Designing Policy Support for Climate-Smart Trade in the CAREC Region

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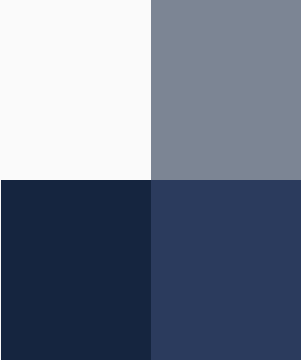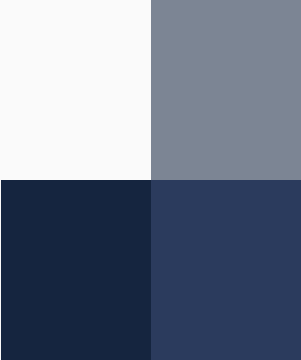
Contents

Introduction

- Climate change poses a significant threat to human civilization and economic development (WTO, 2020).
- International trade, when aligned with sound environmental policies, can help mitigate and adapt to climate change (WTO, 2020).
- Trade-led growth has lifted millions out of poverty, providing market access, technology transfer, and investment opportunities (UNCTAD, 2020).
- Increased production and trade have led to overuse of resources, increased emissions, and inequality (UNCTAD, 2020).

Introduction

- CAREC member countries are required to reduce greenhouse gas emissions by 10% to 20% by 2030 (CAREC, 2019).
- Implement innovative approaches to reduce industrial pollution and shift towards greener production and trade to comply with environmental regulations (Asian Development Bank, 2017).
- To address these challenges and promote sustainable development, the CAREC region is implementing a variety of climate-smart goods.

Policy Relevance & Objective

- Balancing economic development with climate imperatives is essential for effective regional climate policy.
- As of 2022, trade, constituting 35% of the combined GDP of the region, serves as a vital driver for development and integration among CAREC countries.
- Study conducted by the ADB (2023) on climate initiatives reveals a predominant emphasis on energy-related projects among previous climate change initiatives in the region.
- It highlights a notable gap concerning the intersectionality of climate policies and trade dynamics.
- To examine the impact of public regulations and voluntary compliance on the climate-trade nexus in the CAREC region.
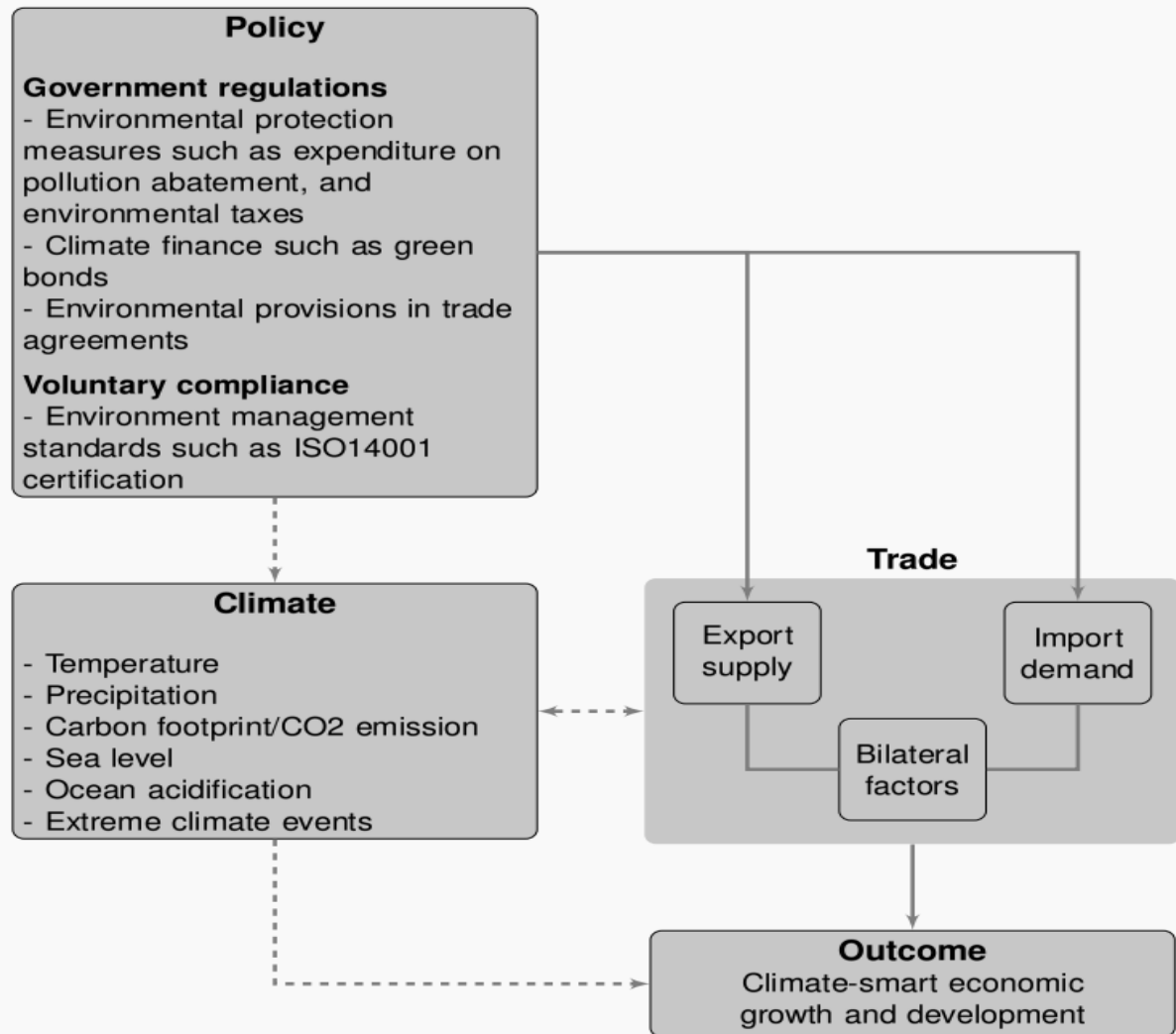
Climate-Trade Nexus

