

Annex 1. Data Sources and Sample Coverage

FDI Data

Greenfield FDI data: Data on greenfield FDI come from the fDi Markets database. The data cover new cross-border projects and expansions of existing projects and are collected primarily from public sources (including newswires from tens of thousands of global media sources and over 3,000 promotion agency sources) and from market research and publication companies. Projects are then cross-referenced against multiple sources, especially investing firms' sources. Greenfield FDI can differ from official FDI numbers because they exclude certain types of FDI (mergers and acquisitions and other equity and nonequity investments); they include both announced and opened projects; and, in some instances, investment figures are not provided, in which case fDi Markets estimates the investment amount. Nevertheless, Aiyar, Malacrino, and Presbitero (2023) show a strong correlation between country-level gross FDI flows and aggregate greenfield FDI values stemming from the fDi Markets Database.

Importantly, for this note, fDi Markets provides detailed project-level information, making it possible to distinguish between different types of investments. In addition to providing information on the source and destination country, it also includes information on the targeted sector and the type of activity pursued by the projects. In particular, the dataset classifies projects according to clusters and also tags projects with specific labels. The cluster and tags are used to create a "green" label (see Hasna and others 2023; Pienknagura 2024). More precisely, in addition to all projects belonging to the "Environmental Technology" cluster, projects with (1) alternative protein, (2) carbon capture, (3) cleantech, (4) cultured meats, (5) electric vehicles, (6) hydrogen, (7) photovoltaic, (8) plant-based foods, (9) vegan industries, (10) wind power technologies, (11) sustainable tourism, or (12) waste to energy tag are classified as green.

In addition, using the project tags, the note distinguishes between three green FDI subcategories: renewable energy, EVs, and green hydrogen. These three categories account for the bulk of the green FDI flows.

Time Coverage: While aggregate FDI data are available since the 1970s, the analysis is conducted for the period 1990–2019. Greenfield FDI data are available since 2003.

Country Coverage: The empirical analysis focuses on 100 countries with available aggregate and greenfield FDI, as well as at least 15 years of greenfield FDI data.

Climate Policies

Climate policy counts, from the Climate Policy Database (CPD), include policies with an explicit climate-change-mitigation objective, such as greenhouse-gas-emissions-reduction strategies; energy policies that help to decarbonize the energy supply and reduce energy demand; and policies that aim to introduce low-emissions practices and technologies to non-energy sectors, such as agriculture and land use. A policy can be a law, a strategic document, a target, or any other policy document that results in a lasting reduction of the country's emissions intensity (see Nascimento and others 2022). The main advantage of this measure, which has been used widely in scientific publications, is its comprehensive coverage of policy actions, both from an instrument and sectoral perspective. This is particularly important in a context where countries have resorted to sectoral policies and regulations and subsidies instead of economy-wide carbon pricing. One drawback of this measure is that it does not capture the intensity of each policy. Following Hasna and others (2023), the note classifies

climate policies based on their impact on the government balance. The four categories are (1) revenue-generating, (2) expenditure-generating, (3) revenue neutral regulations, and (4) nonregulatory revenue neutral. The first three are also labeled as binding policies.

Low-Carbon-Technology Tariffs (LCTs)

Data on LCT tariffs are constructed by combining HS five-digit codes associated with LCTs with product-level tariff data from the United Nations Conference on Trade and Development Trade Analysis Information System. LCT tariffs are constructed in steps. First, for each country and product line, a list of preferential partners/rates is identified. For all other partners, most-favored nation (MFN) tariffs are applied. After tariffs are properly assigned for each importing country–HS five-digit code–partner triad, a trade-weighted average applied rate is constructed for each importing country–HS five-digit code pair. Finally, we compute LCT tariffs by aggregating HS five-digit codes corresponding to LCT goods.

Time Coverage: Time coverage is 1998–2019.

Country Coverage: The empirical analysis focuses on 136 countries with available LCT trade data for 20 or more years of data.

