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Civil society and environmental compliance: New empirical evidence

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Civil society and environmental compliance: New empirical evidence*

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Abstract

In this article we examine the effect of civil society capacity on environmental compliance. We argue that civil society development positively impacts compliance with environmental regulations. We propose a theoretical framework whereby better civil society increases the cost of non-compliance; hence companies are more likely to behave in an environmentally friendly way. Our empirical findings suggest that a well-developed civil society contributes to better environmental performance of enterprises. This is robust to controlling for the levels of income and environmental awareness across countries as well as their regional characteristics. Thus, the study provides evidence for the important role of enhancing civil society participation in achieving greater environmental protection and has significant policy implications.

Key words: civil society, environmental compliance

JEL codes: O13, O44, P18, Q51, R11

*This publication reflects the views of the authors and does not represent views or policies of its affiliates.

1 Introduction

The purpose of the present study is to show that the development of civil society is important for improving environmental compliance measured at the country level. We use an ordered logit model to estimate the relationship between civil society participation and environmental policy performance. We assume that a more developed civil society contributes to improving corporate social responsibility and the “accountability” of companies and inducing policymakers to take actions on environmental protection. The study develops a theoretical framework for the nexus between the country’s civil society and environmental policy outcomes and provides an empirical investigation of the factors explaining the variation in country-level environmental performance with the focus on the effect of civil society participation controlling for the variations in income, environmental awareness of the population and regional affiliation of countries.

Given increasing policy interest in enhancing environmental protection exploring the factors that promote environmental compliance has become salient. Many of environmental problems such as air pollution, water pollution, and toxic waste disposal are created by polluting companies and exacerbated by weak environmental protection policies. In recent decades there have occurred a number of disasters that caused significant human casualties, environmental pollution and massive economic losses. Examples include the explosion in the thermal power station in India (2020), the accident in the ammonium nitrate storage facility in Lebanon (2020), the Lubrizol chemical products plant fire in France (2019), the Mariana dam disaster in Brazil (2015), the explosions at a container storage station in Tianjin, China (2015), toxic chemical leak in Gumi, Korea (2013) and the like. In the context of such crises civil society is to play an active role in voicing the issues and raising awareness about risks and negative consequences of disasters. Hence, it is important to demonstrate the important role of civil society in improving environmental quality through evidence-based research.

Our study contributes in several ways to the literature on democratic institutions pushing forward environmental protection. First, we develop a theoretical model explaining the role of civil society in reducing environmental risks. Second, we employ more recent data for over 100 countries and re-examine the effects of civil society on environmental performance. The former

is measured by the Civil Society Participation Index which assesses the extent to which civil society takes part in consultations during policy-making processes, the involvement of people in civil society organizations, including women, and the mode of legislative candidate nomination within parties (Bernhard et al. (2015, 2017); Our world in data (2022); V-Dem Institute (2022)). Environmental performance is measured by the Environmental Performance Index (EPI) (Wolf M. et al. (2022)) showing performance of countries across several categories such as environmental policy targets, climate change performance, environmental health, and ecosystem vitality.

The key findings of the study are as follows. The coefficient on the measure of civil society participation exhibits a consistently positive sign in all model specifications. This suggests that a more developed civil society is significantly associated with better compliance with environmental regulations. The effect of income on environmental performance is positive and statistically significant in the models controlling for regional characteristics. Richer countries experience a higher likelihood of compliance compared to poor countries. A better educated population is associated with better environmental performance.

The paper proceeds as follows. Section 2 provides a review of recent literature on the role of democratic institutions on environmental compliance. Section 3 presents a theoretical model relating civil society development to environmental compliance. The data used in the study are described in section 4. The estimation model and results are reported in section 5. The final section discusses the policy implications of the findings and concludes.

2 Literature review

Previous literature has provided support for the positive relationship between democratic institutions and environmental quality and. For example, Bernauer and Koubi (2009). Barrett and Graddy (2000) reveal that countries with greater civil liberties and political freedoms demonstrate higher levels of environmental quality. Neumayer (2002) shows that countries with better democratic institutions exhibit stronger international environmental commitments. Welsch (2004) measures the quality of democratic institutions by level of corruption to find that it negatively affects environmental performance.

Scholars have also examined the role of democratic institutions in promoting environmental protection across countries and regions. The relevant literature delivered mixed results at the country level. In particular, in their study of India Usman et al. (2019) find that the impact of democracy on environmental performance is weak in the long-run but strong in the short-run. Kovalev et al. (2009) examine the importance of civil society in responding to environmental challenges in Russia and show that better civil society institutions have been a strong factor in affecting decision-making and reducing environmental hazards. However, Vakulchuk and Overland (2017) point to the limited impact of the public debate on decision-making in the natural resource management and environmental issues in Kazakhstan.