- Environmental taxes reduce greenhouse gas emissions by internalizing the external costs of pollution (OECD, 2022).
- FTAs with climate-relevant provisions can harmonize regulatory standards and promote sustainable trade practices (Brandi, 2017).
- Climate provisions in (NTMs) shape international trade patterns by ensuring that traded goods meet specific environmental criteria (IMF, 2021).

- Use of digital technologies enhance transparency, improve compliance tracking, and supports the integration of environmental considerations. (Bonini & Görner, 2011).
- Ocean acidification and sea-level rise pose significant threats to marine ecosystems and coastal communities, highlighting the need for robust adaptation measures (NOAA, 2023).
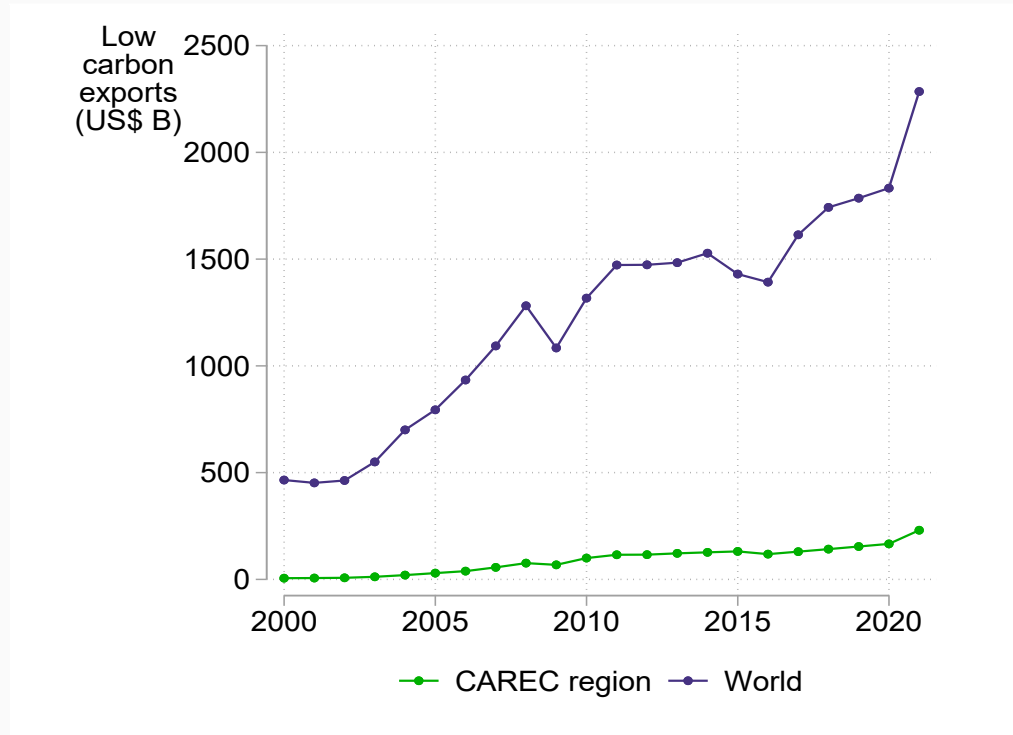
Climate-Trade Nexus (Cont...)

