

Online supplementary appendix for
“Targeted Trade Policy Instruments and Climate Change Mitigation: The Case of
Environmental Provisions in Trade Agreements”

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Note: The material contained herein is supplementary to the article named in the title

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Appendix A – Instrumentation for trade and income variable

Table A1. PPML estimates for the gravity model of trade

Dependent variable	Total trade (Sum of exports and imports)
Log distance (per trading dyad)	-0.81*** (0.02)
Contiguity (per trading dyad)	0.34*** (0.05)
Common language (per trading dyad)	0.27*** (0.04)
Colonial relationship (per trading dyad)	0.01 (0.05)
Constant	16.54*** (0.18)
Exporter-year fixed effects	Yes
Importer-year fixed effects	Yes
Observations	1,210,282
Pseudo R ²	0.955

Notes: Robust standard errors, clustered at the exporter-importer-year level, are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively. Fixed effects are included but not reported for brevity.

Table A2. Estimates for income growth model

Dependent variable	Log GDP per capita
Lagged GDP per capita	0.914*** (0.006)
Log population	-0.060*** (0.008)
Log investment rate	0.026*** (0.003)
Population growth rate	-0.007*** (0.001)
Log trade per capita	0.030*** (0.003)
Log human capital index	0.072*** (0.019)
Constant	1.419*** (0.149)
Country fixed effects	Yes
Year fixed effects	Yes
Observations	3,072
R ² within	0.933

Notes: Robust standard errors, clustered at the country level, are in parentheses. ***, **, and * denote significance at 1%, 5%, and 10% respectively. Fixed effects are included but not reported for brevity. The model is estimated using ordinary least squares (OLS).

Appendix B – List of countries in our sample

Table B1. List of countries in our sample

Country	Country	Country
Albania ^d	Gabon	New Zealand ^{*d}
Algeria*	Gambia	Nicaragua
Angola	Germany ^{*d}	Niger
Argentina*	Ghana	Nigeria
Armenia	Greece ^{*d}	Norway ^{*d}
Australia ^{*d}	Guatemala	Pakistan
Austria ^{*d}	Guyana	Panama
Bahrain	Haiti	Paraguay
Bangladesh	Honduras	Peru
Barbados	Hungary ^{*d}	Philippines
Belarus ^{*d}	Iceland ^d	Poland ^{*d}
Belgium ^{*d}	India*	Portugal ^{*d}
Belize	Indonesia*	Qatar
Benin	Iran*	Romania ^{*d}
Bolivia	Iraq	Russia ^{*d}
Botswana	Ireland ^{*d}	Rwanda
Brazil*	Israel ^d	Saudi Arabia*
Brunei Darussalam	Italy ^{*d}	Senegal
Bulgaria ^{*d}	Jamaica	Serbia ^d
Burkina Faso	Japan ^{*d}	Sierra Leone
Burundi	Jordan	Singapore
Cambodia	Kazakhstan*	Slovakia ^{*d}
Cameroon	Kenya	Slovenia ^{*d}
Canada ^{*d}	Kuwait	South Africa*
Central African Republic	Kyrgyzstan	South Korea*
Chile	Laos	Spain ^{*d}
China*	Latvia ^{*d}	Sri Lanka
Colombia	Lesotho	Sudan
Congo	Lithuania ^{*d}	Sweden ^{*d}
Costa Rica	Luxembourg ^{*d}	Switzerland ^{*d}
Côte d'Ivoire	Madagascar	Taiwan*
Croatia ^{*d}	Malaysia*	Tajikistan
Cyprus ^{*d}	Maldives	Tanzania
Czech Republic ^{*d}	Mali	Thailand*
Democratic Republic of Congo	Malta ^{*d}	Togo
Denmark ^{*d}	Mauritania	Tunisia
Dominican Republic	Mauritius	Turkey*
Ecuador	Mexico*	Uganda
Egypt*	Moldova ^d	Ukraine ^{*d}
El Salvador	Mongolia	United Arab Emirates
Estonia*	Morocco*	United Kingdom ^{*d}
Eswatini	Mozambique	United States of America ^{*d}
Ethiopia	Myanmar	Uruguay
Fiji	Namibia	Viet Nam
Finland ^{*d}	Nepal	Zambia
France ^{*d}	Netherlands ^{*d}	Zimbabwe

Note: ISO standards for International Organization for Standardization. Countries with superscript (^d) are those classified as developed while those with asterisks (*) are those that are tracked and have data on climate change performance index (CCPI). Those with superscript (^{*d}) are developed countries that have data on CCPI.