There are recent papers focusing on the relationship between environmental protection and civil society institutions at the regional level. For example, Farzanegan and Markwardt (2018) focus on the MENA countries. Glass and Newig (2019) conduct a comparative analysis of the sample of high and upper-middle income countries belonging to the OECD and the EU. Arvin and Lew (2009) and Azam et al. (2021) empirically examine the impact of democracy on environmental improvement and sustainable development in developing countries. These studies show that improvements in democratic institutions explain improvements in environmental protection. However, this is not the case in all regions. For example, Satrovic et al. (2021) investigate the Gulf Cooperation Council region and find that the performance of democratic institutions in mitigating climate challenges and achieving Sustainable Development Goals is weak.

3 Theoretical framework

The objective of the section is to provide a theoretical framework for interpreting the observed facts, which are laid out in the data and empirical results sections. The theoretical model shows how environmental compliance is affected by the level of civil society participation. Better civil society imposes accountability and firms are less likely to infringe environmental regulations.

We assume that countries differ by civil society development. Firms face the following distribution of profits if they comply with environmental regulations:

$$\pi_1 = z_1 + \varepsilon_1 \tag{1}$$

where π_1 is profit of a complying firm, z_1 is mean profits and $\varepsilon_1 \sim N(0, \sigma_1^2)$.

And if firms do not comply their profits will be:

$$\pi_2 = z_1 - \delta + \varepsilon_2 \tag{2}$$

where δ is the cost firms face if they are caught and $\varepsilon_2 \sim N(0, \sigma_2^2)$.

Equations (1) and (2) illustrate the income levels in 2 states of the world. Now, suppose that:

$$\pi_1 - \pi_2 = z_1 + \varepsilon_1 - z_1 + \delta - \varepsilon_2 = \delta + \varepsilon_1 - \varepsilon_2$$

If $\pi_1 - \pi_2 > 0$, then it means that profits in the state where they comply with environmental requirements are more than profits in the state where do not comply.

Whether the probability that $\pi_1 - \pi_2 > 0$ holds depends on δ :

$$P(\pi_1 - \pi_2 > 0) = P(\delta + \varepsilon_1 - \varepsilon_2 > 0) = P(\varepsilon_1 - \varepsilon_2 > -\delta)$$

$$= P\left(\frac{\varepsilon_1 - \varepsilon_2}{\sigma_{\varepsilon_1 - \varepsilon_2}} > -\frac{\delta}{\sigma_{\varepsilon_1 - \varepsilon_2}}\right) = 1 - F(\omega)$$

where $F(\omega)$ is a standard normal distribution and $\omega = -\frac{\delta}{\sigma_{\varepsilon_1 - \varepsilon_2}}$ is a standard normal variable.

$$\frac{\partial P}{\partial \delta} > 0 \tag{3}$$

Equation (3) summarizes the main content of our model. It says that the probability of environmental compliance increases when the cost of non-compliance δ increases. In other words, if the cost of non-compliance increases it raises the probability of compliance. The empirical analysis presented in section 5.1 sheds light on the relationship between environmental compliance and civil society participation.

4 Data

To measure environmental performance across countries we use the Environmental Performance Index (EPI) which is available from the Yale Center for Environmental Law & Policy (Wolf M. et al. (2022)). The EPI shows the performance of countries across several categories related to environmental protection. It ranks countries on how they pursue environmental policy targets, climate change performance, environmental health, and ecosystem vitality. Overall, the EPI provides data to compare countries based on how they address environmental challenges, which can be used by policy-makers and analysts to determine the factors contributing to environmental progress.

Our main independent variable of interest is the Civil Society Participation Index across countries, which comes from the Varieties of Democracy project (website V-Dem...).¹ Overall, the index assesses the extent of the participation of civil society in policy-making, the involvement of people in civil society organizations and openness of some election processes. Figure 1 shows civil society participation across countries. Civil society is particularly pronounced in the US, Canada, Australia, and West European countries. By contrast, civil society, for instance, is weak in Turkmenistan, North Korea, Saudi Arabia, Cuba and Syria.

¹Several studies (Lindberg et al. (2014), Coppedge et al. (2016), Bernhard et al. (2017) and Hegre et al. (2019)) use the V-Dem data for studying democratic institutions and civil society in comparative politics.