- Green patents and technological innovations are crucial for advancing cleaner technologies and reducing the environmental footprint of economic activities (UNEP, 2020).
- Carbon footprint and CO2 emissions, influencing global climate patterns and necessitating comprehensive mitigation strategies (UNFCCC, 2021).
- Regional trade agreements often incorporate environmental provisions to harmonize regulatory standards and promote sustainable trade practices (CEPII, 2023).
- Bilateral trade factors are influenced by environmental regulations and climate conditions, affecting the competitiveness and sustainability of economies (WTO, 2022).

Climate-Trade nexus

Policy

Government regulations
- Environmental protection measures such as expenditure on pollution abatement, and environmental taxes
- Climate finance such as green bonds
- Environmental provisions in trade agreements

Voluntary compliance
- Environment management standards such as ISO14001 certification

Climate
- Temperature
- Precipitation
- Carbon footprint/CO2 emission
- Sea level
- Ocean acidification
- Extreme climate events

Trade
Export supply
Import demand
Bilateral factors

Outcome
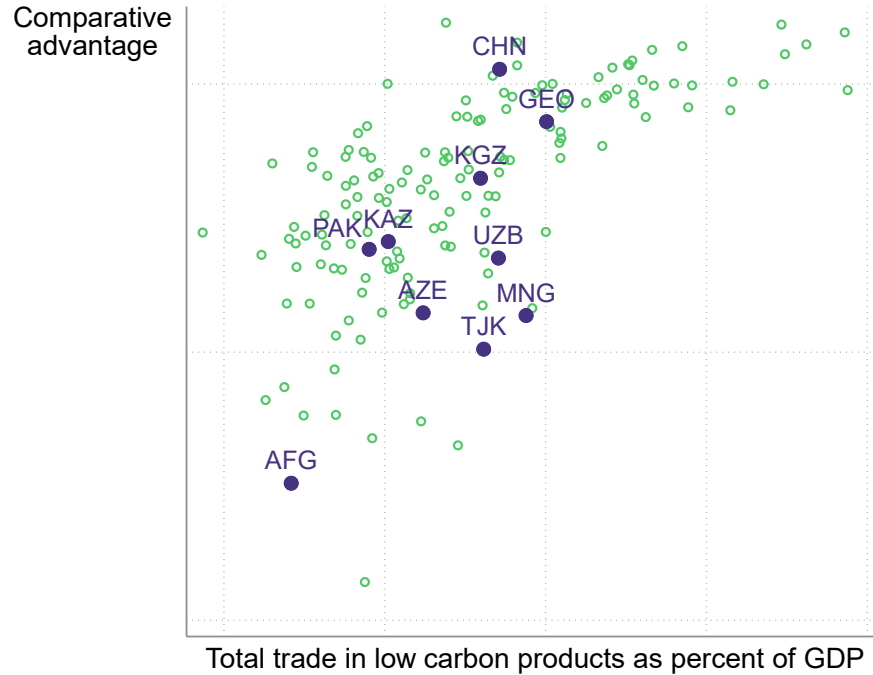Climate-smart economic growth and development

Climate Situation: Some Stylized Facts

Trade in Low Carbon Products, over 2000–2021

Climate Situation: Some Stylized Facts

Comparative Advantage in the Exports of Low Carbon Products

Low Carbon Technology Products: Trade

Country	Low carbon exports (million US$)	Low carbon exports share of total exports (%)	Low carbon imports (million US$)	Low carbon imports share of total imports (%)	Total low carbon trade as percent of GDP (%)
Afghanistan	0.02	0.00	105.47	1.56	0.56
Azerbaijan	16.14	0.07	679.77	5.81	1.27
China	229879.03	6.82	132804.61	4.96	2.04
Georgia	109.02	2.57	400.32	3.96	2.73
Kazakhstan	164.33	0.27	1849.62	4.40	1.02
Kyrgyz	14.84	0.89	153.03	2.75	1.81
Mongolia	6.39	0.07	361.55	5.27	2.41
Pakistan	68.18	0.24	3093.91	4.27	0.91
Tajikistan	0.54	0.04	164.70	3.91	1.85
Uzbekistan	28.43	0.20	1382.24	5.82	2.03