Appendix C – Key variables and summary statistics

Table C1. Operational definitions for key variables and data sources

Variable	Operational definition	Data source
CCPI	Climate Change Performance Index (CCPI), ranging from 0 to 1 inclusive	Germanwatch e.V, https://www.germanwatch.org/en/CCPI
EPI	Environmental Performance Index (EPI), ranging from 0 to 1 inclusive	Socioeconomic Data and Applications Center (SEDAC) https://sedac.ciesin.columbia.edu/data/collection/eipi/sets/browse
Number and type of PTA	Cumulative number of different types of PTAs in force by a country and year	TRade and ENvironment Database (TREND), https://www.chaire-epi.ulaval.ca/en/trend
Exports and imports	Export and imports of goods in c US\$	Base pour l'Analyse du Commerce International (BACI) http://www.cepii.fr/cepii/en/ (Gaulier & Zignago, 2010)
Trade openness	Ratio of the sum of exports and imports to GDP	Constructed based on data from BACI and World Bank's World Development Indicators (WDI)
Trade per capita	Sum of exports and imports divided by population	Constructed based on from BACI and WDI, World Bank
Bilateral distance, contiguity, colonial relationship, common language	Bilateral distance between capital cities and dummies for the existence of common border (continuity), common language and colonial relationship	BACI
Per capita income	GDP per capita, (constant 2017 international \$)	WDI, World Bank
Investment rate	Gross capital formation (% of GDP)	WDI, World Bank
Population growth	Annual population growth rate (%)	WDI, World Bank
Population	Total number of people in a country	WDI, World Bank
Population density	Number of people inhabiting a square kilometre of land area	WDI, World Bank
HCI	Human Capital Index based on years of schooling and returns to education	Penn World Table version 10.01 (Feenstra et al., 2015) https://www.rug.nl/ggdc/productivity/pwt/
Democracy index	Measure of political structure of the governance institutions. The indicator ranges from 0 (autocracy) to 100 (democracy)	Economic Intelligence Unit (EIU), https://www.eiu.com/n/campaigns/democracy-index-2022/

Table C2. Descriptive statistics for selected variables

	Obs.	Mean	Std. dev.	Min	Max
CCPI (overall score)	983	0.518	0.105	0.088	0.796
Emissions	983	0.304	0.090	0.093	0.466
Renewable energy	983	0.042	0.034	0	0.194
Energy use	983	0.075	0.037	0.006	0.187
Climate policy	983	0.097	0.042	0	0.200
EPI (overall score, [0 1])	1,779	0.560	0.127	0.184	0.935
Environmental health	1,959	0.625	0.276	0.001	0.999
Climate and energy	1,737	0.498	0.226	0.002	0.998
Number by type of PTA					
All PTAs	1,840	27.118	24.164	1	113
PTAwEPs	1,840	24.942	23.406	1	110
PTAwEPs	1,840	2.177	2.459	0	16
PTAwCPs	1,840	17.299	16.121	0	77
PTAwCPs	1,840	9.819	10.262	0	41
PTAwDCPs	1,840	8.980	11.401	0	57
PTAwDCPs	1,840	18.138	14.705	1	60
Trade (annual total, billion current US\$)	1,840	239.390	512.145	0.413	4,235.529
Trade openness (%)	1,840	88.848	58.852	1.219	442.620
GDP per capita ('000 constant 2017 US\$)	1,840	21.635	21.758	0.730	120.648
Investment rate (%)	1,840	24.611	7.720	1.571	79.401
Population growth (annual %)	1,840	1.456	1.649	-2.258	5.320
Population (million)	1,840	51.742	165.715	0.304	1,407.745
Population density (people/km ²)	1,840	254.406	887.120	1.657	7,965.878
Human capital index	1,840	2.584	0.702	1.126	4.352
Democracy index (ranging from 0 to 1)	1,840	0.590	0.211	0.113	0.993
Bilateral distance ('000 km)	1,210,282	8.557	4.712	0.002	19.939
Contiguity (Yes==1)	1,210,282	0.013	0.112	0	1
Colonial relationship (Yes==1)	1,210,282	0.188	0.390	0	1
Common language (Yes==1)	1,210,282	0.006	0.079	0	1

Note: Obs. is the number of observations while Std. dev. is the standard deviation. Equality between observed and predicted trade values is not a mistake. PTAwEPs means PTAs with environmental provisions; PTAwEPs means PTAs without environmental provisions; PTAwCPs means PTAs with climate change provisions; PTAwCPs means PTAs without climate change provisions; PTAwEPwCPs means PTAs with environmental provisions but without climate change provisions. *Source:* Authors' calculations based on data from Germanwatch e.V., Socioeconomic Data and Applications Center (SEDAC, TRade and ENvironment Database (TREND), Base pour l'Analyse du Commerce International (BACI), World Bank's World Development Indicators (WDI), Penn World Table version 10.01, and Economic Intelligence Unit (EIU).