Annex 2. Empirical Frameworks

Empirical Analysis of the Effect of Climate Policies on Green FDI Flows

To gauge the impact of climate policies on FDI flows, this note follows Pienknagura (2024) and estimates the following baseline equations. First, it assesses the impact on aggregate FDI flows as a share of GDP by means of the following regression:

$$\frac{\text{FDI}^j}{\text{GDP}_{c,t}} = \alpha_c + \mu_t + \beta cp_{c,t-1} + \rho X_{c,t-1} + \varepsilon_{c,t} \quad (1)$$

The parameter j can be green and nongreen greenfield FDI, and within green, it can be renewable energy, EV, or green hydrogen. The parameter α_c is a country-fixed effect, μ_t is a time-fixed effect, $cp_{c,t-1}$ is the log of the CPD stock of climate policies in country c at time $t-1$, and $X_{c,t-1}$ includes additional controls (trade over GDP, GDP growth, GDP per capita, capital per worker, and, in some specifications, the cost of capital).

The baseline results estimate β through standard panel estimation methods. For robustness, β is also estimated through instrumental variables techniques, where $cp_{d,t-1}$ is instrumented with a distance-weighted average of climate policies introduced by other countries (see Pienknagura 2024 for more details). The instrumental variables (IV) results are qualitatively similar to those of the ordinary least square (OLS) estimation, suggesting that the conclusions presented in the main text are robust to endogeneity concerns.

To study the impact of political alignment between recipient and source countries, the note estimates the following equation based on Pienknagura (2014) and Aiyar, Malacrino, and Presbitero (2024), using the Poisson-Pseudo Maximum Likelihood estimator proposed by Santos-Silva and Tenreyro (2006):

$$Y_{d,o,t}^{\text{green}} = \exp\left\{\alpha_d + \mu_{o,t} + \gamma PD_{o,d,t} + \beta cp_{d,t} + \rho X_{d,t} + \sigma Z_{d,o,t}\right\} + \varepsilon_{d,o,t} \quad (2)$$

The parameter Y denotes either the total dollar amount of the green projects or the dollar value of projects in each of the three green FDI subcategories; α_d denotes destination country-fixed effects; $\mu_{o,t}$ denotes origin country-time-fixed effects (in some extensions, only origin-fixed effects are included to allow for the inclusion of origin country climate policies); $cp_{d,t}$ is the log of the total number of active climate policies in the destination country; $X_{d,t}$ denotes destination country-specific variables (GDP, population, tariffs); $PD_{o,d,t}$ is a gauge of political distance proposed by and Bailey, Strezhnev, and Voeten (2017) and used by Aiyar, Malacrino, and Presbitero (2024); and $Z_{d,o,t}$ denotes country-pair variables (some time varying) such as distance, common language, and a trade agreement dummy.

To study the impact of changes in the composition of climate policy frameworks across countries, the baseline bilateral specification is extended as follows:

$$Y_{d,o,t}^{\text{green}} = \exp\left\{\alpha_d + \mu_{o,t} + \beta cp_{d,t} + \sum_p \beta^{p,d} \text{share}_{d,p,t} + \rho X_{d,t} + \sigma Z_{d,o,t}\right\} + \varepsilon_{d,o,t} \quad (3)$$

The parameter $\text{share}_{d,p,t}$ is share of policies of type p in country d 's overall stock of climate policies. The estimated coefficients of equation (3) allow the computation of the effect of different policy types in a way that is consistent with a variant of equation (2), which excludes the political distance variable.

Annex 3. Additional Econometric Results

This section presents results for additional econometric exercises including (1) results' robustness to alternative climate policy measures, (2) results comparing the drivers of green and nongreen FDI inflows, (3) results studying the link between climate policies and green FDI levels and green FDI as a share of total FDI, and (4) an instrumental variable exercise aimed at addressing endogeneity concerns.

