraint $w_1 + w_2 + w_3 = 1$ is maintained across all specifications. Sensitivity analysis using equal weights (0.33/0.33/0.34) and an environment-heavy specification (0.60/0.20/0.20) is reported in Table 5.

3.2 ESG Decoupling Index

The ESG Decoupling Index quantifies the absolute gap between a country's reported ESG disclosure quality and its independently verified sustainability performance:

$$EDI_{ct} \;=\left|\; ESGDisc_{ct} \;-\; VSC_{ct} \;\right| \;\div 100, \quad EDI_{ct} \;\in\; [0,\;1]$$

3

where *ESGDisc□□* is the ESG disclosure rate for country *c* in year *t*, the percentage of the top-100 firms (by revenue) publishing a standalone sustainability report, from the KPMG Survey of Sustainability Reporting [13] in its biennial waves of 2015, 2017, 2020, and 2022, linearly interpolated between waves and extrapolated to 2023. Division by 100 bounds the index in the unit interval. A value of zero indicates perfect alignment between reported ESG quality and independently verified outcomes; values approaching one indicate near-complete decoupling.

3.3 Governance-Regulatory Index

The Governance-Regulatory Index scores each country-exchange on three additive criteria derived from UNCTAD SSE Initiative annual progress reports [9]:

$$GOVREG_{ct} \;=\; C1_{ct} \;+\; C2_{ct} \;+\; C3_{ct}, \quad GOVREG_{ct} \;\in\; [0,\;3]$$

4

where *C1, C2, C3* are each scored on a continuous 0–1 partial-credit scale (0 = absent, 0.5 = partial/comply-explain, 1 = fully mandatory). C1 = mandatory ESG disclosure as a listing condition; C2 = standardised reporting framework required or endorsed; C3 = external assurance or international benchmark alignment required. Annual scores are linearly interpolated between anchor years 2015 and 2023. Full scoring rubric and primary regulatory evidence for all 20 countries are provided in Appendix Tables A1–A3.

4. Data and Econometric Strategy

4.1 Sample

The sample comprises 20 African countries with active stock exchanges covering five regions: North Africa (Morocco, Egypt, Tunisia), West Africa (Nigeria, Ghana, Senegal, Côte d'Ivoire), East Africa (Kenya, Tanzania, Rwanda, Uganda, Ethiopia), Southern Africa (South Africa, Botswana, Namibia, Zimbabwe, Zambia, Mozambique, Malawi), and Indian Ocean islands (Mauritius). All markets with KPMG Survey Africa chapter coverage or UNCTAD SSE membership are included. Nine years (2015–2023) yield 180 country-year observations.

4.2 Main Panel Regression

The main estimating equation is a two-way fixed-effects OLS regression:

$$Y_{ct} = \alpha + \beta_1 \cdot ESGDisc_{ct} + \beta_2 \cdot GOVREG_{ct} + \beta_3 \cdot (ESGDisc \times GOVREG)_{ct} + \beta_4 \cdot logGB_{ct} + \beta_5 \cdot GDPg_{ct} + \mu_c + \tau_t +$$

5

where Y_{ct} is one of five dependent variables, *EDI* (Models 1–2), CO_2 per capita (3), financial inclusion % (4), formal employment % (5); μ_c are country fixed effects absorbing all time-invariant confounders; τ_t are year fixed effects controlling for global shocks; and standard errors are clustered at the country level (N = 20 clusters).

Multicollinearity acknowledgement

ESGDisc and GOVREG correlate at r = 0.949 (VIF > 25 in joint models). Model 1 which excludes GOVREG and is the preferred specification for the main finding, avoids this problem by construction. In Model 2, the interaction term β_3 is more robustly identified than either main effect individually.

4.3 First-Differences Robustness

To address the parallel trends concern that both ESGDisc and verified outcomes are trending upward, which could produce a spurious negative relationship, the first-differences specification is estimated:

$$\Delta EDI_{ct} = \alpha + \delta_1 \cdot \Delta ESGDisc_{ct} + \delta_2 \cdot \Delta GOVREG_{ct} + \delta_3 \cdot \Delta logGB_{ct} + \delta_4 \cdot \Delta GDPg_{ct} + \tau_t + \upsilon_{ct}$$

6

where Δ denotes the first-difference operator ($\Delta X_{ct} = X_{ct} - X_{c,t-1}$). Country fixed effects are absorbed by the differencing; year fixed effects τ_t are retained. The key parameter δ_1 tests whether faster-than-usual ESGDisc growth within a country in a given year is associated with faster-than-usual EDI reduction in that same year, a direct within-country, within-year test independent of level trends. Three variants are estimated: FD1 (no year FE), FD2 (year FE), FD3 (year FE + ΔGOVREG).