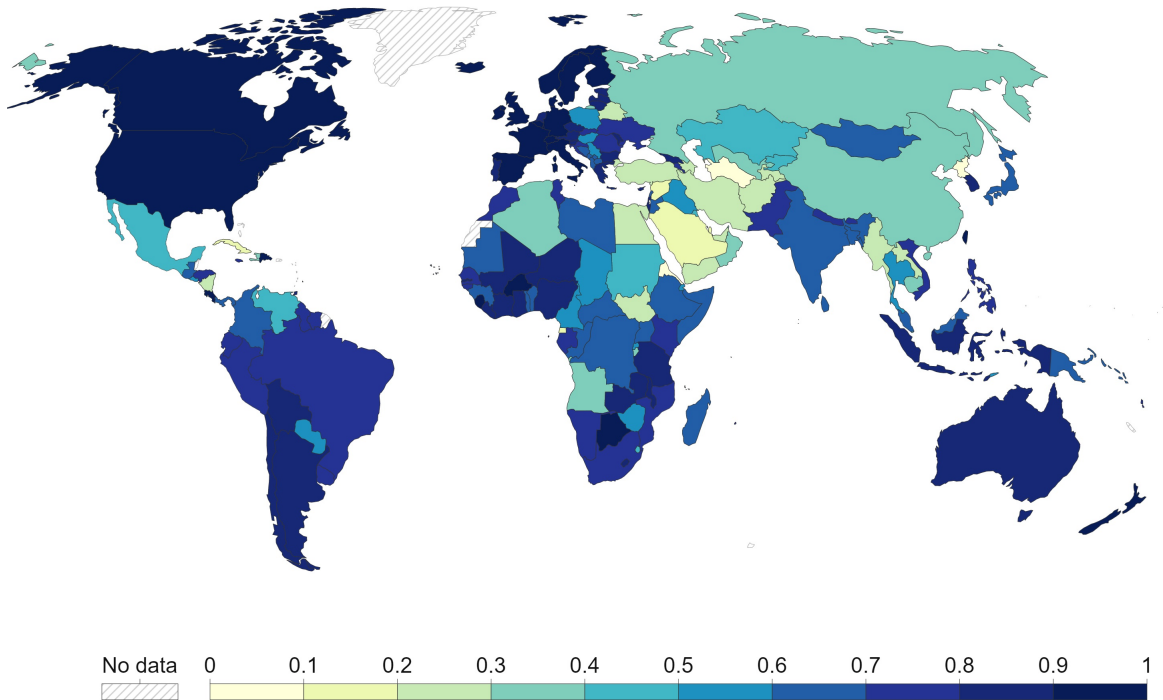


Figure 1: Civil society participation, 2021

Note: Based on the expert evaluations and index by V-Dem, the figure presents information on the extent to which people are active in diverse organizations which influence policy-makers. It ranges from 0 to 1 (most active). Low values (light blue) reflect a weak civil society, while high values (dark blue) imply a strong civil society (source: Our world in data (2022)).

To account for the population’s environmental awareness of the need for environmental protection across countries we introduce an education variable into the model. The population’s education level serves as a proxy for environmental awareness. The cross-country data on educational attainment are borrowed from Barro and Lee (2013). These data widely used in the cross-country analysis in economic literature cover more than 140 countries for two age categories of the population (aged over 15 years and over 25 years). Educational attainment is reported in three categories: primary, secondary and post-secondary education. In our study we employ the educational attainment data for the working-age population over age 25. We also use the Penn World Table database (PWT 8.1) to obtain per capita GDP across countries (Feenstra and Timmer (2015)).

Dependent Variable	Definition	mean	sd	min	max
the Environmental Performance Index (EPI)	The EPI ranks 180 countries on climate change performance, environmental health, and ecosystem vitality (source: Wolf M. et al. (2022)).	2.96	1.44	1.00	5.00
the Civil Society Participation Index	The index indicates the extent to which main civil society organizations are commonly consulted by policy-makers, the involvement of people in civil society and the mode of legislative candidate nomination. It ranges from 0 to 1 (most participation) (source: V-Dem Institute (2022); Bernhard et al. (2015, 2017)).	0.73	0.21	0.09	0.99
the Bertelsmann Transformation Index	The index measures the extent to which developing countries and countries in transition have transformed into liberal democracy and a market economy (source: Bertelsmann Stiftung (2014))	4.86	2.14	1.00	9.00
the Civicus Civil Society Enabling Environment Index	The index evaluates civil society's ability to exist and operate freely and participate in governance processes (source: Civicus (2013))	0.57	0.16	0.24	0.87
Log of GDP per capita	Data on per capita GDP across countries for 2017 sourced from PWT 8.1.	9.43	1.04	6.79	11.19
Education	Educational attainment is represented by average years of education of the population (source: Barro and Lee (2013))	8.21	2.67	1.97	13.42

Table 1: Data sources and descriptive statistics

The relationship between the EPI and the Civil Society Participation Index is illustrated in Figure 2. The correlation between variables shows that they are positively associated with each other. Although the correlation does not imply a causal effect, we can observe that there is a positive relationship between the EPI and the level of civil society development across countries. Thus, in countries where civil society is under-developed, on average, environmental protection is likely to be poorly implemented. This evidence motivates the development of the theoretical

model relating the development of civil society to environmental compliance (section 3).

