WESTERN HEMISPHERE DEPARTMENT

Climate Change Challenges and Opportunities in LAC

JULY 30, 2024

Anna Ivanova
Advisor

Presentation Outline

I. Climate Risks in Latin America and the Caribbean

II. Macroeconomic Implications of Climate Mitigation Policies

III. Growth and Fiscal Gains of Climate Adaptation Policies

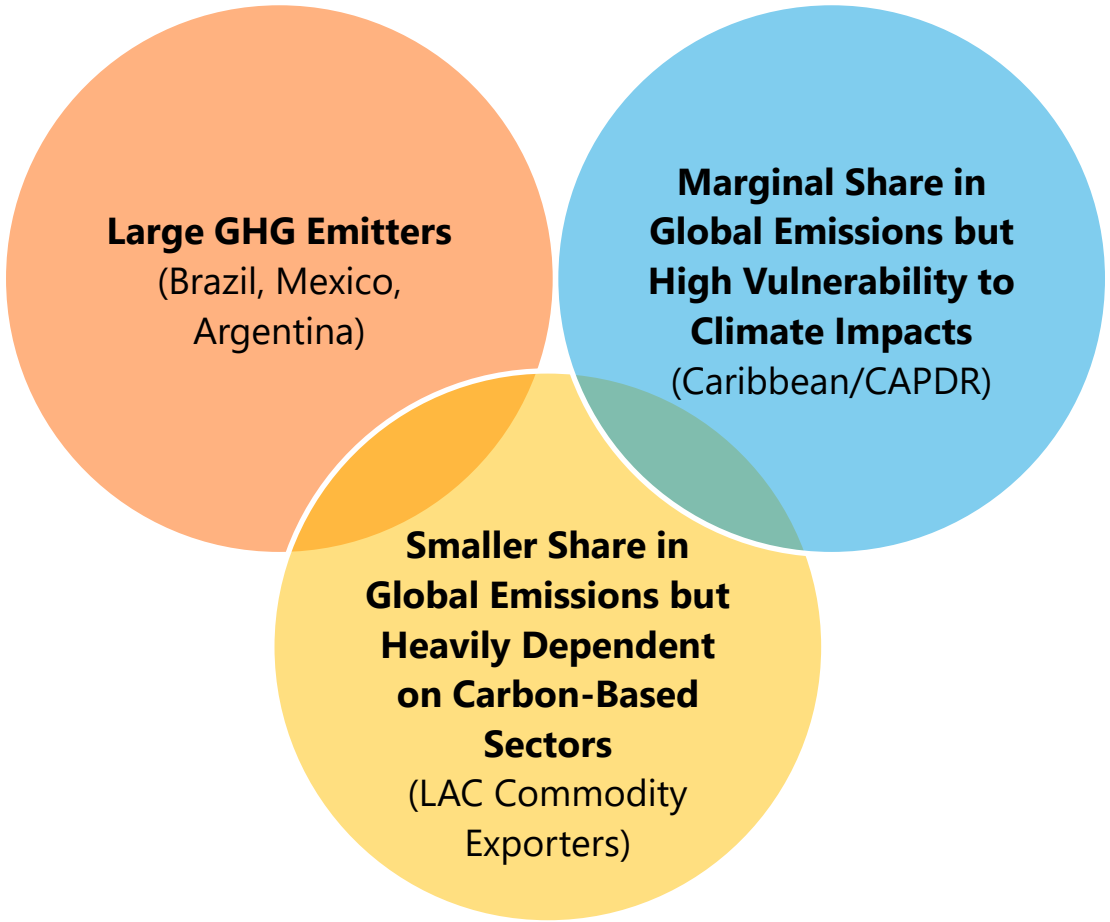
IV. Green Transition Opportunities and Risks

V. Climate Financing Gaps

I. Climate Risks in LAC

Latin America and the Caribbean is one of the most diverse regions with respect to climate-related risks

Mapping LAC with Respect to Climate Change and Emissions



Source: IMF staff calculations.
Note: CAPDR = Central America, Panama, and the Dominican Republic; GHG = greenhouse gas; LAC = Latin America and the Caribbean.

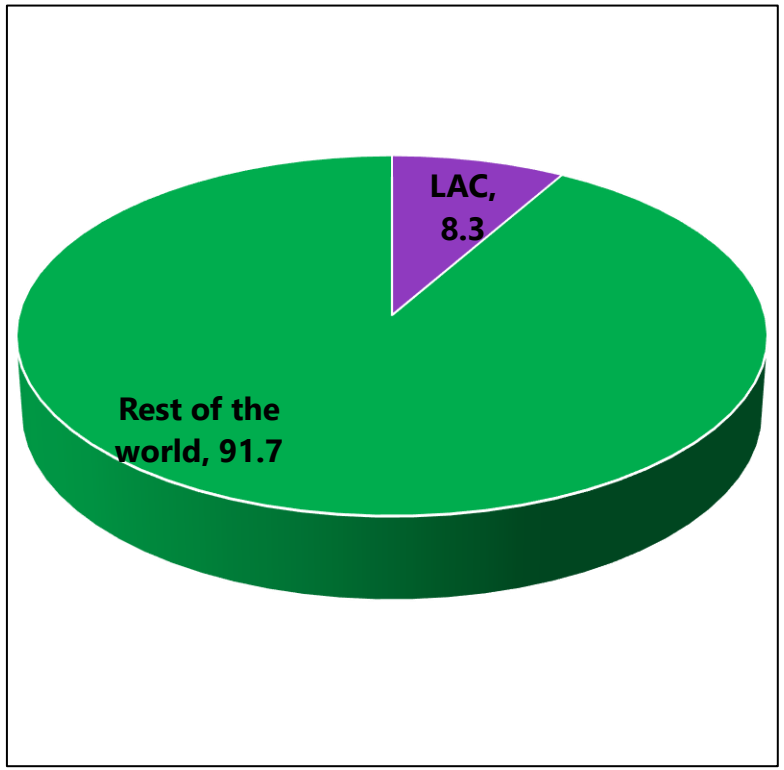
Mitigation: The region's net GHG emissions are in line with its economic size and population though significant heterogeneity

While the region's share in global GHG emissions is relatively small, it is commensurate with its economic size and population…

… and LAC's per capita GHG emissions are in line with the world average though significant heterogeneity

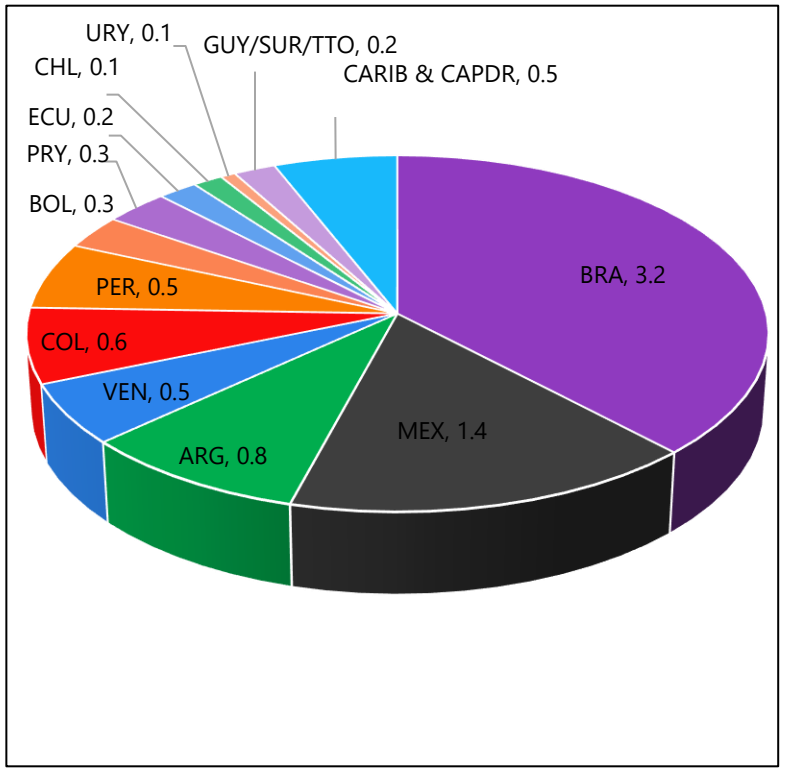
Global Net GHG Emissions, 2020

(Percent of global emissions, including Land Use change and forestry)