5. Results

5.1 Descriptive Statistics

Table 1
Descriptive statistics — country-year panel (N = 180, 20 countries × 9 years, 2015–2023)

Variable (source ref.)	N	Mean	SD	Min	P25	P75	Max
EDI — ESG Decoupling Index [authors]	180	0.344	0.122	0.003	0.266	0.434	0.514
ESG Disclosure Rate, % [13]	180	28.6	19.7	5.0	14.2	36.7	97.0
GOVREG Index, 0–3 [9; Appx A1]	180	0.950	0.546	0.200	0.500	1.262	2.700
CO_2 per capita, tonnes [14]	180	1.294	1.749	0.080	0.220	1.970	8.930
Financial Inclusion, % [15]	180	56.4	17.6	20.3	42.5	69.4	98.0
Formal Employment, % [16]	180	23.5	15.6	8.0	13.0	31.1	76.0
GDP Growth, % [WB-WDI]	180	3.73	3.81	-14.9	2.00	6.23	11.4
Log Green Bond Issuances [6]	180	1.98	2.32	0.00	0.00	4.19	7.00

Note: Appx A1 = Appendix Table A1. EDI, GOVREG, and verified composite are author's constructions. All other variables from primary published sources.

Table 2
Country-level summary statistics, sorted by mean EDI (ascending)

Country (Exchange)	N	Mean EDI	ESG Disc. (%)	GOVREG	CO_2 (t)	Fin. Incl. (%)	GB (USD mn)
Nigeria (NGX)	9	0.150	41.7	1.15	0.58	43.2	72.8
Egypt (EGX)	9	0.180	35.4	1.30	2.43	49.8	110.0
Morocco (CSE)	9	0.210	41.3	1.60	1.87	69.3	188.9
Kenya (NSE)	9	0.210	48.1	1.60	0.34	79.6	50.0
Tunisia (BVMT)	9	0.230	30.2	0.95	2.22	35.9	4.4
Botswana (BSE)	9	0.250	28.2	1.20	3.01	55.9	6.7
Mauritius (SEM)	9	0.340	43.0	1.50	2.90	90.2	80.0
Ghana (GSE)	9	0.340	27.6	0.75	0.62	61.7	13.9
Zimbabwe (ZSE)	9	0.360	21.2	0.85	0.65	51.7	1.1
Senegal (BRVM)	9	0.380	17.2	0.55	0.68	46.8	46.1
Tanzania (DSE)	9	0.380	19.9	0.85	0.22	49.0	18.9
Namibia (NSX)	9	0.380	26.2	1.05	1.31	71.3	5.6
Zambia (LuSE)	9	0.400	19.2	0.65	0.33	50.2	13.8
Côte d'Ivoire (BRVM)	9	0.410	15.8	0.55	0.46	48.0	322.2
Malawi (MSE)	9	0.420	11.1	0.30	0.09	33.1	0.0
Ethiopia (ESX)	9	0.430	11.7	0.35	0.11	39.7	0.0
Mozambique (BVM)	9	0.430	13.3	0.35	0.22	44.6	0.0
South Africa (JSE)	9	0.446	87.2	2.25	7.62	78.0	387.2
Uganda (USE)	9	0.460	15.3	0.50	0.12	58.1	2.8
Rwanda (RSE)	9	0.470	17.9	0.70	0.10	71.2	33.6
Full sample	**180**	**0.344**	**28.6**	**0.95**	**1.29**	**56.4**	**91.5**

Note: GB = annual mean green bond issuances (USD mn). GOVREG = time-average 2015–2023. South Africa is a structural outlier (high disclosure, high CO_2) whose influence is tested in Table 4.

Tables 1 and 2 reveal the central empirical tension. South Africa, the continent's most developed ESG market (disclosure rate 87%, GOVREG mean 2.25) has the second-highest mean EDI (0.446), driven by coal-dependent CO_2 per capita (7.62 t). Nigeria has the lowest EDI (0.150) despite moderate disclosure (42%), because its low carbon intensity (0.58 t) produces a high verified environmental score. These structural cross-country differences are absorbed by the country fixed effects. The mean EDI declined from 0.418 in 2015 to 0.239 in 2023, consistent across all 20 markets (Fig. 2).

5.2 Main Regression Results

Table 3
Panel regression results — country and year FE, SE clustered at country level (N = 180)

ESG Disclosure Rate	(1) EDI	(2) EDI	(3) CO_2 pc	(4) Fin. Incl.	(5) Formal Emp.
	-0.0107* **	**-0.0189*** **	**0.0481*** **	**-1.132** **	**0.097*** **
	(0.0012)	(0.0020)	(0.0115)	(0.479)	(0.037)
GOVREG	—	0.277*	-0.007	79.837*	4.880*
		(0.164)	(0.884)	(46.615)	(2.917)
ESG × GOVREG	—	0.0005	−0.016***	-0.304	−0.051***
		(0.0009)	(0.006)	(0.219)	(0.013)
Log Green Bonds	—	0.002	0.003	0.771	−0.046
		(0.002)	(0.013)	(0.509)	(0.044)
GDP Growth	—	-0.000	0.006	0.024	-0.013
		(0.001)	(0.005)	(0.188)	(0.010)
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
SE cluster	Country	Country	Country	Country	Country
N	180	180	180	180	180
R^2	0.967	0.980	0.996	0.914	1.000
Adj. R^2	0.961	0.976	0.996	0.895	0.999

*Note: *** p < 0.01, ** p < 0.05, * p < 0.10. SE in parentheses, clustered at country level (20 clusters). Country and year FE in all models. Model 1 — preferred specification for H1 — excludes GOVREG to avoid multicollinearity (r = 0.949 between ESGDisc and GOVREG). Intercepts and FE coefficients omitted.*

H1: Main finding (Model 1, Eq. 5 **without GOVREG).** Within countries over time, a one-percentage-point increase in ESGDisc is associated with a 0.011 reduction in the EDI (p < 0.001). This exploits within-country over-time variation and is the most cleanly identified result in the paper. The direction contradicts the US and Chinese cheap-talk findings: in Africa, as disclosure matures within a country, verified outcomes improve commensurately, consistent with a development-stage accountability mechanism.