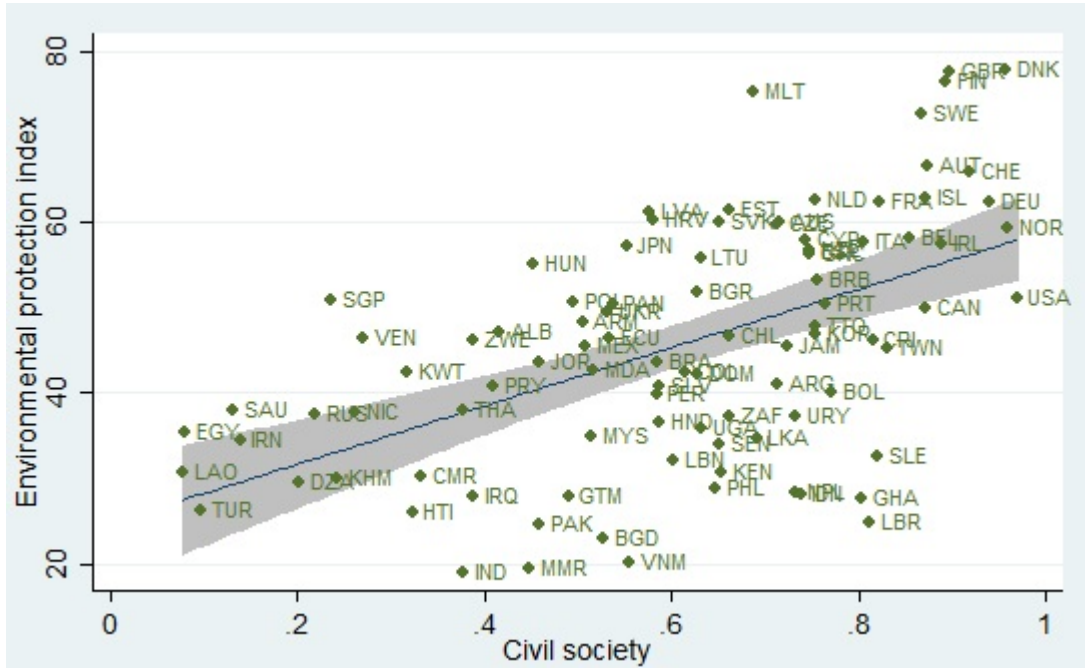


Figure 2: The relationship between the EPI and the Civil Society Participation Index
Source: Wolf M. et al. (2022) and V-Dem Institute (2022). Notes: The figure shows the correlation between Environmental performance and the level of civil society development for the year 2020. The coefficient of correlation is 53%.

5 Empirical analysis

The logit estimation of environmental compliance is given by the following cross-section regression:

$$P(\text{compliance}_i) = \Phi(\beta_0 + \beta_1 CS_i + \beta_2 X_i) \quad (4)$$

where $P(\text{compliance}_i)$ is the probability of compliance to environmental regulations in country i , CS_i stands for the variable of interest, which is the measure of civil society participation, and X_i represents a vector of country-specific characteristics (income, national education level and region). Regional dummies serve as an additional control to account for differences in development and economic conditions across regions. The logit regression estimates the likelihood of compliance with environmental regulations relative to non-compliance. The reference category is a country

belonging to the bottom 20% of countries in terms of environmental compliance.

According to Equation (4), a country in any compliance category is compared to another country having the same level of country-specific characteristics (education level of the population, income and regional features). Several model specifications are estimated (section 5.1). Specification 1 contains only the variables of main interest, i.e. the index of civil society development, the second one adds per capita income of the country, the third specification includes average years of schooling of the population. We then add controls for regional effects (Panel B of Table 2).

5.1 Results and discussions

Panel A of Table 2 reports the odds ratios of civil society participation on the probability of environmental compliance estimated from the ordinary logit models. All else equal, the civil society index has a statistically significant effect on the probability of environmental compliance. The odds of compliance with environmental regulations are higher for countries with a higher level of civil society participation which corresponds to a more developed civil society.