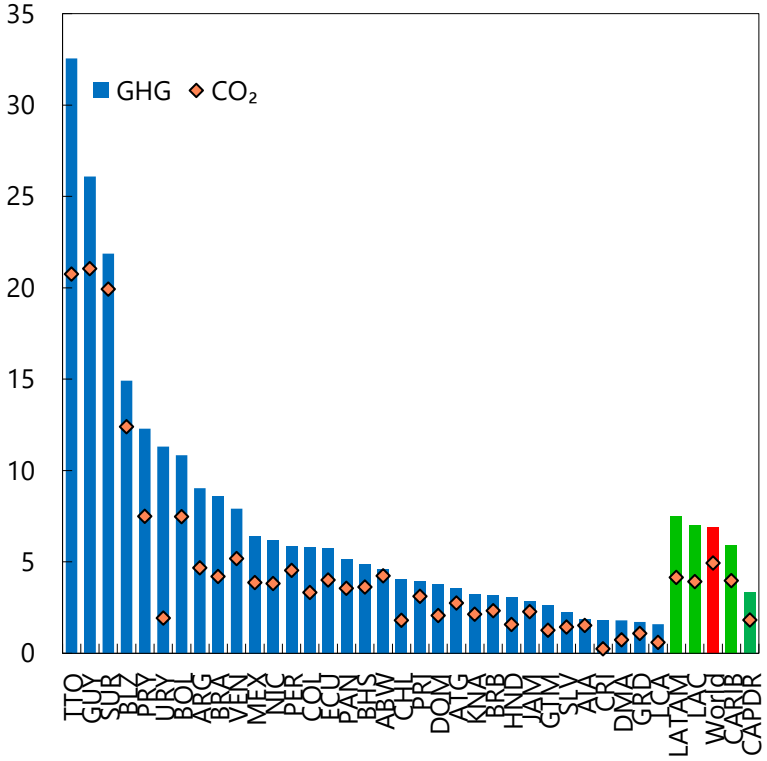
LAC: Net GHG Emissions, 2020

(Percent of global emissions, including Land Use change and forestry)



GHG and CO_2 Net Emissions per Capita, 2022

(Tons CO_2-eq.)



Sources: CAIT; UNFCCC.; and IMF staff calculations.
Note: GHGs include CO2, CH4, N2O, and F-gases, sourced from agricultural, energy, forestry, and industrial sectors, as well as waste and change in land-use policies. CAPDR (Central America, Panama, and the Dominican Republic) = Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama; CARIB (Caribbean) = Haiti, Jamaica, Suriname, Trinidad and Tobago; CO_2 = carbon dioxide; GHG = greenhouse gas

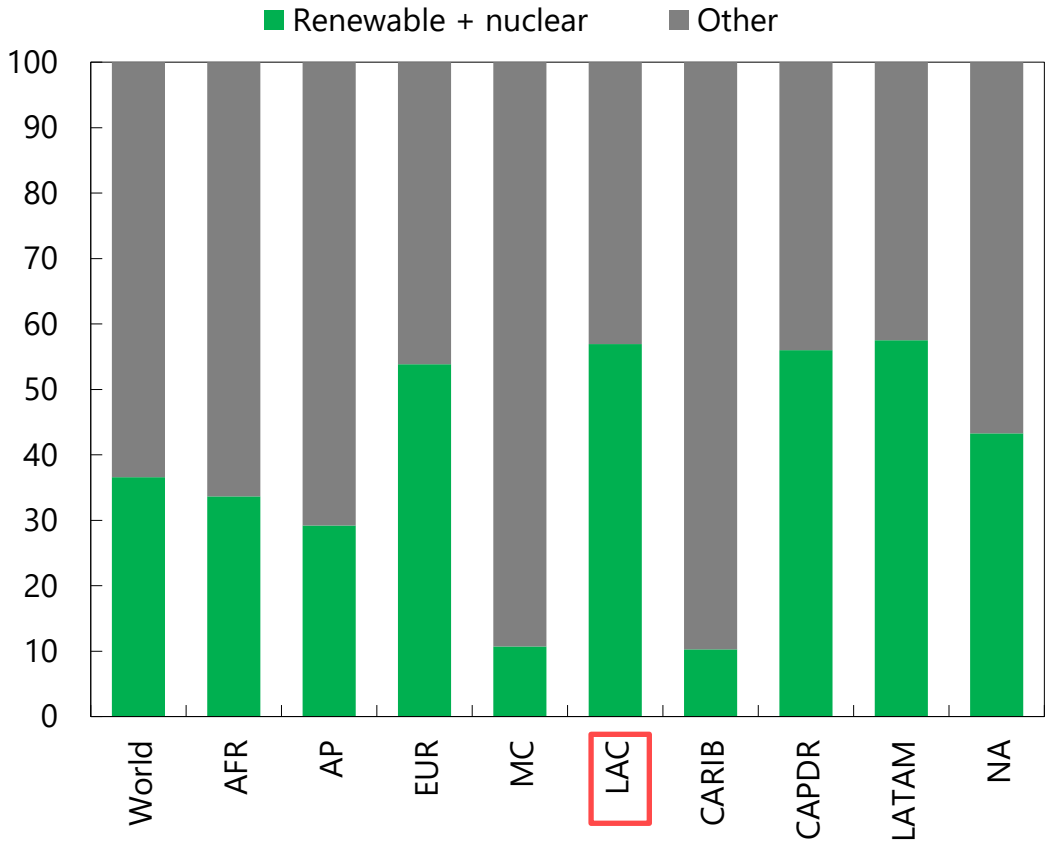
Sources: IMF climate change indicators and IMF staff calculations.
Note: Total GHG emissions including land-use, land-use change and forestry. CO_2 = carbon dioxide; GHG = greenhouse gas

Mitigation: The composition of GHG emissions in LAC is different from the rest of the world

LAC has the cleanest electricity generation matrix in the world (Caribbean is an exception).