Econometric Estimation

$$X_{ijt} = \frac{Y_{it}E_{jt}}{Y_t} \left(\frac{\tau_{ijt}}{\Pi_{it}P_{jt}}\right)^{-\theta} \qquad (1)$$

X_{ijt} is the bilateral exports between countries i and j in year t
Y is the world's aggregate production
Y_i is domestic production of country i; and E_j is expenditure of country j
whereas the bilateral trade cost between the country pair τ_{ij}

$$\ln X_{ijt} = \ln Y_{it} + \ln E_{jt} - \ln Y_t - (\theta)\ln\tau_{ijt} + (\theta)\ln\Pi_{it} + (\theta)\ln P_{jt} + \varepsilon_{ijt} \qquad (2)$$

Econometric Estimation

$$EXP_{ijt} = exp\left[\alpha_0 + \alpha_1 \ln(DIST_{ij}) + \alpha_2 CNTG_{ij} + \alpha_3 LANG_{ij} + \alpha_4 CLNY_{ij} + \alpha_5 RTA_{ijt} + \alpha_6 POLICY + \beta_i + \gamma_j + \delta_t\right] + \varepsilon_{ijt} \qquad (3)$$

$$EXP_{ijt} = exp\left[\alpha_0 + \varphi_{ij} + \alpha_1 RTA_{ijt} + \alpha_2 POLICY + \beta_i + \gamma_j + \delta_t\right] + \varepsilon_{ijt} \qquad (4)$$

Bilateral distance (*DIST*), Contiguity (*CNTG*), Language commonality (*LANG*), Colonial tie (*CLNY*), Regional trade agreement (*RTA*). Climate-related variable is denoted by *POLICY,* Pollution abatement (*POLABT*), Environmental taxes (*ENVTAX*), Green bonds (*GBOND*), Environmental provisions (*ENVPRV*). ISO-14001 certification (*ISO14001*).

Variables	Description	Source
EXP	Bilateral exports of low carbon exports.	IMF
DIST	Bilateral geographical distance between trading pair.	CEPII
CNTG	Contiguity (trading between share border countries).	CEPII
LANG	Language commonality	CEPII
RTA	Regional trade agreement.	CEPII
POLABT	Government expenditures on pollution abatement.	IMF
GBOND	Green Bonds	IMF
ENVTAX	Environmental tax	OECD
ENVPRV	Environmental provisions in trade agreements between trading partners.	IMF
ISO14001	Number of ISO-14001 certificates per country.	ISO
ISO14001gdp	Number of ISO-14001 certificates per country normalized over GDP of the country.	ISO

Variables	N	Mean	SD	Min	Max
EXP	81,599	38.01	365.6	0	30,041
DIST	81,599	7,160	4,413	18	19,706
CNTG	81,599	0.0179	0.133	0	1
LANG	81,599	0.109	0.312	0	1
CLNY	81,599	0.0140	0.117	0	1
RTA	81,599	0.326	0.469	0	1
POLABT	70,163	0.102	0.160	0	1.033
GBOND	24,811	0.00645	0.0190	2.15e-05	0.192
ENVTAX	73,442	2.285	0.946	0.0300	5.140
ENVPRV	81,599	10.79	38.51	0	383
ISO14001	81,599	3,371	5,659	1	34,852