Environmental compliance may be affected by other factors, as well. It is possible that a country's income level simultaneously influences both compliance and civil society development. For example, more developed countries may have more eco-friendly technologies or wider engagement of civil society organizations in governance. To mitigate this concern, in Column (2), we add per capita income as a control. The estimated coefficient is positive, meaning that in richer countries firms are more willing to be compliant. The estimates for the effects of other covariates are similar to those obtained from the previous specification; the coefficient on the civil society measure remains positive, although its significance is lowered.

Next, we additionally control for the population's awareness of the need for environmental protection across countries. In Column (3), we introduce the population's education level into the model as a proxy for environmental awareness. This control is included to account for its potential positive effect as companies may be more willing to comply with environmental laws and policies in countries where the population is more educated and hence more aware of issues related to ecology, environmental protection, and climate change. The coefficient on this education variable exhibits

a positive sign, implying that compliance is higher in countries with a higher level of education of the population.

	(1)	(2)	(3)
VARIABLES	Benchmark Model	Model with income	Model with income and education
Panel A:			
2nd (20%-40%)	39.39** (2.67)	2.411 (0.48)	3.543 (0.56)
3rd (40%-60%)	175.7** (2.80)	4.219 (0.71)	6.520 (0.73)
4th (60%-80%)	68.92*** (3.71)	4.377 (1.07)	7.367 (0.99)
5th (top 20%)	537.7*** (3.69)	189.8* (2.19)	258.9* (2.21)
lgdp		0.0865* (-2.32)	0.0593* (-2.53)
nat_educ			1.212 (0.66)
Panel B: with controls for regional effects			
2nd (20%-40%)	69.40* (2.24)	17.18* (2.13)	14.33*** (4.41)
3rd (40%-60%)	197.9 (1.62)	19.53 (1.16)	10.35* (2.00)
4th (60%-80%)	100.1* (2.44)	18.64* (2.32)	6.494*** (5.61)
5th (top 20%)	1053.6 (1.90)	69.83* (2.46)	50.78*** (6.75)
WE/EU	0.00108*** (-3.69)	0.00131*** (-3.68)	0.000303*** (-3.91)
ECA	0.0789** (-3.13)	0.0940*** (-3.47)	0.475 (-1.50)
AP	120.5*** (7.11)	139.0** (3.07)	257.9*** (4.03)
MENA	1.429 (0.90)	3.158 (1.57)	2.080 (0.82)
SSA	80.39*** (3.70)	29.38*** (3.47)	12.37*** (17.56)
lgdp		0.192 (-1.13)	1.007 (0.01)
nat_educ			0.471*** (-4.21)
N of obs.	97	97	97

Table 2: Results from the logit model for environmental compliance

*Note: The dependent variable in columns (1)-(3) is the Environmental Performance Index (EPI) taken from Wolf M. et al. (2022). Panel A reports the logit estimates, controlling for the Civil Society Participation Index, income and education level; Panel B reports the results accounting for regional controls. Standard errors in parentheses and *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The regression results in Panel B use clustered standard errors, which allow for correlations within regions.*

In Panel B of Table 2 the inclusion of regional controls tests the possibility that important regional factors affect environmental performance. As such, the regional fixed effects are included to account for variations in institutions, geography, culture, among others, to account for important omitted region-specific variables. We identify six geographic regions: North America (NA), South America (SA), Europe (WE/EU), Asia-Pacific region (AP), Sub-Saharan Africa (SSA), Middle East and North Africa (MENA), Europe & Central Asia (ECA) and others. The region used as the omitted category is North America, so that the estimated regional coefficients show differences in the level of environmental compliance in the regions relative to North America.

Overall, the results are consistent across models. Table 2 suggests that the development of civil society is important for environmental performance. The effects are statistically significant at least at the 10% level. Countries with a more developed civil society are more likely to be compliant with environmental regulations. This positive relationship holds within regions and after controlling for income and education. Income and education have significant and positive impacts on compliance behavior, which is consistent with our expectations, implying that income and environmental awareness matter for increasing compliance with environmental regulations.

Environmental performance may differ depending, among others, on the level of government effectiveness. As such, due to higher quality of public administration, public services, policy formulation and implementation, and greater institutional effectiveness, more effective governments may be more likely to be associated with better environmental quality. For the role of government effectiveness to factor into we use the Government Effectiveness index, which is obtained from the the World Bank Worldwide Governance Indicators database (Kaufmann et al. (2010)). Table 3 reveals the gap in the role of civil society participation between more and less-effective governments. The results show that civil society is more effective in improving environmental performance in countries with better governance. This suggests that public demands for environmental protection in such countries may be satisfied more effectively and quickly. On the contrary, civil society organizations in countries with low quality of public services may be less successful in dealing with environmental issues.