Alternative Measures of Climate Policy Stringency

One limitation of the CPD data is that it does not capture the stringency of climate policies implemented by countries. To explore whether the association between green FDI and climate policies is robust to measures capturing stringency, modify the specification in equation (1) replacing $cp_{c,t-1}$ with the OECD's climate action and policies measurement framework (CAPFM) stringency measure. The index provides a measure of stringency along three dimensions: (1) sectoral policies, (2) cross-sectoral policies, and (3) international policies. The econometric analysis uses an aggregate measure that averages the stringency score for the three dimensions. The downside of the CAPFM data is that it only provides information for 18 EMDEs.

Results, described in summary Annex Table 3.1, show that the positive association between green FDI and climate policies is robust to the use of this alternative measure. Moreover, the positive association between climate policy stringency is also present for green FDI in overall renewables, in wind and solar, and green FDI into the energy sector.

Comparison of Drivers of Green and Nongreen FDI Flows

As the main text discusses, green FDI flows differ from nongreen flows in that the former are positively associated with climate policies and the relationship is statistically significant, while the association between climate policies and the latter is not statistically significant. Beyond this difference, the two types of FDI appear to be driven by different factors. Green FDI appears associated mostly with climate policies and with the cost of capital (as proxied by deposit rates), while nongreen flows are larger in countries with higher GDP growth, lower GDP per capita, and higher capital per worker. These results for green and nongreen FDI flows are robust to the inclusion of lagged of the left-hand side variable.

Climate Policies and Green FDI in Levels and as Share of Total FDI

The baseline analysis of aggregate green FDI flows uses the green FDI-to-GDP ratio. This is done to normalize flows for a country's size and for comparability with previous literature. A downside of the approach is its inability to distinguish between changes in the ratio arising from the effect of climate policies on green FDI levels and those arising from the impact of climate policies on GDP. To tackle this downside, Annex Table 3.1 describes the results of two alternative exercises. The first estimates a model similar to that described in equation (1), but replacing the left-hand side variables with green FDI levels.¹ The results point to a positive association between the number of climate policies in a country and green FDI levels. This is consistent with results from bilateral

¹ The estimation of this alternative model follows the Poisson Pseudo Maximum Likelihood estimator proposed by Santos-Silva and Teneryro (2006). This estimator is better suited compared to an OLS panel approach when the left-hand side variable is in levels, such that the OLS model would use the log of the variable, and there is a large share of zeroes in the data.

estimations. The second exercise replaces the left-hand side variable in equation (1) with the share of green FDI on total FDI. The results suggest that a larger number of climate policies is associated with a larger increase in green FDI as a share of the total. This is consistent with the finding in the “[Comparison of Drivers of Green and Nongreen FDI Flows](#)” section, which shows that climate policies have a nonsignificant impact on nongreen FDI.

Annex Table 3.1. Robustness Exercise and Extensions

Exercise Description	Additional Details	Summary of Results
Use of alternative climate policy measures taking into account policy stringency	Replace CPD climate policy count with OECD’s CAPFM stringency index.	Green FDI remains positively associated with climate policy stringency.
Differences in drivers of green and nongreen FDI flows	Estimate equation (1) for green and nongreen FDI flows, assessing the impact of a core set of controls.	Green FDI flows are mostly driven by climate policies and the cost of capital. Nongreen flows respond positively to GDP growth and capital per worker and are negatively associated with GDP per capita.
Estimating the relationship between green FDI levels and climate policies	Estimate equation (1) using green FDI flows in levels as the dependent variable. This is estimated through the PPML estimator proposed by Santos-Silva and Tenreyro (2006).	The relationship between green FDI flows in levels is positive and statistically significant.
Estimating the relationship between green FDI as a share of total FDI and climate policies	Estimate equation (1) using green FDI flows as a share of total FDI inflows as the dependent variable.	

Green FDI and the Cost of Capital

Financial development and financing costs can affect FDI inflows (Desbordes and Wei 2017). To study the quantitative importance of the costs of capital on green FDI, we extend the baseline specification by including real interest rates as an additional control. We proxy interest rates with deposit rates, because of its broader coverage, and compute real rates by subtracting inflation. Annex Table 3.2 shows that higher real interest rates have a negative and statistically significant impact on green FDI flows. Two additional points are worth highlighting. First, note that the impact of climate policies on green FDI remains positive and statistically significant (albeit the statistical significance of real interest rates is stronger). Second, climate policies appear to be quantitatively more important in determining green FDI—a one-standard-deviation improvement in climate policies has an impact on green FDI inflows (as a share of GDP) that is almost six times as large a one-standard-deviation reduction in real deposit rates.