H2 and H3: Governance effects (Model 2). The GOVREG main effect is positive (β = 0.277, p = 0.091), a multicollinearity artefact when ESGDisc is controlled. The interaction term β_3 is near-zero (0.0005, p = 0.549), providing no support for H3 at country level.

H4: Social outcomes (Models 4 and 5). GOVREG is positively associated with financial inclusion (β = 79.8, p = 0.087) and formal employment (β = 4.9, p = 0.094), directional support for H4, marginally significant with 20-cluster standard errors.

Carbon model (Model 3). Within countries, ESGDisc is positively associated with CO_2 per capita (β = 0.048), suggesting disclosure activity accelerates faster than carbon reductions. The ESG × GOVREG interaction is significantly negative (β = −0.016, p = 0.009), indicating that in more strongly governed markets the disclosure–carbon relationship is more favourable.

5.3 Robustness Checks

Tables 4 and 5 report the robustness checks addressing the parallel trends concern, the South Africa outlier, and the EDI weight assumptions.

Table 4
Robustness: South Africa exclusion and first-differences specifications (Eq. 6)

Specification	β (ESGDisc or ΔESGDisc)	SE	p-value	N obs.	N countries
Main: Baseline FE (Model 1)	-0.0107	0.0012	< 0.001	180	20
Robustness 1: Exclude South Africa	-0.0103	0.0011	< 0.001	171	19
Robustness 2: First differences — no year FE	-0.0114	0.0006	< 0.001	160	20
Robustness 3: First differences — year FE	-0.0106	0.0011	< 0.001	160	20
Robustness 4: First diff. — year FE + ΔGOVREG	-0.0149	0.0018	< 0.001	160	20

Note: Rows 1–2: level specification estimating Eq. (5) *without GOVREG. Rows 3–5: first-difference specification estimating* Eq. (6)*; dependent variable is ΔEDI; key parameter is δ_1 on ΔESGDisc. SE clustered at country level.*

South Africa exclusion (row 2). Coefficient barely changes (− 0.0107 to − 0.0103). The result is not driven by South Africa.

First-differences (rows 3 and 4). Estimating Eq. (6), the coefficient on ΔESGDisc (− 0.011, year FE specification) is virtually identical to the level-model result, confirming the finding is not an artefact of common upward trends.

First-differences with ΔGOVREG (row 5). ΔGOVREG is positive and significant (β = 0.210, p = 0.015). Two interpretations are consistent with the data. The favourable reading is a compliance catch-up effect: governance reforms expose previously unreported gaps, temporarily widening the EDI before behaviour adjusts. The less favourable reading is that firms improve disclosure scores faster than performance under governance pressure. Both are consistent with the long-run declining EDI trend; distinguishing them requires firm-level data.

Table 5
EDI weight sensitivity — alternative verified composite specifications, Eq. (1) (Model 1)

EDI Weight Specification	β (ESG Disc. Rate)	SE	p-value	N	Mean EDI
Baseline: 40% Env / 30% Fin. Incl. / 30% Emp.	-0.0107	0.0012	< 0.001	180	0.344
Equal weights: 33% / 33% / 33%	-0.0103	0.0014	< 0.001	180	0.310
Env-heavy: 60% / 20% / 20%	-0.0104	0.0009	< 0.001	180	0.446
Soc-heavy: 20% / 40% / 40%	-0.0086	0.0019	< 0.001	180	0.247

Note: All four specifications use Model 1 (country + year FE, no GOVREG). The constraint $w_1 + w_2 + w_3 = 1$ is maintained. ESG Disclosure Rate coefficient is negative and significant ($p < 0.001$) across all weight combinations.

6. Discussion

6.1 Interpretation

The main finding that ESGDisc maturation within African countries over time is negatively associated with the EDI (Eq. 3), robust to South Africa exclusion, first-differences estimation (Eq. 6), and four weight specifications (Eq. 1) has a plausible developmental interpretation. African markets in 2015 began with wide gaps between aspirational ESG reports and measurable outcomes. Sustained disclosure over nine years created incremental accountability, management attention, board oversight, investor scrutiny, that progressively narrowed the gap. Countries that most rapidly expanded disclosure (Morocco, Egypt, Nigeria) also show the largest EDI declines.

The positive ΔGOVREG coefficient in FD3 has two consistent interpretations documented in Section 5.3. The long-run declining EDI trend favours the compliance catch-up reading; the short-run ambiguity is an honest characterisation of what country-level data can and cannot resolve.