Source of Electricity Generation, 2021[1]

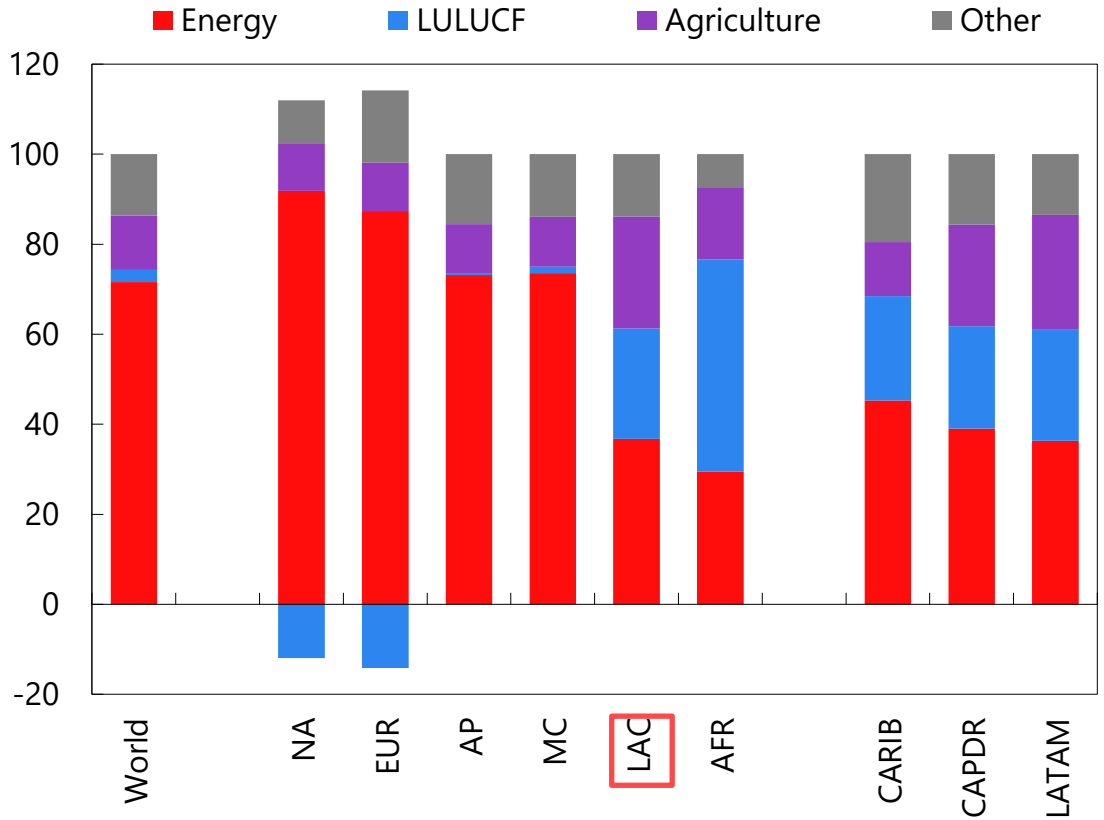
(Percent of total)



Energy sector contributes a smaller share of emissions in LAC than elsewhere; but the share of emissions in agriculture, and land use is higher.

Greenhouse Gas Emissions by Sector, 2020

(Percent of total)



Sources: IEA, OECD, World Resources Institute - CAIT Climate Data Explorer and IMF staff calculations.

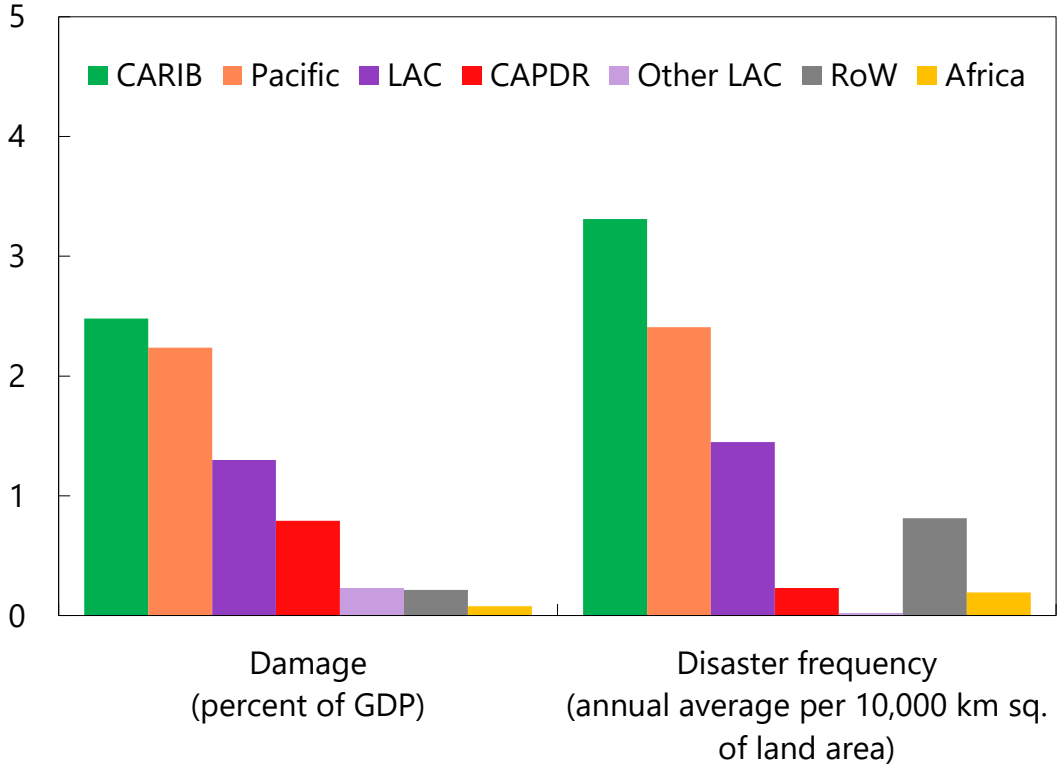
[1] "Renewable + nuclear" includes wind, solar, hydro, nuclear and heat energy. "Other" includes coal, natural gas, and oil products.

Note: AFR = Africa; AP = Asia Pacific; CAPDR = Central America, Panama, and the Dominican Republic; CARIB = Caribbean; EUR = Europe; LAC = Latin America and the Caribbean; LATAM = Latin America; LULUCF = land use, land-use change, and forestry; MC = Middle East and Central Asia; NA = North America

Adaptation: Many LAC countries are highly vulnerable to weather-related natural disasters

Caribbean countries most vulnerable to weather-related natural disasters.

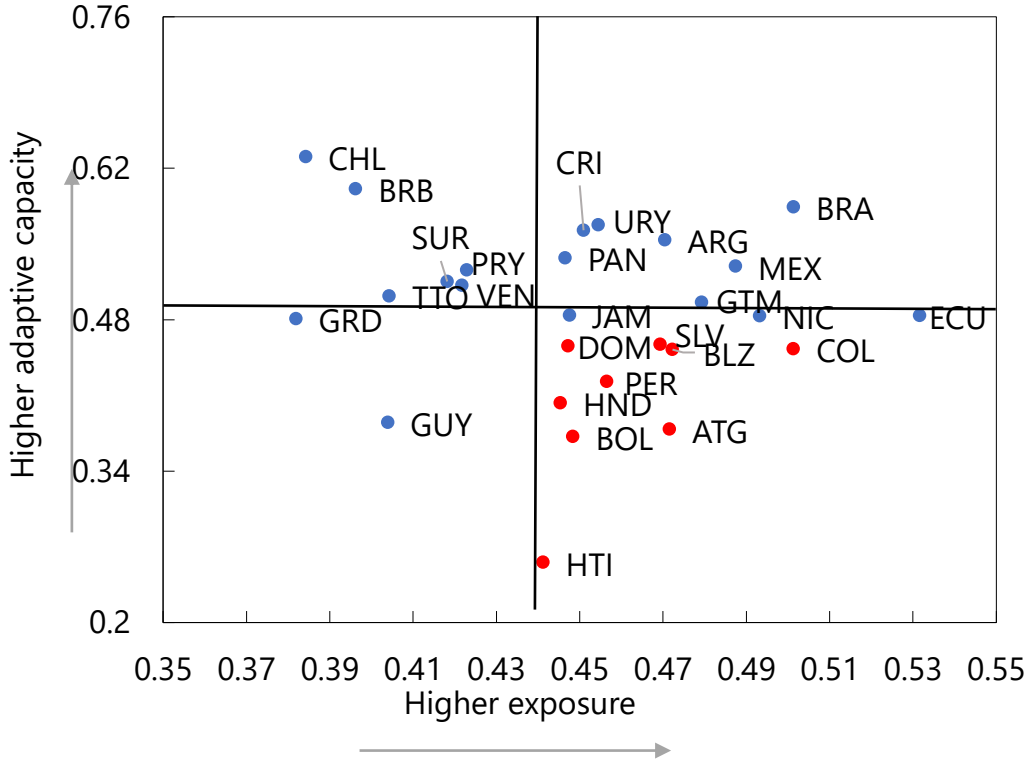
Average Annual Effects of Natural Disasters, 1980–2020



Many countries in the region have weak adaptive capacity relative to their exposure to climate-related risks.