Results and Analysis

Variables	Exports	Exports	Exports	Exports	Exports	Exports	Exports	Exports
DIST	-0.767***		-0.758***		-0.824***		-0.809***	
	(0.043)		(0.042)		(0.050)		(0.045)	
CNTG	0.197**		0.364***		0.135		0.239**	
	(0.099)		(0.091)		(0.102)		(0.099)	
LANG	0.390***		0.375***		0.436***		0.304***	
	(0.083)		(0.086)		(0.085)		(0.091)	
CLNY	0.399**		-0.016		-0.111		0.176	
	(0.167)		(0.198)		(0.239)		(0.209)	
RTA	0.403***	0.119*	0.178**	0.256***	0.171*	0.044	0.173*	0.143**
	(0.075)	(0.064)	(0.084)	(0.067)	(0.096)	(0.061)	(0.096)	(0.069)
POLABT	0.020**	0.020**						
	(0.009)	(0.009)						
GBOND			0.015**	0.014**				
			(0.006)	(0.006)				
ENVTAX					0.065	0.068		
					(0.124)	(0.125)		
ENVPRV							-0.031	0.025**
							(0.021)	(0.012)
I,J,T FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IJ FE	No	Yes	No	Yes	No	Yes	No	Yes
N	64,788	61,776	24,811	22,050	73,442	69,434	26,285	25,080

Variables	Exports	Exports	Exports	Exports
DIST	-0.829***		-0.829***	
	(0.050)		(0.050)	
CNTG	0.192*		0.192*	
	(0.101)		(0.101)	
LANG	0.391***		0.391***	
	(0.091)		(0.091)	
CLNY	-0.116		-0.117	
	(0.262)		(0.262)	
RTA	0.194*	0.065	0.191*	0.051
	(0.101)	(0.057)	(0.101)	(0.057)
ISO14001 (COUNT)	0.155***	0.147***		
	(0.036)	(0.036)		
ISO14001 (GDP NORM)			0.064**	0.055*
			(0.032)	(0.033)
I,J,T FE	Yes	Yes	Yes	Yes
IJ FE	No	Yes	No	Yes
N	81,599	77,655	81,599	77,655

Conclusion

- Study finds that government expenditure on pollution abatement, climate finance mechanisms like green bonds, and comprehensive environmental provisions in trade agreements positively influence low carbon exports.
- Environmental taxes do not have a significant impact.
- ISO14001 certification in exporting countries supports low carbon product exports.
- Our findings provide actionable insights for fostering sustainable economic growth through climate-smart trade practices, benefiting both governments and businesses.

Policy recommendations

1 Governments should prioritize and boost expenditures on **pollution abatement** under the COFOG framework, which will help reduce CO2 emissions embedded in the economy and trade.

2 Existing trade agreements, such as ECOTA (2003) and CIS (1994), should be amended to include comprehensive **environmental provisions**. New agreements should also integrate robust environmental measures to encourage sustainable practices and low-carbon trade.

3 Development and promotion of climate finance mechanisms like **green bonds** should be enhanced. These bonds mobilize capital for environmentally beneficial projects, aiding in the decarbonization of trade.