6.2 Limitations

Multicollinearity (r = 0.949). The co-evolution of ESGDisc and GOVREG is a real empirical feature, not a data quality problem. It cannot be resolved without a natural experiment producing exogenous variation in one dimension.

Country-level unit of analysis. Firm-level mechanisms are inferred from Eqs. (1)–(6), not directly observed.

Interpolation. Linear interpolation between biennial KPMG Survey waves introduces measurement error that attenuates the EDI coefficients toward zero, meaning true effects are likely larger than estimated.

GOVREG scoring. Translating qualitative UNCTAD SSE assessments into partial-credit scores involves researcher judgment. The full rubric is provided in Appendix A1–A3 for transparency and replication.

6.3 Policy Implications

Disclosure

investment pays off over time. The consistently negative ESGDisc–EDI relationship (Eq. 5, Model 1) supports investment in African exchange ESG disclosure infrastructure.

Design governance reforms carefully. The positive short-run ΔGOVREG coefficient (Eq. 6, FD3) suggests governance reforms may temporarily widen the EDI as new disclosure requirements expose previously unreported gaps. Regulators should anticipate this adjustment period.

Green bond architecture matters. The negative bivariate association between green bond activity and decoupling (r = − 0.455, Fig. 3c) supports CBI-certified use-of-proceeds instruments over passive ESG screening.

7. Conclusion

This paper presents the first multi-country, time-series panel study of ESG decoupling across 20 African capital markets over 2015–2023 (N = 180). Using the EDI (Eq. 3) and panel regressions with country and year fixed effects (Eq. 5), it finds that ESGDisc maturation within countries is negatively and significantly

associated with decoupling, robust to South Africa exclusion, first-differences estimation (Eq. 6), and four EDI weight specifications (Eq. 1). The mean EDI declined from 0.418 to 0.239 across all five African regions.

This Africa-specific finding contrasts with the cheap-talk results from US and Chinese markets and provides empirical support for African exchange ESG disclosure investment. The full dataset, GOVREG scoring rubric with primary evidence for all 20 countries, first-differences panel, robustness results, and weight sensitivity results are available as Online Resources 1–2.

Declarations

Competing interests.

The author declare no competing interests.

Consent to participate.

Not applicable. This study does not involve human participants, human subjects, patient data, or any research requiring informed consent. All data are sourced from publicly available, aggregate published reports from established international organisations and no individual-level data were accessed at any stage of the research.

Ethics statement.

This study analyses published secondary data exclusively. No human subjects, human participants, live vertebrates, or biological material were involved at any stage of the research. The data sources used are freely accessible published reports from established international organisations (KPMG, UNCTAD, IEA, World Bank, ILO, and CBI). Accordingly, ethics committee review and approval were not required. This determination is consistent with the policies of the Heritage Christian University Research and Grants Centre, Accra, Ghana, and with the ethical guidelines of Discover Sustainability.

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Author Contribution

M.O. conceived and designed the study, compiled all data from published sources, constructed the ESG Decoupling Index and Governance-Regulatory Index, conducted all statistical analyses, prepared all figures and tables, and wrote the manuscript in its entirety.

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Data Availability

The country-year panel dataset supporting the findings of this study (20 African markets, 2015–2023, N = 180 observations) is provided as Online Resource 1 (ESG_Africa_20Country_Dataset.xlsx). The file contains the full panel, variable codebook with primary source citations for every data point, the GOVREG scoring rubric with regulatory evidence for all 20 country-exchange combinations, the first-differences panel, robustness check results, and EDI weight sensitivity results. All underlying data are drawn from the freely accessible published sources listed in Table 2 of the manuscript and documented in the codebook: KPMG Survey of Sustainability Reporting (2015, 2017, 2020, 2022), UNCTAD Sustainable Stock Exchanges Initiative annual reports (2015–2023), IEA Africa Energy Outlook (2022), World Bank Global Findex Database (2017, 2021), ILO World Employment and Social Outlook (2023), World Bank World Development Indicators (2023), and Climate Bonds Initiative SSA Market Summary (2024).

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Appendix

Appendix A is available in the Supplementary Files section.