	(1)	(2)	(3)
VARIABLES	Full sample	Less effective government	More effective government
2nd (20%-40%)	11.97*** (5.250)	0.51 (-0.17)	353.4*** (9.000)
3rd (40%-60%)	6.99 (1.940)	0.305 (-1.37)	15.46*** (6.920)
4th (60%-80%)	5.909*** (4.160)	0.097 (-1.94)	473.9*** (3.850)
5th (top 20%)	37.44*** (8.300)	0.517 (-0.31)	0.41 (-0.32)
lgdp	0.869 (-0.12)	0.0764 (-1.16)	86.10*** -6.66
nat_educ	0.478*** (-3.95)	0.888 (-0.19)	0.185*** (-5.16)
N of obs.	97	49	48

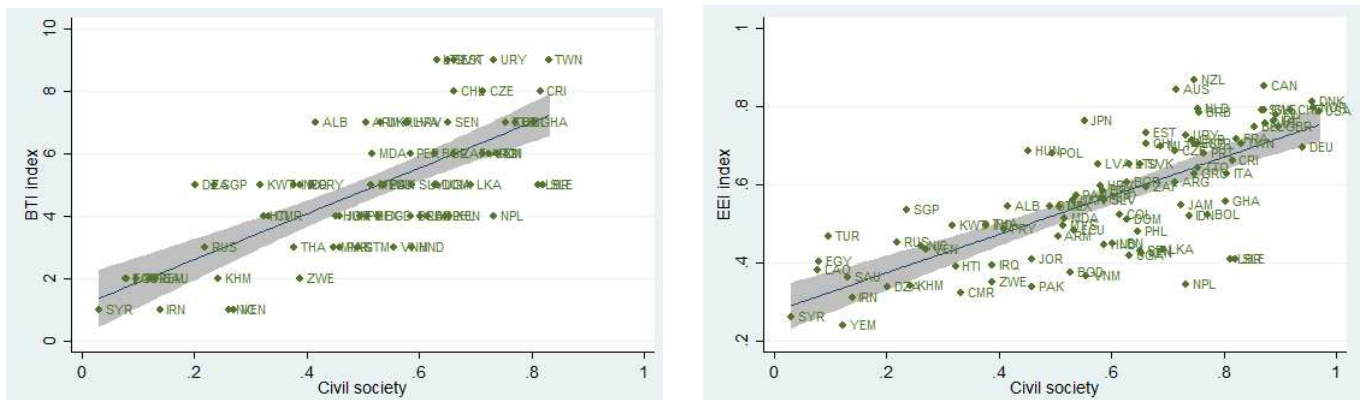
Table 3: Environmental compliance and government effectiveness

*Note: The dependent variable in columns (1)-(3) is the Environmental Performance Index (EPI) taken from Wolf M. et al. (2022). Column (2) reports the logit estimates for countries with less effective governments; Column (3) reports the results for more effective governments. All models account for regional controls and use clustered standard errors based on regions. Standard errors in parentheses and *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

5.2 Robustness

The cross-country analysis shows that civil society development positively impacts environmental performance. However, the relationship between the variables of interest may still be driven by the methodology employed by V-Dem to construct the Civil Society Participation Index. We therefore re-estimate Table 2 using two indices measuring civil society across countries: the Bertelsman Transformation Index (Bertelsmann Stiftung (2014)) and the Civicus Civil Society Enabling Environment Index (Civicus (2013)). The Bertelsman Transformation Index (BTI) based on expert opinions indicates the extent to which developing countries and countries in transition have transformed into liberal democracy and a market economy. The BTI consolidates a number of variables into three subcategories of countries' transition level and democracy status (Democracy Status, Economy Status, Governance Index). Among many indicators the BTI has the indicator - the Civil society participation index, relevant to our study. The disadvantages of the BTI data are that the number of included countries is smaller (only developing and transition countries) compared with the V-Dem civil society index. The Civicus Civil Society Enabling Environment

Index (EEI) measures civil society’s ability to exist and operate freely as well as participate in governance processes. The first report was issued in 2013 including the ranking of 108 countries based on the level of civil society. Many indicators used to compile this measure capture the following three dimensions: socio-economic, socio-cultural, and governance (Bernhard et al. (2015)). Fig. 3 shows that the V-Dem civil society index is positively correlated with both indices. The coefficient of correlation between the V-Dem index and the BTI is 71% and the V-Dem index and the EEI is 57%.