LAC Adaptive Capacity to their Climate-Related Risks, 2021

(Index)

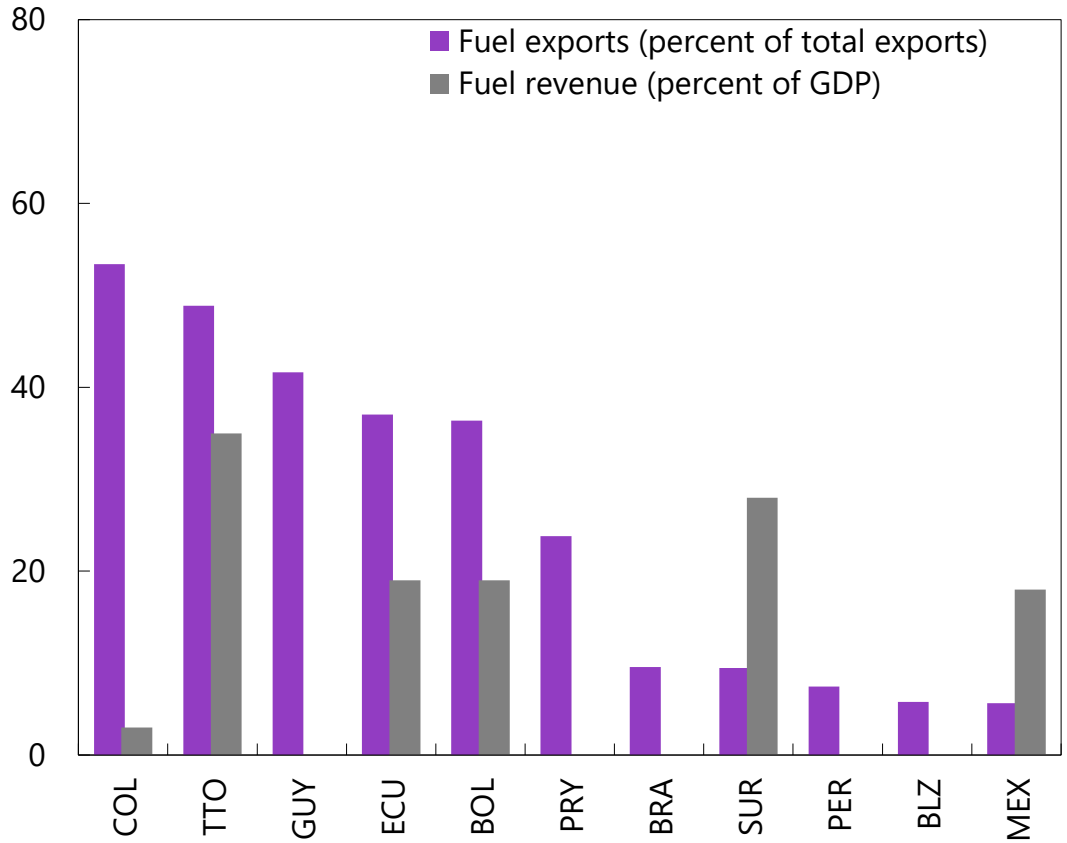


Sources: EM-DAT, IMF-Adapted ND-GAIN; World Economic Outlook; and IMF staff calculations.
Note: Three subgroups are identified as weather-related natural disasters: climatological (incl. drought, wildfire), hydrological (incl. flood, landslide), and meteorological (storm, extreme temperature). Groups of WHD, Pacific and rest of the world are exclusive.

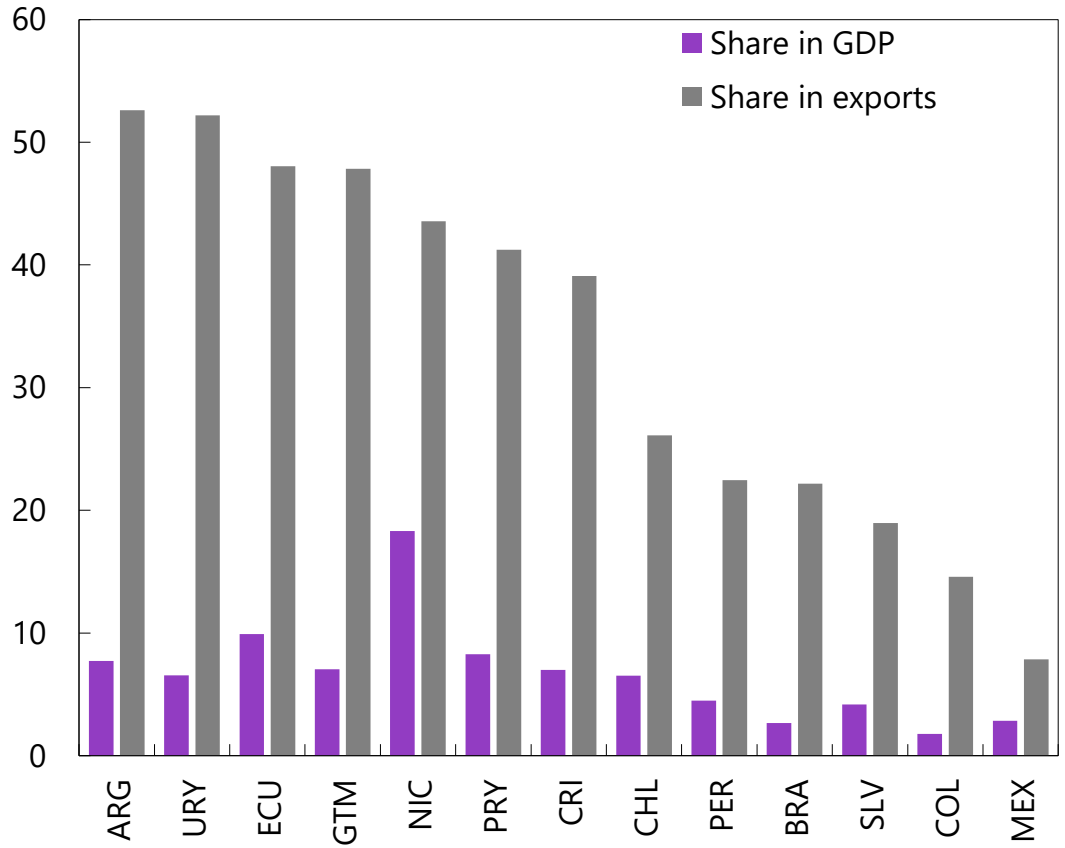
Transition: some countries in LAC are vulnerable to global energy transition

Commodity exporters are facing transition risks.