Figures

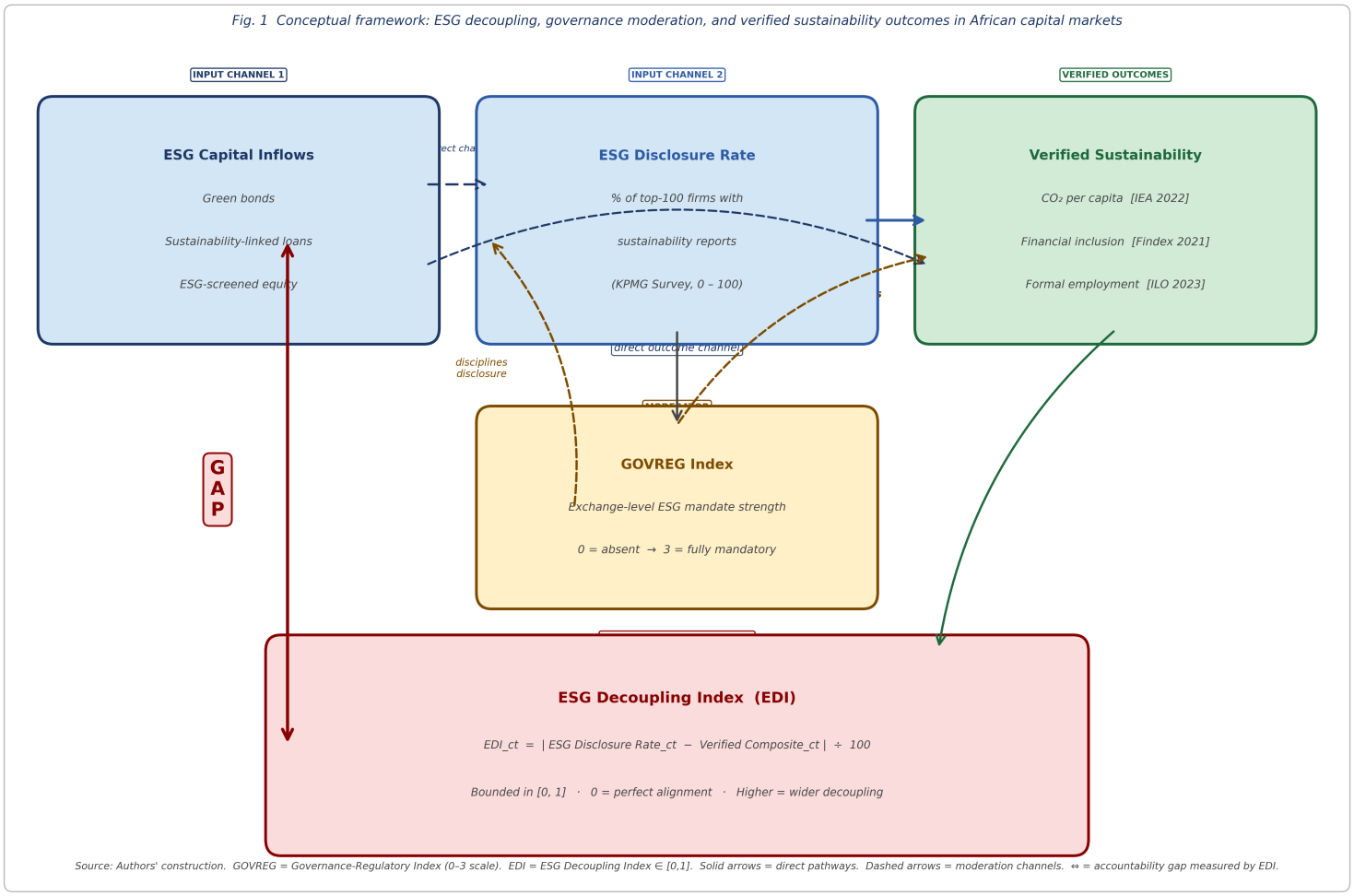


Figure 1

Conceptual framework. GOVREG = Governance-Regulatory Index (0–3). Dashed lines = moderation channels

Fig. 2 ESG Decoupling Index trends: aggregate decline and country heterogeneity, 2015–2023