Appendix D – CCPI and EPI frameworks

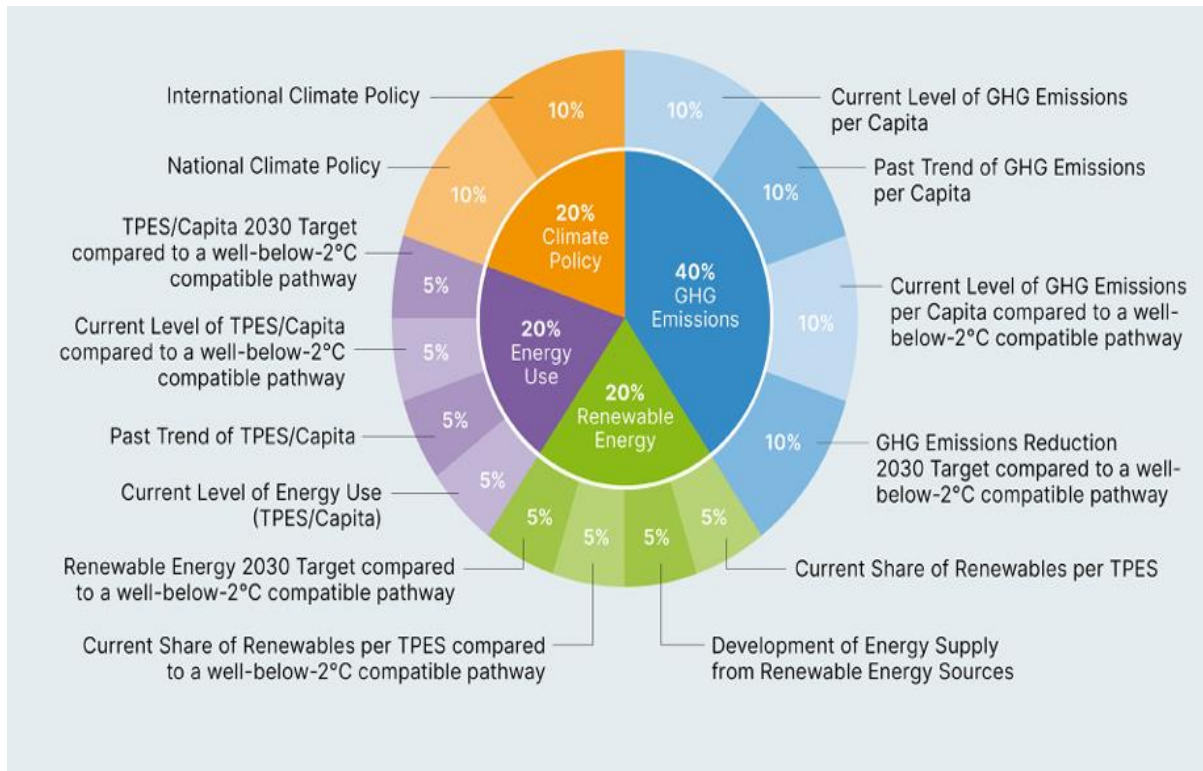


Figure D1. Components of the Climate Change Performance Index (CCPI): Fourteen indicators (outer circle) in four categories (inner circle). *Note:* GHG means Greenhouse Gases while TPES means Total Primary Energy Supply. *Source:* Burck et al. (2023).

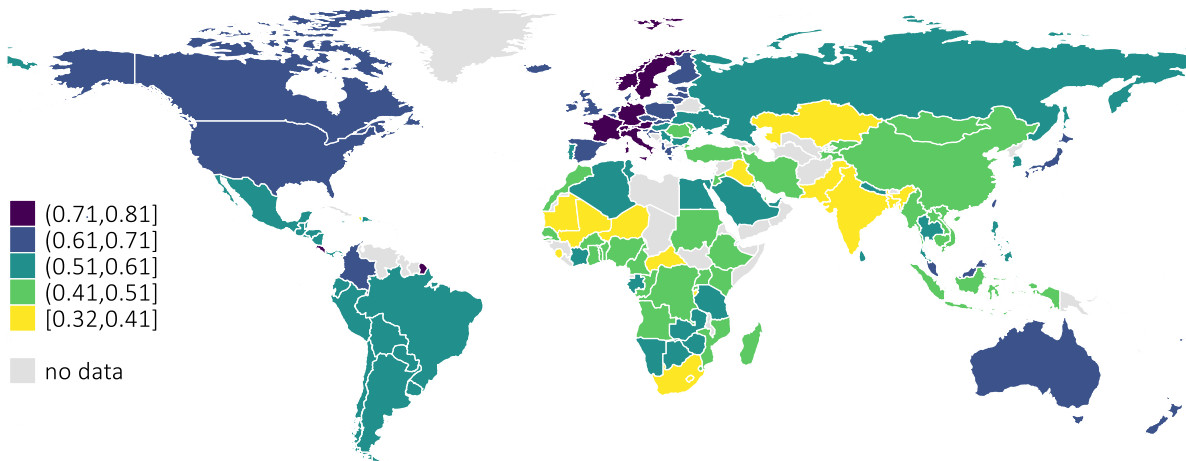


Figure D3. Variations in mean environmental performance index (EPI) scores across countries over the sample period. Note: The darker shade (from yellow to purple), the larger the average EPI score. Gray-shaded regions refer to missing data (i.e., where EPI is not tracked). *Source:* Authors' illustration based on data from the Socioeconomic Data and Applications Center (SEDAC)