Dependence on Fossil Fuels, 2015-2019
(Percent of GDP and exports)



Dependence on Agricultural Exports, 2019
(Percent of GDP and exports)



Sources: Carbon Tracker; Haver Analytics; national authorities; UN Comtrade; WDI; and IMF staff calculations.
Note: GUY All 2020 data. Fuel exports cover exports of mineral fuels, lubricants, and related materials (Standard International Trade Classification Rev. 3, Section 3). Fuel production is proxied by mining and quarry if petroleum and/or natural gas extraction and/or refinement is not available. Fuel revenue estimates are not available for some countries. Fuel revenue data for some countries were not available.

II. Macroeconomic Implications of Climate Mitigation Policies

LAC governments have been making efforts to reduce emissions, but policy gaps are still wide

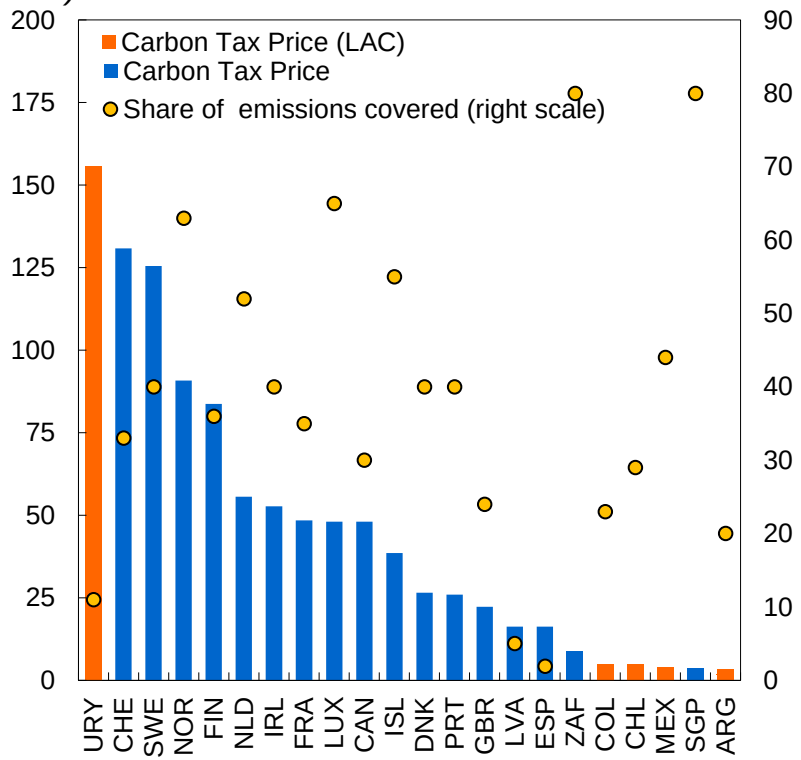
- All LAC countries submitted and ratified their NDCs (2016 Paris Accord); 14 countries set Net Zero Emissions targets by 2050
- Many LAC countries have adopted climate strategies, but few are comprehensive
- Large global ambitions and policy implementation gaps (targets not enough to contain global warming to 1.5 or 2°C).

Carbon taxes are used sparsely and some countries in LAC still have large explicit fuel subsidies

So far, carbon taxes are used sparsely across the region and mainly at lower rates; there is a potential to scale up.

Carbon Tax Rate and Share of Emissions Covered, March 2023

(USD per ton of CO2-eq; percent of total emissions -RHS scale-)

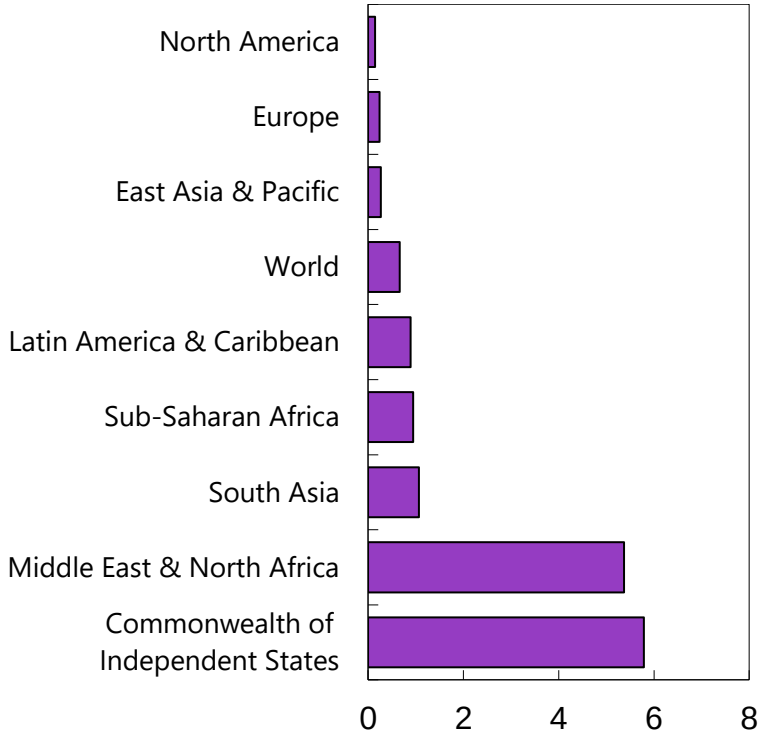


Sources: World Bank, Carbon Pricing Dashboard (March 2023), and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. LAC = Latin America and the Caribbean, it represents the simple average of URY, COL, CHL, MEX and ARG.

LAC exceeds the world average on explicit fossil fuel subsidies…

Explicit Fuel Subsidies 2019

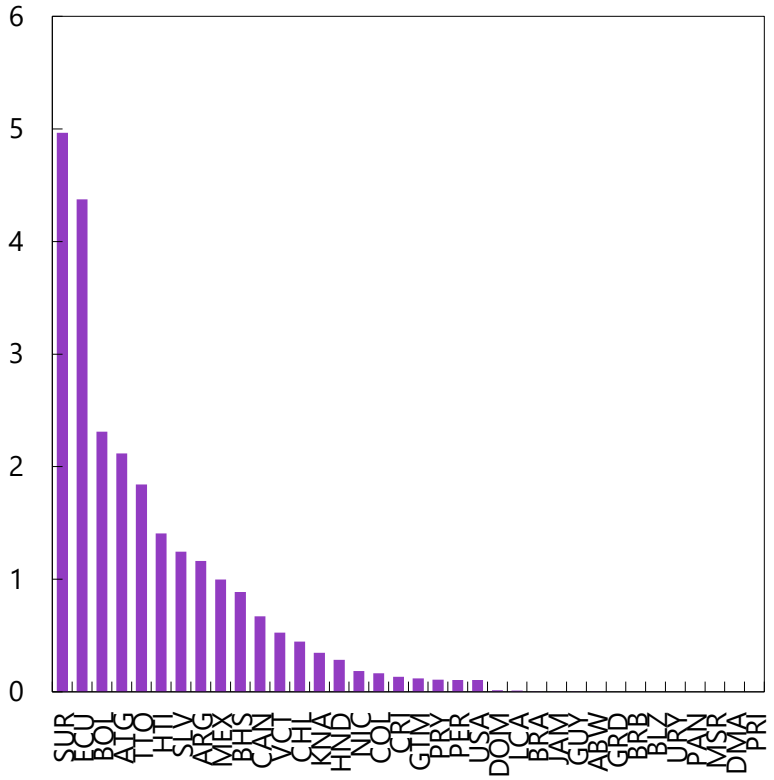
(Percent of GDP - comparison among region across the world)



…though there is substantial heterogeneity among LAC countries

Total Fuel Explicit Subsidies, 2019

(Percent of GDP)



Sources: World Bank; Carbon Pricing Dashboard (April 2022); and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. LAC = Latin America and the Caribbean; LPG = liquefied petroleum gas; WHD = Western Hemisphere.
1 Other local factors comprise road congestion, damage, and accidents. Fossil fuel subsidies include the following products: gasoline, diesel, kerosine, LPG, natural gas, coal, electricity

LAC policymakers have a variety of tools at their disposal for climate mitigation

While price-based tools can help achieve higher efficiency of mitigation policy, other measures may be needed to reach the emissions targets.