(a) The BTI and the Civil Society Participation Index by V-Dem (b) The EEI and the Civil Society Participation Index by V-Dem

Figure 3: The V-Dem Civil Society Participation Index versus other civil society development measures

Notes: The figure shows the correlations between two measures of civil society development and the V-Dem Civil Society Participation Index. The correlation between BTI and the V-Dem index is 71%. The correlation between EEI and the V-Dem civil society index is 57%.

The results in Table 4 show that inferences do not change drastically when we employ the other measures of civil society development. Compared to the baseline regression (Table 2), the effect of civil society on environmental performance is positive and shows statistical significance. However, the effects are less statistically significant when the BTI index is used compared to those obtained with the EEI index. It may be related to differences in the samples of countries covered by these indices.

VARIABLES	Panel A (the EEI index)			Panel B (the BTI index)		
	Benchmark Model	Model with income	Model with income and education	Benchmark Model	Model with income	Model with income and education
2nd (20%-40%)	308.1** (3.180)	157.5*** (4.720)	56.10*** (4.790)	96.79 (1.220)	25.43 (0.860)	19.82 (1.090)
3rd (40%-60%)	141.5* (2.160)	28.01** (3.190)	11.20** (2.610)	387.1* (2.180)	51.74* (2.070)	17.45* (2.340)
4th (60%-80%)	182.2 (1.670)	15.31** (2.880)	5.904* (2.160)	179.7** (2.900)	43.17* (1.990)	13.36* (2.200)
5th (Top 20%)	3358.4 (1.930)	270.9** (3.170)	180.9** (3.230)	4320.4*** (3.290)	466.4* (2.250)	149.3 (1.830)
WE/EU	0.000123** (-3.15)	0.000120*** (-3.35)	0.0000890*** (-3.68)	0.00354*** (-4.23)	0.00284*** (-3.31)	0.000639*** (-3.68)
ECA	0.0596 (-1.73)	0.116* (-2.52)	0.463 (-0.78)	0.0989 (-0.92)	0.11 (-0.94)	0.184 (-0.80)
AP	1065.8** -2.61	195.6*** -3.8	200.8*** -3.77	37.85*** (7.380)	58.43 (1.750)	97.32 (1.690)
MENA	0.151 (-0.98)	0.483 (-0.58)	0.177 (-1.03)	1.535** -2.64	2.479 -0.85	1.867 -0.52
SSA	2.695 -1.55	1.676 -0.66	1.455 -0.59	10.57*** -5.36	7.163*** -3.82	5.875** -2.73
lgdp		0.139 (-1.49)	0.581 (-0.31)		0.269 (-0.70)	0.902 (-0.05)
nat_educ			0.538* (-2.54)			0.556** (-2.60)
N of obs.	97	97	97	97	97	97

Table 4: Robustness Checks. Results from the Logit Model for Environmental compliance

*Note: The dependent variable in columns (1)-(3) is the Environmental Performance Index (EPI) taken from Wolf M. et al. (2022). Panel A reports the logit estimates using the EEI index; Panel B reports the logit estimates using the BTI index. Cluster-robust standard errors are reported in parentheses and *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.*

6 Conclusion and Policy Implications

The current study explores the factors explaining the variations in the environmental compliance levels across countries with the aim of assessing the effect of civil society development controlling for income, educational and regional characteristics of countries. The major findings of the study suggest the importance of civil society participation in the improvement of environmental performance. The effect of civil society on environmental compliance is consistently positive across all model specifications, implying that greater civil society participation is significantly associated

with better environmental protection.

Additional insights of the study indicate that the level of environmental performance is more likely to be higher in richer countries than in poorer societies. Although the effect becomes statistically insignificant when accounting for regional characteristics, the effect does not lose its positive sign. The effects of the population's environmental awareness have expected positive signs in all models, although being statistically insignificant in some models. Higher environmental awareness proxied by greater educational attainment is more likely to raise environmental performance in the country.

Also, we check for the role of government effectiveness in explaining better environmental outcomes. The findings suggest the gap in the role of civil society participation between more and less-effective governments such that civil society is more effective in improving environmental performance in countries with better governance. On the contrary, civil society organizations in countries with less effective governments may be less successful in dealing with environmental issues.

Overall, the empirical findings point to the importance of having greater civil society participation which is confirmed from the analysis based on several measures of civil society development. This finding provides support for the need for relevant policies on civil society development. In particular, it is policies that are directed towards facilitating the building up and improving of the institutional capacity of civil society organizations and, in general, creating conditions for civil society to become an effective partner of the government in voicing, formulating and implementing public policy.

Despite contributing to the literature on the relationship between civil society and environmental performance, the study has some limitations. The study employs national data of different countries neglecting regional heterogeneities in economic performance within countries. Regional or inter-regional analyses using the same framework may provide additional insights into the nexus between civil society development and environmental compliance.