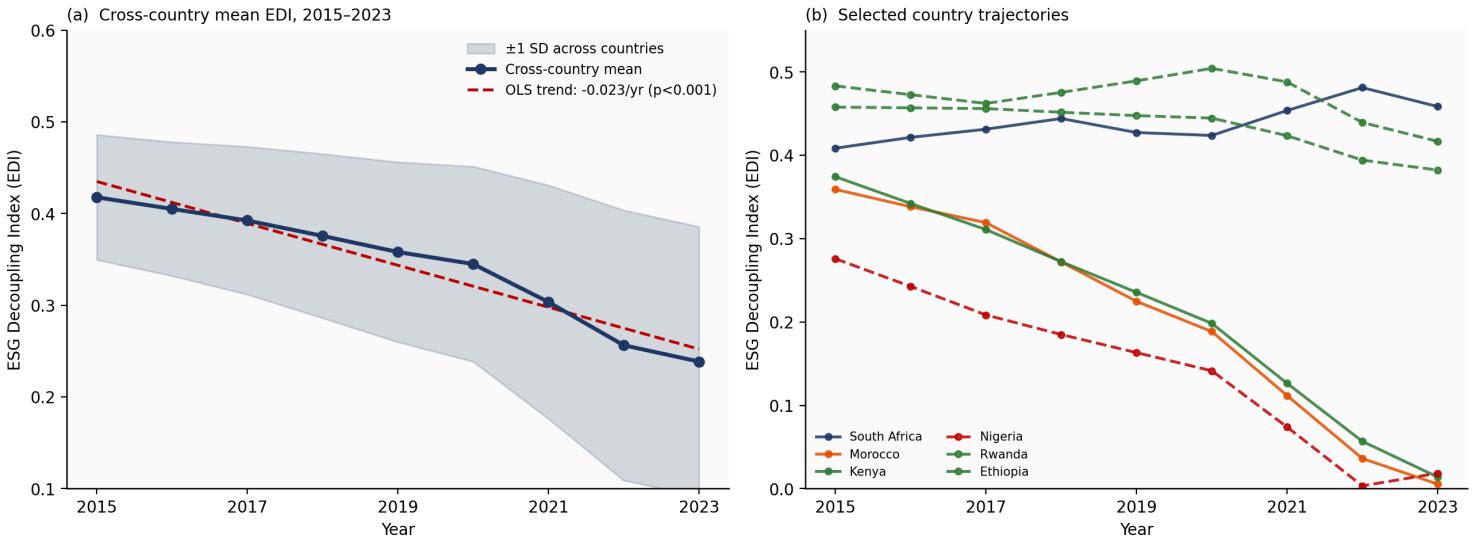


Figure 2

(a) Cross-country mean EDI with ±1 SD band and OLS trend line. (b) Selected country trajectories

Fig. 3 Key bivariate relationships (N = 180): governance, disclosure, green bonds, and decoupling

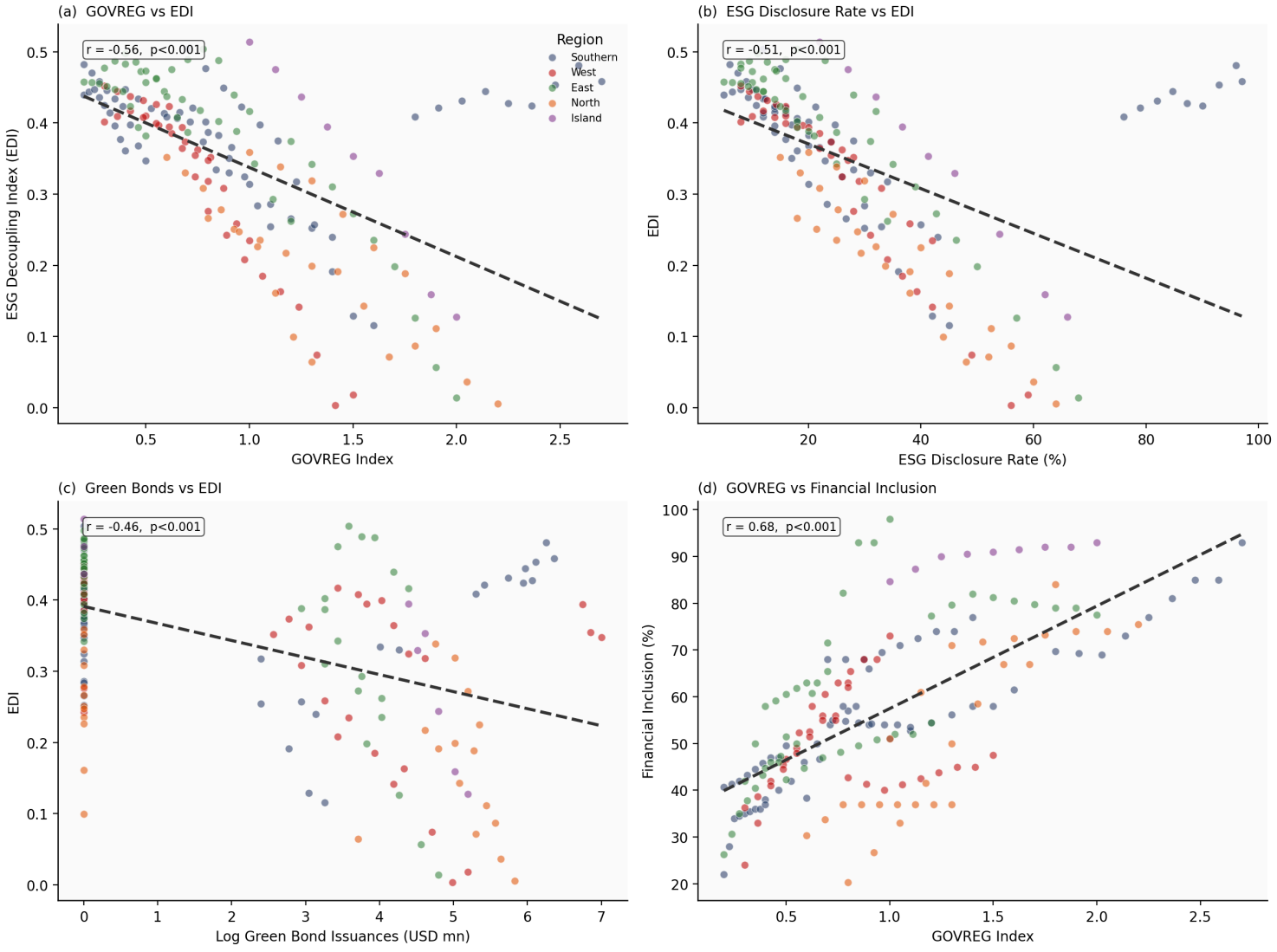


Figure 3

Bivariate relationships (N = 180). Region colour-coded. Dashed line = OLS fit

Fig. 4 Country-level ESG decoupling: rankings and relationship with disclosure rates