Price-Based Mitigation Policies

- Removal of fuel subsidies
- Carbon tax
- Feebates, Emissions trading systems
- Differentiated electricity tariffs
- Other taxes and subsidies

Non-Price-Based Mitigation Policies

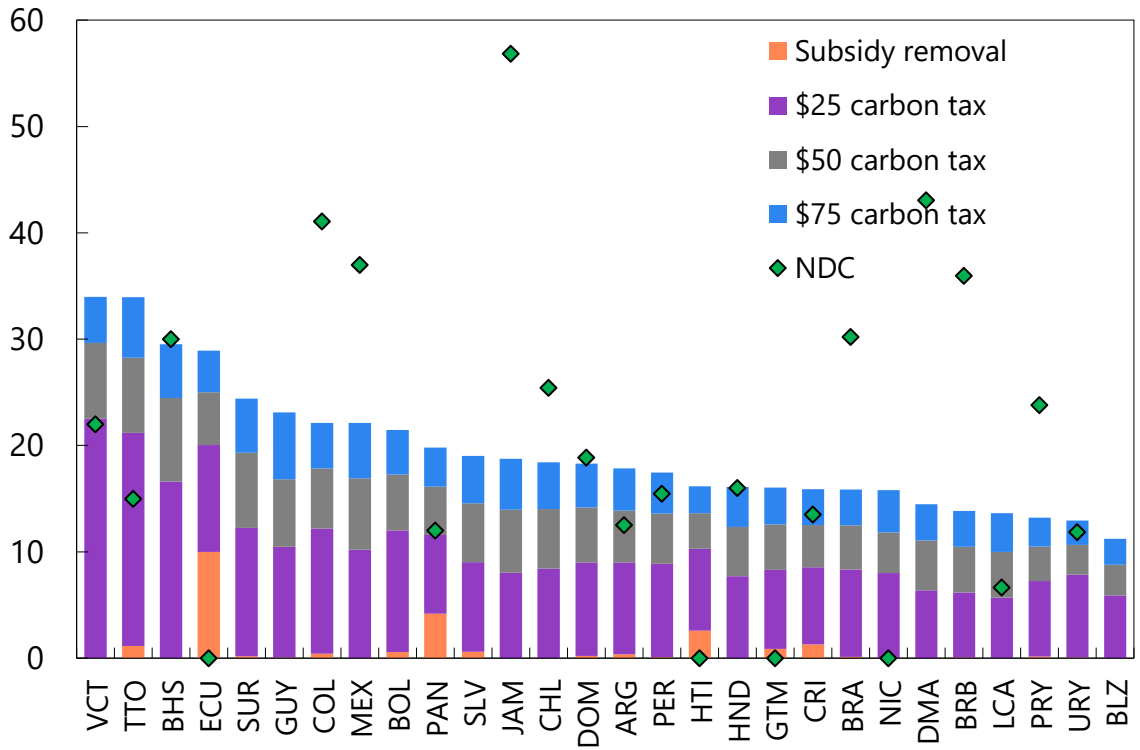
- Public investment in low-carbon technologies and infrastructure
- Direct public spending on R&D, policing and law enforcement, education
- Supportive regulations
  - Renewable portfolio standards
  - Emission and emission reporting standards
  - Technological standard
  - Product standards

Sources: IMF staff

Subsidy removal and a carbon tax can help achieve emissions targets but likely not sufficient…

Gradual removal of consumer-side fuel subsidies and introduction of carbon taxes can help close gaps to NDCs but will likely not be enough.

Reduction of GHG Emissions (excluding LULUCF) from Consumer-Side Subsidy Removal and Carbon Tax
(Percent of 2030 BAU)

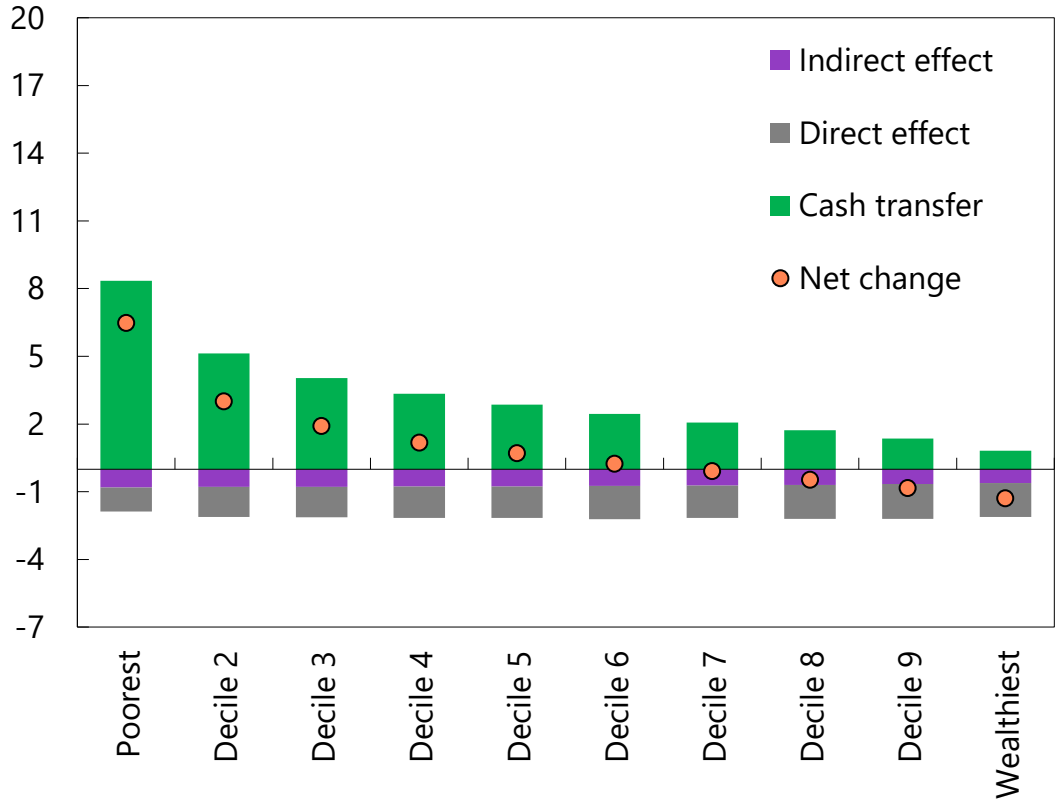


Sources: IMF, Carbon Pricing Assessment Tool; and IMF staff calculations.
Note: Data labels use International Organization for Standardization (ISO) country codes. BAU = business as usual

…while vulnerable can be compensated

Revenues generated by these policies, among other things, could be used to compensate vulnerable groups.