Annex Table 3.2. Green FDI, Climate Policies, and Real Interest Rates

Variables	(1) Overall Green FDI	(2) FDI Renewable Energy	(3) FDI Wind and Solar	(4) Green FDI Energy Sector
log Number of climate policies ($t - 1$), all	0.1941* (0.0934)	0.1773* (0.0878)	0.2140** (0.0816)	0.1748* (0.0878)
Trade over GDP ($t - 1$)	0.0009 (0.0024)	-0.0009 (0.0021)	-0.0003 (0.0016)	-0.0008 (0.0022)
GDP growth ($t - 1$)	-0.2801 (0.7785)	-0.6194 (0.7248)	-0.7034 (0.6996)	-0.6260 (0.7263)
log GDP per capita ($t - 1$)	-0.2220 (0.3104)	-0.1577 (0.2389)	-0.0419 (0.1363)	-0.1668 (0.2467)
log Capital per worker ($t - 1$)	-0.0971 (0.1594)	-0.1710 (0.1312)	-0.0523 (0.0913)	-0.1680 (0.1327)
Real interest rates ($t - 1$)	-0.0028* (0.0013)	-0.0025** (0.0011)	-0.0023*** (0.0007)	-0.0025** (0.0011)
Constant	2.9683 (1.7710)	3.3207* (1.6798)	0.7834 (0.9503)	3.3767* (1.7068)
Observations	1,346	1,346	1,346	1,346
R-squared	0.2556	0.2495	0.2756	0.2531
Country FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

Note: Robust standard errors in parentheses.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Instrumental Variable Results

To address endogeneity concerns, this section presents results from two robustness exercises. The first is estimated using equation (1) through an instrumental variables approach where domestic climate policies are instrumented using a distance-weighted sum of climate policies in other countries. More precisely, we build the following variable:

$$\ln cp_{-c,t-1}^{IV} = \ln \left(\sum_{i \neq c} \left(\frac{1/\text{dist}_{c,i}}{\sum_i 1/\text{dist}_{c,i}} \right) cp_{c,t-1} \right) \quad (1)$$

This follows the approach of Acemoglu and others (2019) and David, Komatsuzaki, and Pienknagura (2022). The variable constructed following the equation (1) is then used to instrument domestic climate policies in country c .² The idea behind the approach is that climate policies are implemented in waves; thus, we expect a positive correlation between domestic climate policies and our instrument.

² The exercise uses the first and second lag of the instrument.

In Annex Table 3.3 columns (1)–(4) show results from the IV exercise for overall green FDI flows, renewable energy flows, solar and wind flows, and overall FDI into the energy sector.³ Consistent with the baseline results, results point to a positive and statistically significant relationship between climate policies and different types of green FDI flows.