4 Countries should promote and support compliance with international environmental standards like **ISO 14001 certification**. This will help manage environmental responsibilities effectively and contribute to climate mitigation and adaptation efforts.
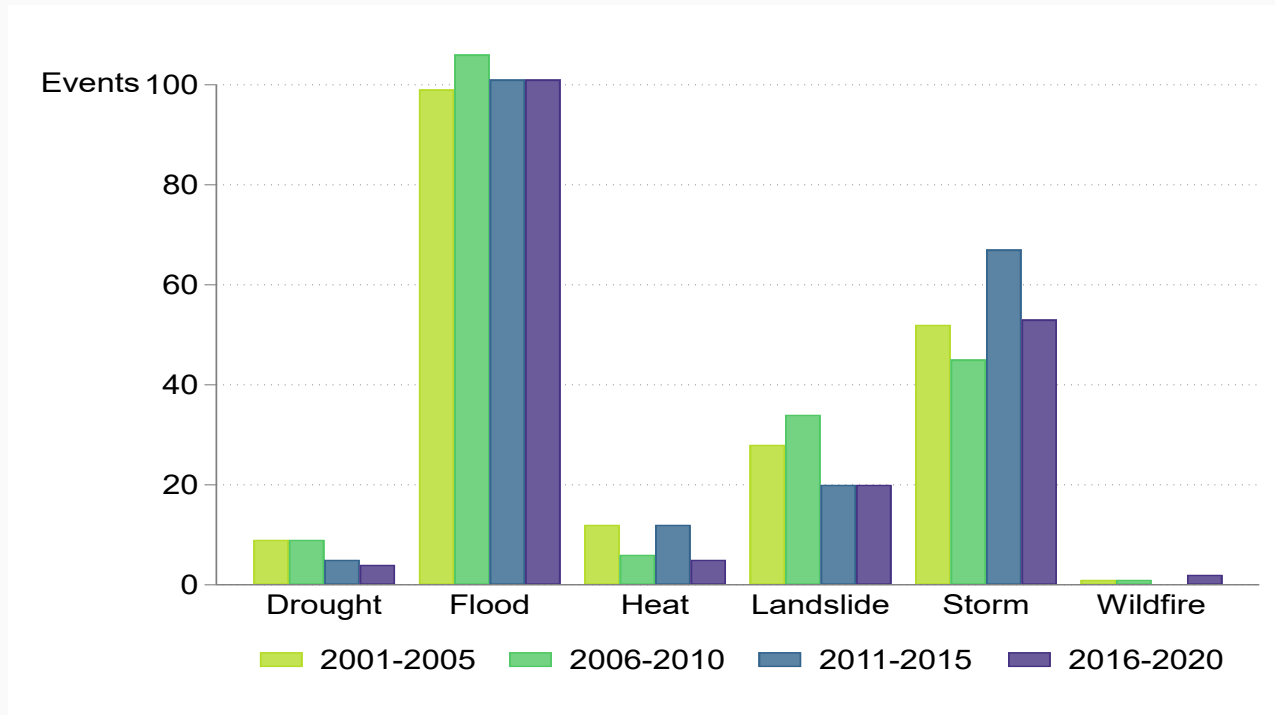
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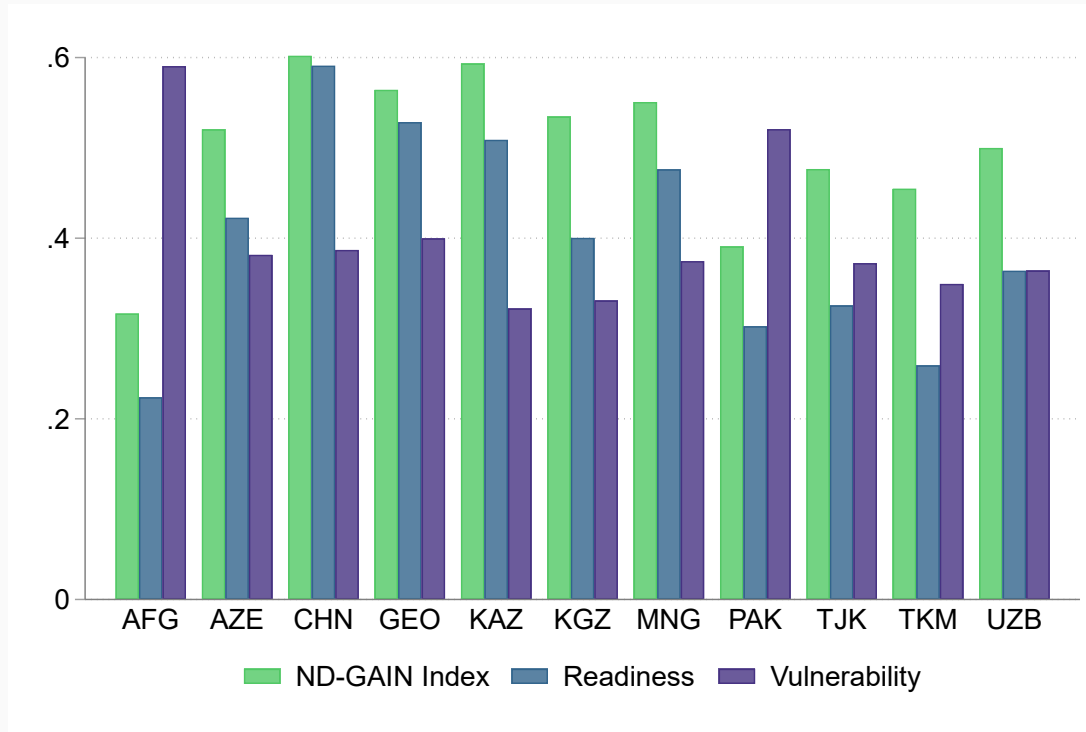Do you have any questions?

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Climate Situation: Some Stylized Facts

Occurrence of Extreme Climate Events in the CAREC Region

Climate Situation: Some Stylized Facts

Climate Adoption, Vulnerability and Readiness of CAREC Countries