References

- Arvin, B. M. and Lew, B. (2009). Does democracy affect environmental quality in developing countries? *Applied Economics*, 43(9):1151–1160.
- Azam, M., Hunjra, A. I., Bouri, E., Tan, Y., and Al-Faryan, M. A. S. (2021). Impact of institutional quality on sustainable development: Evidence from developing countries. *Journal of Environmental Management*, 298:113465.
- Barrett, S. and Graddy, K. (2000). Freedom, growth, and the environment. *Environment and Development Economics*, 5(4):433–456.
- Barro, R. and Lee, J.-W. (2013). A new data set of educational attainment in the world 1950-2010. *Journal of Development Economics*, 104:184–198.
- Bernauer, T. and Koubi, V. (2009). Effects of political institutions on air quality. *Ecological Economics*, 68(5):1355–1365.
- Bernhard, M., Jung, D.-J., Tzelgov, E., Coppedge, M., and Lindberg, S. I. (2017). Making Embedded Knowledge Transparent: How the V-Dem Dataset Opens New Vistas in Civil Society Research. *Perspectives on Politics*, 15(2):342–360.
- Bernhard, M., Tzelgov, E., Jung, D.-J., Coppedge, M., and Lindberg, S. (2015). The Varieties of Democracy Core Civil Society Index. *SSRN Electronic Journal*.
- Bertelsmann Stiftung (2014). Transformation Index BTI. *Guetersloh, Verlag Bertelsmann Stiftung*.
- Civicus (2013). The Civicus Enabling Environment Index. *Report*.
- Coppedge, M., Lindberg, S., Skaaning, S.-E., and Teorell, J. (2016). Measuring high level democratic principles using the V-Dem data. *International Political Science Review*, 37(5):580–593.
- Farzanegan, M. R. and Markwardt, G. (2018). Development and pollution in the Middle East and North Africa: Democracy matters. *Journal of Policy Modeling*, 40(2):350–374.
- Feenstra, Robert C., R. I. and Timmer, M. P. (2015). The next generation of the Penn World Table. *American Economic Review*, 105(10):3150–82.
- Glass, L.-M. and Newig, J. (2019). Governance for achieving the Sustainable Development Goals: How important are participation, policy coherence, reflexivity, adaptation and democratic institutions? *Earth System Governance*, 2:100031.
- Hegre, H., Bernhard, M., and Teorell, J. (2019). Civil Society and the Democratic Peace. *Journal of Conflict Resolution*, 64(1):32–62.
- Kaufmann, D., Kraay, A., and Mastruzzi, M. (2010). The worldwide governance indicators : methodology and analytical issues. *Policy Research Working Paper Series 5430, The World Bank*.
- Kovalev, N., Koppel, J., Drozdov, A., and Dittrich, E. (2009). Democracy and the Environment in Russia. *Journal of Environmental Assessment Policy and Management*, 11(02):161–173.
- Lindberg, S. I., Coppedge, M., Gerring, J., and Teorell, J. (2014). V-Dem: A New Way to Measure Democracy. *Journal of Democracy*, 25(3):159–169.
- Neumayer, E. (2002). Do Democracies Exhibit Stronger International Environmental Commitment? A Cross-country Analysis. *Journal of Peace Research*, 39(2):139–164.

- Our world in data (2022). Retrieved March 2, 2022. <https://ourworldindata.org/regimes-of-the-world-data>.
- Satrovic, E., Ahmad, M., and Muslija, A. (2021). Does democracy improve environmental quality of GCC region? Analysis robust to cross-section dependence and slope heterogeneity. *Environmental Science and Pollution Research*, 28(44):62927–62942.
- Usman, O., Iorember, P. T., and Olanipekun, I. O. (2019). Revisiting the environmental Kuznets curve (EKC) hypothesis in India: the effects of energy consumption and democracy. *Environmental Science and Pollution Research*, 26(13):13390–13400.
- V-Dem Institute (2022). Varieties of Democracy project. *The V-Dem Dataset*.
- Vakulchuk, R. and Overland, I. (2017). Kazakhstan: Civil Society and Natural Resource Policy in Kazakhstan. In *Public Brainpower*, pages 143–162. Springer International Publishing.
- Welsch, H. (2004). Corruption, growth, and the environment: a cross-country analysis. *Environment and Development Economics*, 9(5):663–693.
- Wolf M., J., Emerson J., W., Esty D., C., Sherbinin, A., and Wendling Z., A. (2022). Environmental Performance Index. *Yale Center for Environmental Law & Policy*.