Annex Table 3.3. Green FDI and Climate Policies—Instrumental Variable Results

Variables	(1) Overall Green FDI	(2) FDI in Renewable	(3) FDI in Wind and Solar	(4) Green FDI Energy Sector	(5) Overall Green FDI	(6) FDI in Renewable	(7) FDI in Wind and Solar	(8) Green FDI Energy Sector
log Number of climate policies ($t - 1$), all	0.3556**	0.3493**	0.3450**	0.3558**	0.3567**	0.3504**	0.2829**	0.4320**
	(0.1586)	(0.1640)	(0.1524)	(0.1613)	(0.1595)	(0.1653)	(0.1269)	(0.1889)
Trade over GDP ($t - 1$)	0.0001	-0.0010	-0.0004	-0.0010	0.0001	-0.0010	-0.0000	-0.0011
	(0.0020)	(0.0018)	(0.0013)	(0.0018)	(0.0020)	(0.0018)	(0.0011)	(0.0019)
GDP growth ($t - 1$)	-0.3621	-0.5802	-0.5635	-0.5708	-0.3634	-0.5826	-0.4597	-0.5677
	(0.4988)	(0.4636)	(0.4279)	(0.4658)	(0.4978)	(0.4627)	(0.4263)	(0.5016)
log GDP per capita ($t - 1$)	-0.2776	-0.2449	-0.0504	-0.2544	-0.2804	-0.2475	-0.0283	-0.2799
	(0.2324)	(0.1922)	(0.1151)	(0.1995)	(0.2401)	(0.1988)	(0.1108)	(0.2176)
log Capital per worker ($t - 1$)	-0.1406	-0.2104	-0.0852	-0.2092	-0.1412	-0.2111	-0.0699	-0.2426
	(0.1578)	(0.1296)	(0.1017)	(0.1330)	(0.1565)	(0.1292)	(0.1016)	(0.1434)
Average Reg. green FDI over GDP ($t - 1$)					-0.0266			
					(0.1731)			
Average Reg. FDI in renewables over GDP ($t - 1$)						-0.0285		
						(0.1910)		
Average Reg. FDI in wind and solar over GDP ($t - 1$)							0.8922**	
							(0.4173)	
Average Reg. green FDI into energy sector over GDP ($t - 1$)								-0.0427
								(0.2194)
Observations	1,651	1,651	1,651	1,651	1,651	1,651	1,651	1,600
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses, * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. FDI = foreign direct investment

Columns (5)–(8) address the potential for regional FDI spillovers. For example, climate policies in nearby countries can have direct impacts on country i 's green FDI if they boost green FDI flows in these countries and there are complementarities in FDI activity across regional partners. To assuage this concern, columns (5)–(8)

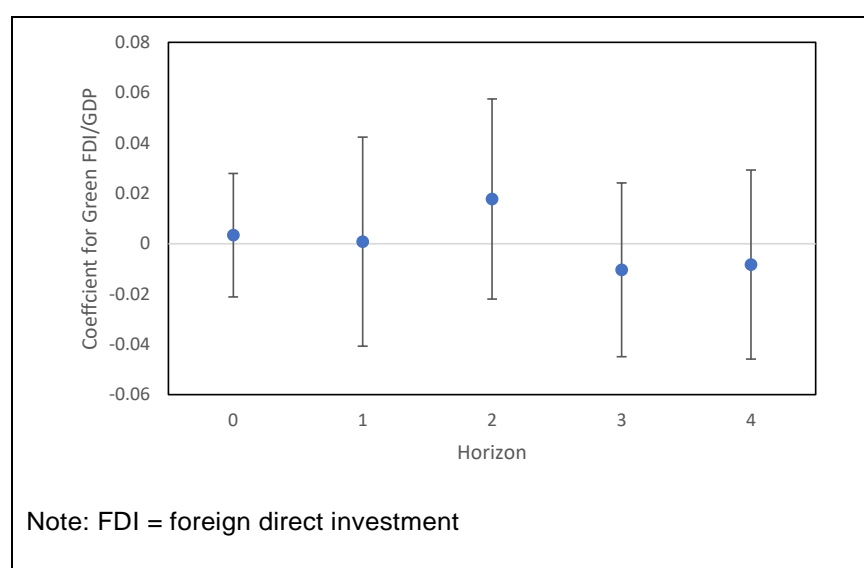
³ The instruments are strong in the sense that the Kleibergen–Paap rk Wald statistic is above 10. Moreover, the null hypothesis of exogeneity of the instruments cannot be rejected by the Hansen test.

expand the IV specification by including regional average for each type of green FDI flow considered in the analysis. This helps to control for FDI spillovers across nearby countries. Results are robust to this exercise. Taken together, these exercises alleviate endogeneity concerns.