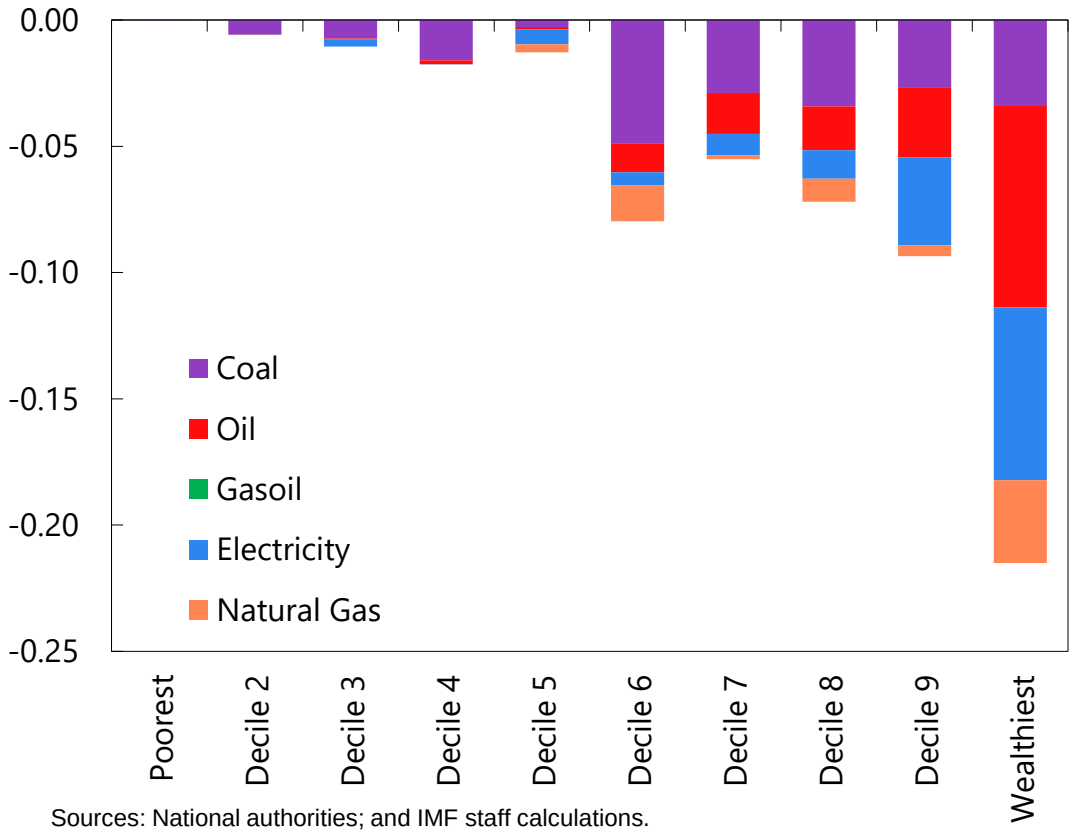
Estimated Consumption Impact from US$50 Carbon Tax and Fuel Subsidy Removal Mexico
(Percent)



Sources: IMF, Carbon Pricing Assessment Tool; and IMF staff calculations.
Note: 100 percent of revenue from a carbon tax is recycled back into the economy through cash transfers.

Double whammy for workers in carbon-intensive energy sectors: consumption and income/job losses

Estimated Gross Labor Income Loss in the Energy Sector from Carbon Tax Consumer-Side Fossil Fuel Subsidy Removal for Mexico
(Percent of total labor income of households in all sectors for each income decile)

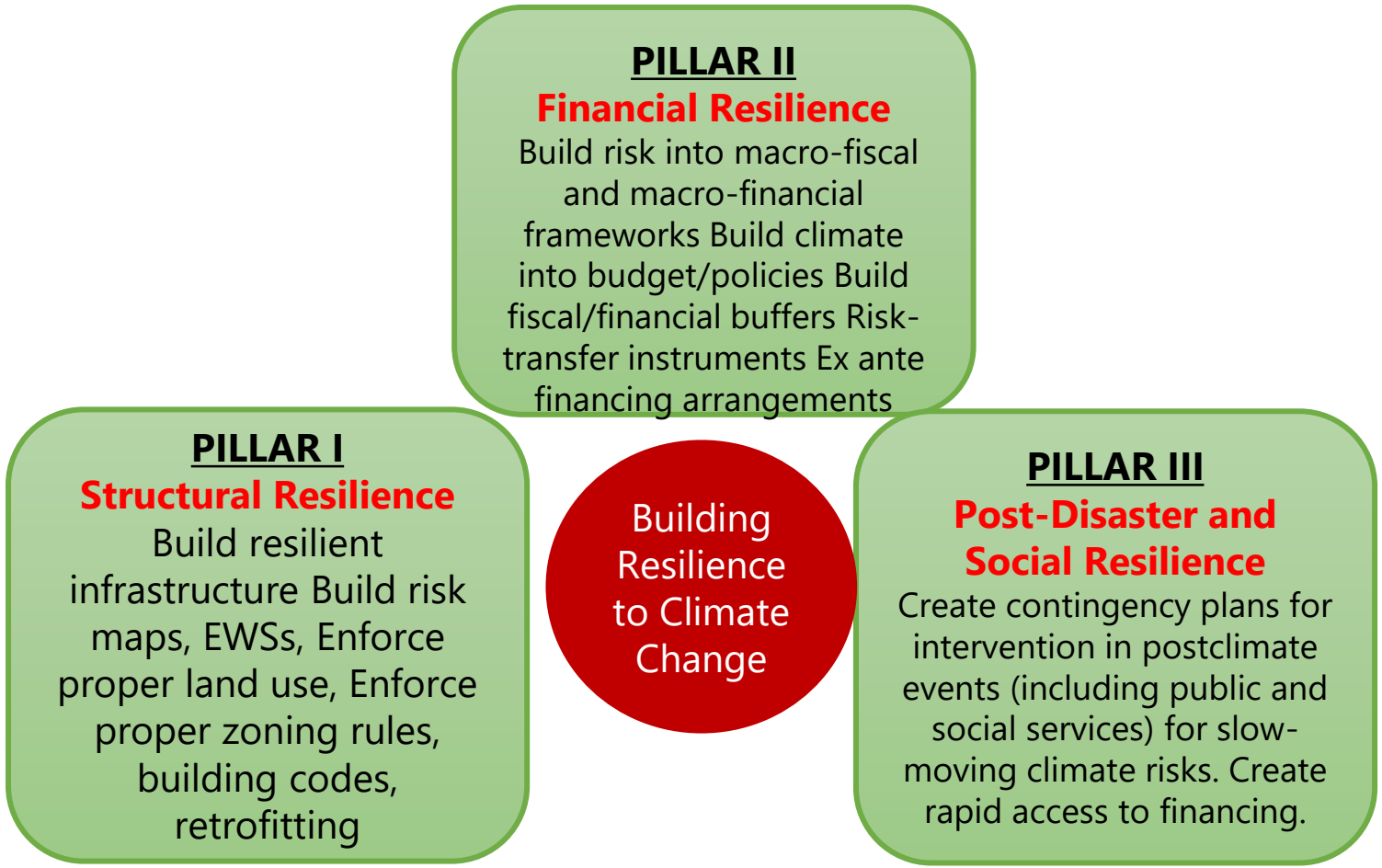


Sources: National authorities; and IMF staff calculations.