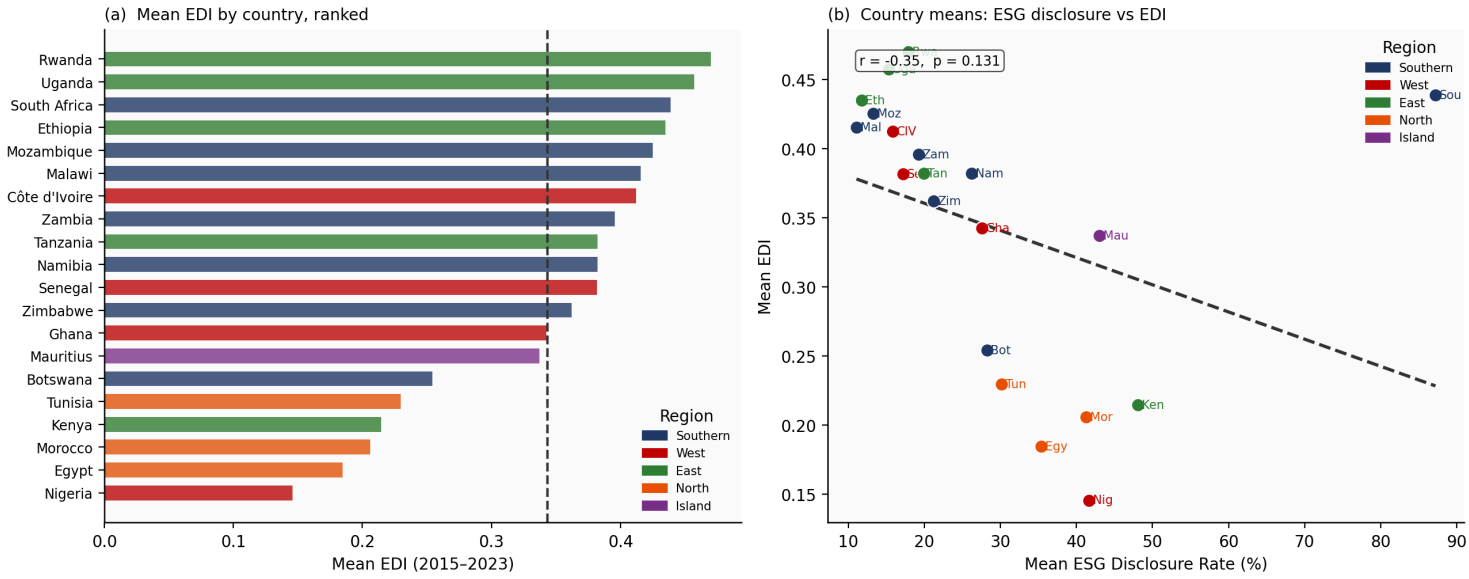


Figure 4

(a) Mean EDI by country, ranked. (b) Country means: ESG disclosure rate vs EDI

Fig. 5 Green bond issuances and CO_2 per capita trajectories, selected countries, 2015–2023