As a second exercise to tackle potential reverse causality, we estimate the dynamic relationship between current green FDI as a share of GDP and future changes in climate policies in the spirit of the local projections approach (Jorda 2005). Annex Figure 3.1 shows the results of regressions of the change in the log of climate policies in period $t + h$ on lagged values of the (log) number of active policies in $t - 1$ and $t - 2$, to control for past policy dynamics, the log of GDP in $t - 1$ and $t - 2$, to

controls for country's economic size, and green FDI flows as a share of GDP in t and $t - 1$.⁴ In particular, it plots the coefficient for green FDI/GDP in horizons 0 to 4. As shown, the coefficient for green FDI as a share of GDP is nonsignificant, suggesting that past green FDI flows do not anticipate future changes in climate policies.

Annex Figure 3.1. Green FDI and Climate Policies: Addressing Reverse Causality Concerns



⁴ The exercise also controls for country- and year-fixed effects.

Annex 4. Selection of Countries in Case Studies

This annex summarizes the approach followed in selecting the countries for the case studies. As mentioned in the main text, the selection follows a multipronged approach that considers the following dimensions:

- 1) The increase in the number of climate policies and green FDI inflows⁵ (in dollars and number of projects) between 2015 and 2021.
- 2) The levels of both green FDI inflows and the number of climate policies in 2021.
- 3) The country's performance in attracting green FDI flows relative to the values predicted by equation (1) in Annex 2.
- 4) The levels of FDI flows received in each green FDI subcategory. The note aims to highlight successful cases in different categories of green FDI.
- 5) The region of the country. The note aims to include at least one EMDE from every IMF region.

Figure 4.1 shows that the countries selected all exhibit green FDI values that exceed those explained by the linear relationship predicted by equation (1). Moreover, most countries have seen an increase in both climate policies and green FDI inflows.

To further visualize the performance of the selected countries, Annex Figure 4.1 shows the score that each country gets in both the climate policy and FDI/renewable energy dimensions using the following scoring system:

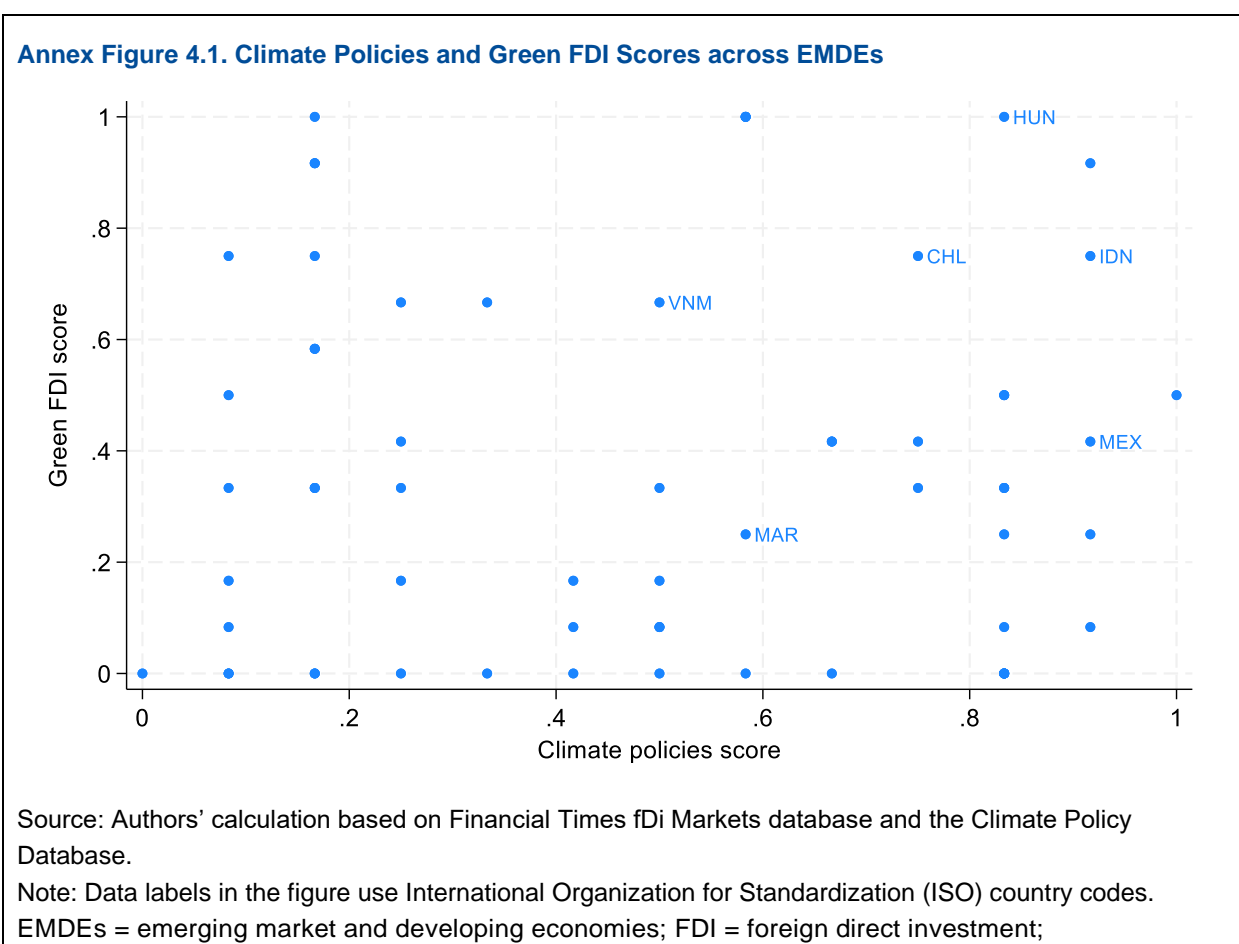
- **Policies:** Each country is assigned two points if the number of climate policies in 2021 exceeds the EMDE 75th percentile, two points if the change in the number of climate policies between 2015 and 2021 exceeds the EMDE 75th percentile, two points if the number of binding climate policies in 2021 exceeds the EMDE 75th percentile, two points if the change in the number of binding climate policies between 2015 and 2021 exceeds the EMDE 75th percentile, two points if the number of climate policies not predicted by the country's GDP exceeds the EMDE 75th percentile in 2021, two points if the change in the number of climate policies not predicted by the country's GDP between 2015 and 2021 exceeds the EMDE 75th percentile, one point if the number of climate policies in 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the number of climate policies between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the number of binding climate policies in 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the number of binding climate policies between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the number of climate policies not predicted by the country's GDP is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the number of climate policies not predicted by the country's GDP between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution.
- **Green FDI/renewable energy:** Each country is assigned two points if the green-FDI⁶-to-GDP ratio in 2021 exceeds the EMDE 75th percentile, two points if the change in the green-FDI-to-GDP ratio between 2015 and 2021 exceeds the EMDE 75th percentile, two points if the share of green FDI flows over total FDI flows in 2021 exceeds the EMDE 75th percentile, two points if the change in the share of green FDI flows over total FDI flows between 2015 and 2021 exceeds the EMDE 75th percentile, two points if the share of green

⁵ The calculations that follow consider both the dollar amount of flows and the number of projects.

⁶ Given the lumpy nature of green FDI, we use a five-year rolling average of green FDI flows to calculate the ratio.

FDI projects over total FDI projects in 2021 exceeds the EMDE 75th percentile, two points if the change in the share of green FDI projects over total FDI projects between 2015 and 2021 exceeds the EMDE 75th percentile, one point if the green-FDI-to-GDP ratio in 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the green-FDI-to-GDP ratio between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the share of green FDI flows over total FDI flows in 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the share of green FDI flows over total FDI flows between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the share of green FDI projects over total FDI projects in 2021 is between the 50th and 75th percentiles of the EMDE distribution, one point if the change in the share of green FDI projects over total FDI projects between 2015 and 2021 is between the 50th and 75th percentiles of the EMDE distribution.

The scores are calculated and then normalized such that the total score in each dimension lies between 0 and 1.



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