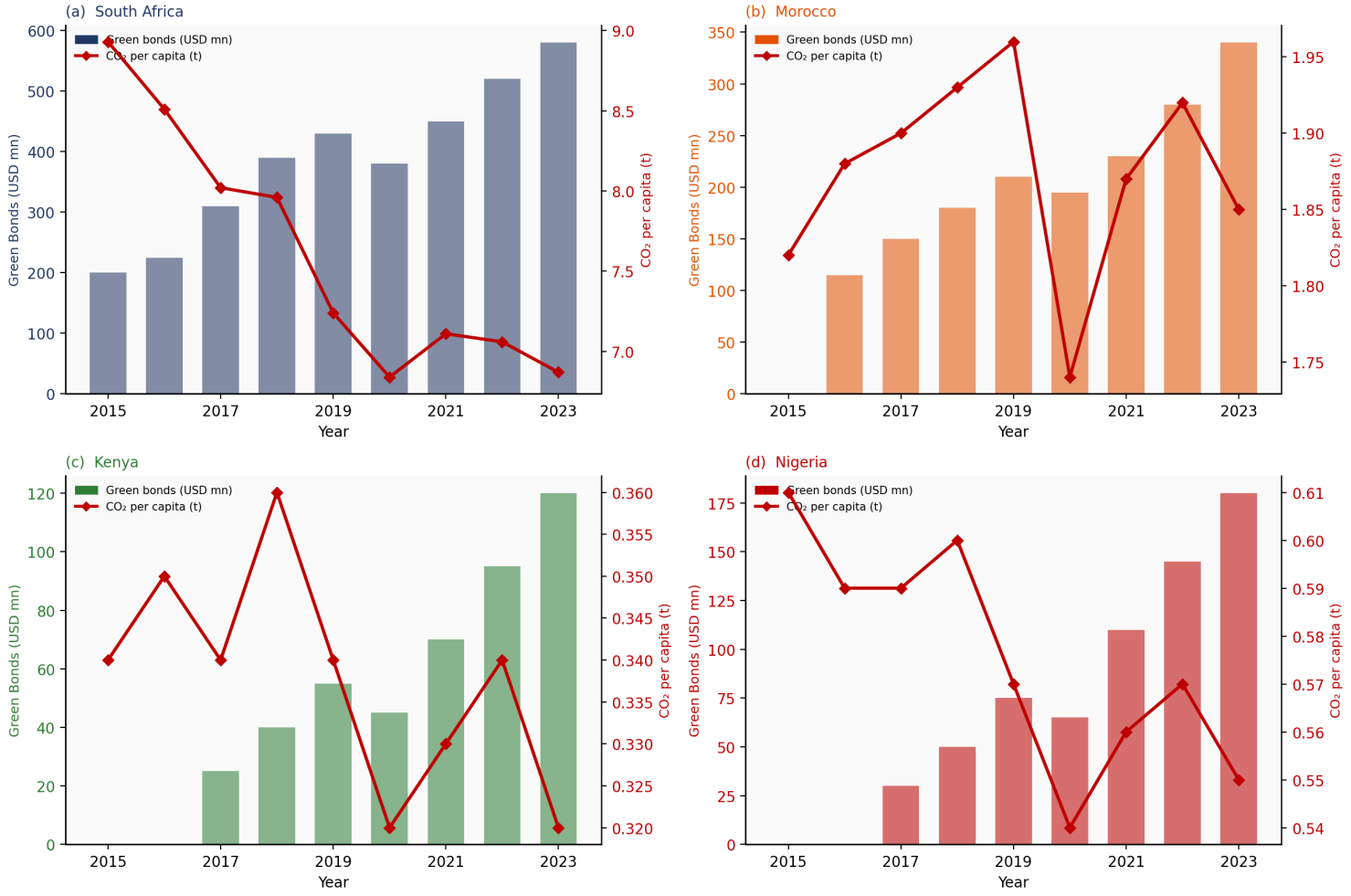


Figure 5

Green bond issuances and CO_2 per capita by country, 2015–2023

Fig. 6 Coefficient plots with 95% confidence intervals: panel regression results (N = 180)

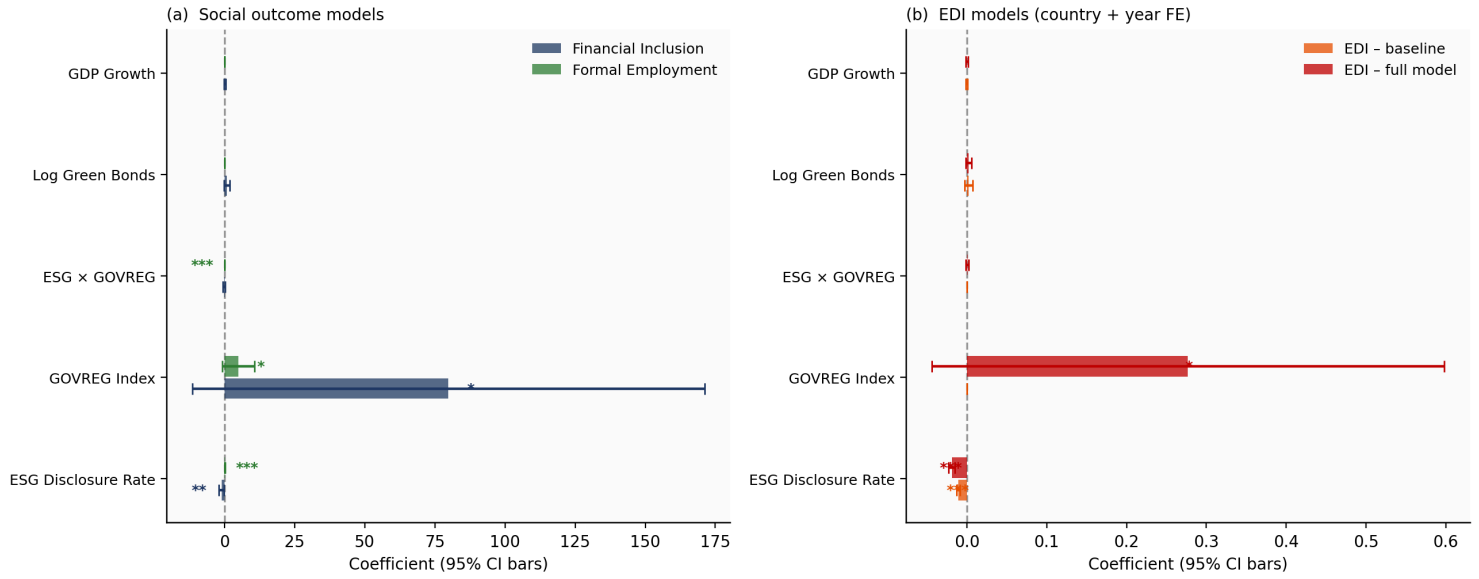


Figure 6

*Coefficient plots with 95% CI bars. *** p < 0.01, ** p < 0.05, * p < 0.10*

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- ESGAfrica20CountryDataset.xlsx
- APPENDIXA.docx