III. Growth and Fiscal Gains of Climate Adaptation Policies

A comprehensive medium-term approach is needed to help most vulnerable countries prepare for climate-related disasters

Building Resilience to Climate Risks

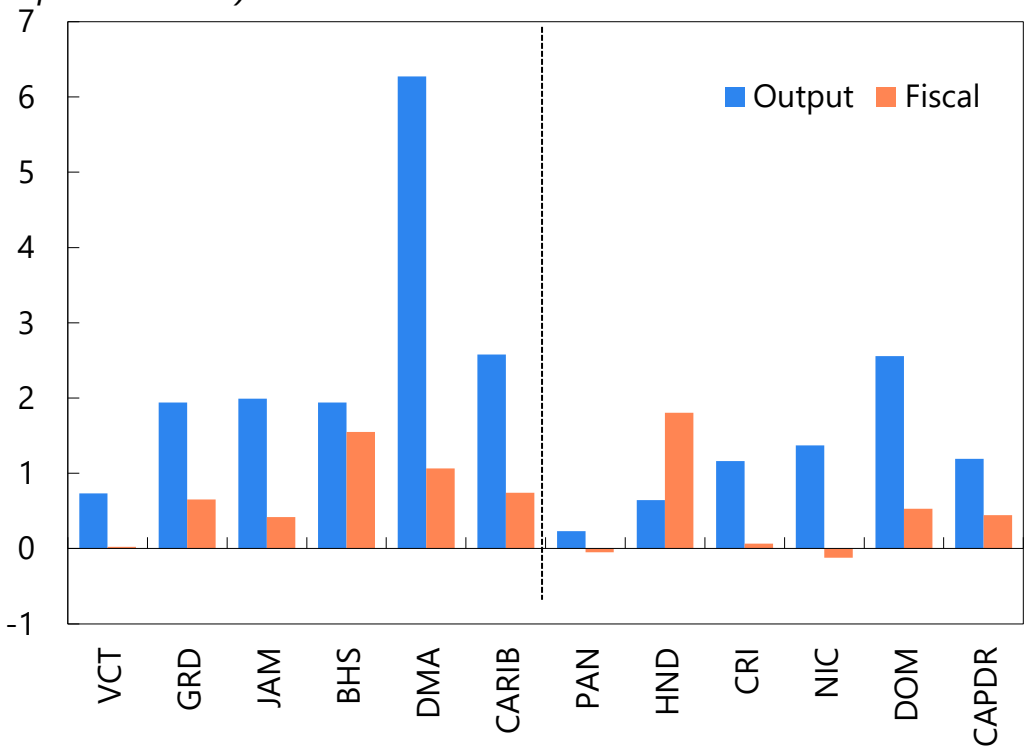


Investing in structural resilience would yield significant long-run benefits in the Caribbean and CAPDR

Investment in resilient public capital (structural resilience) would have significant growth and fiscal benefits

Output and Fiscal Gains from Resilient Investment in the Long Run

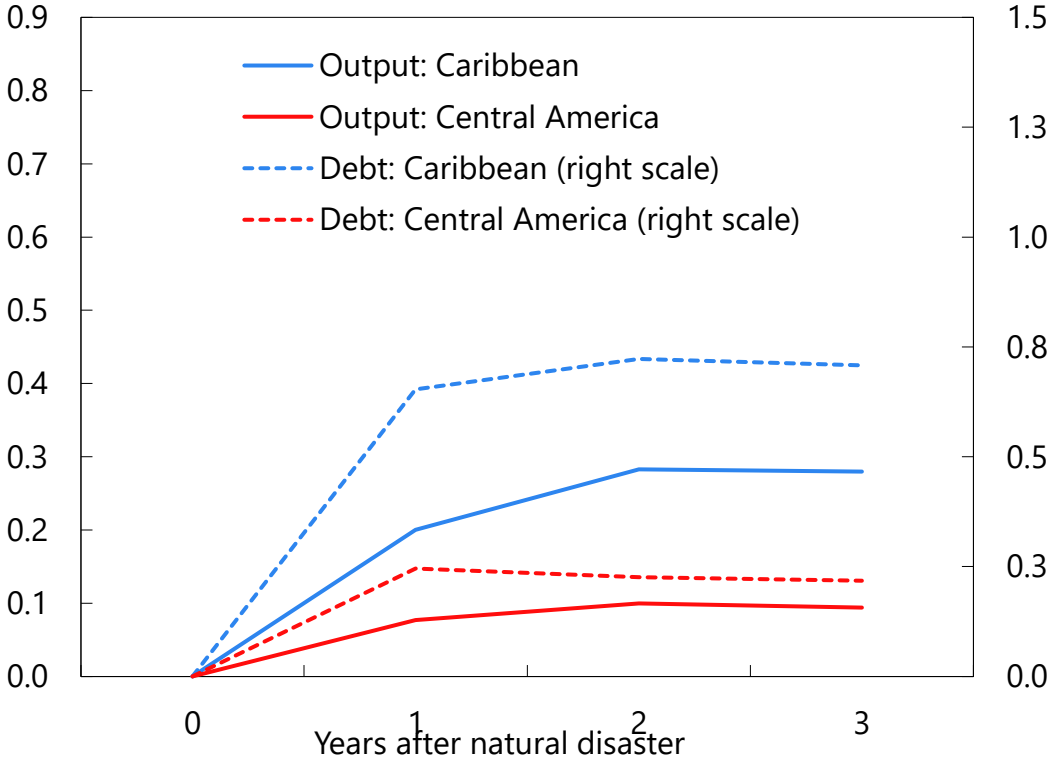
(Change relative to no resilience; Output: percent; Fiscal: percentage points of GDP)



Once resiliency is achieved, resilient capital also offers important output and fiscal gains following a natural disaster

Output and Public Debt Gains from Resilient Investment After Natural Disaster Event

Left scale: percent; right scale: percentage points)



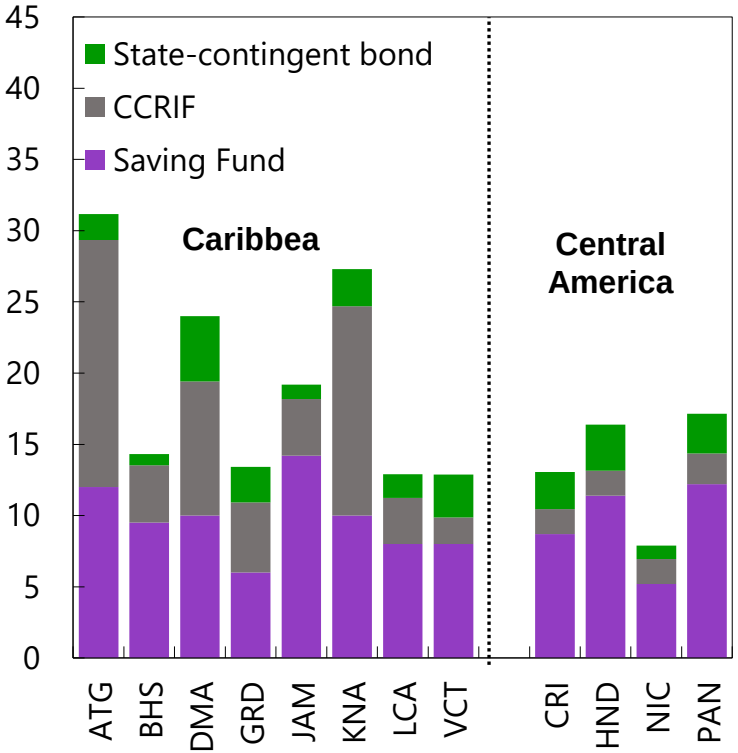
Sources: Caribbean Catastrophe Risk Insurance Facility; EM-DAT; and IMF staff calculations.
Note: Aggregates are simple averages. Data labels use International Organization for Standardization (ISO) country codes. CARIB = Caribbean (BHS, DMA, GRD, JAM, VCT); CAPDR = Central America, Panama, and the Dominican Republic (CRI, DOM, HND, NIC, PAN).

These efforts should be complemented by a comprehensive layered insurance framework

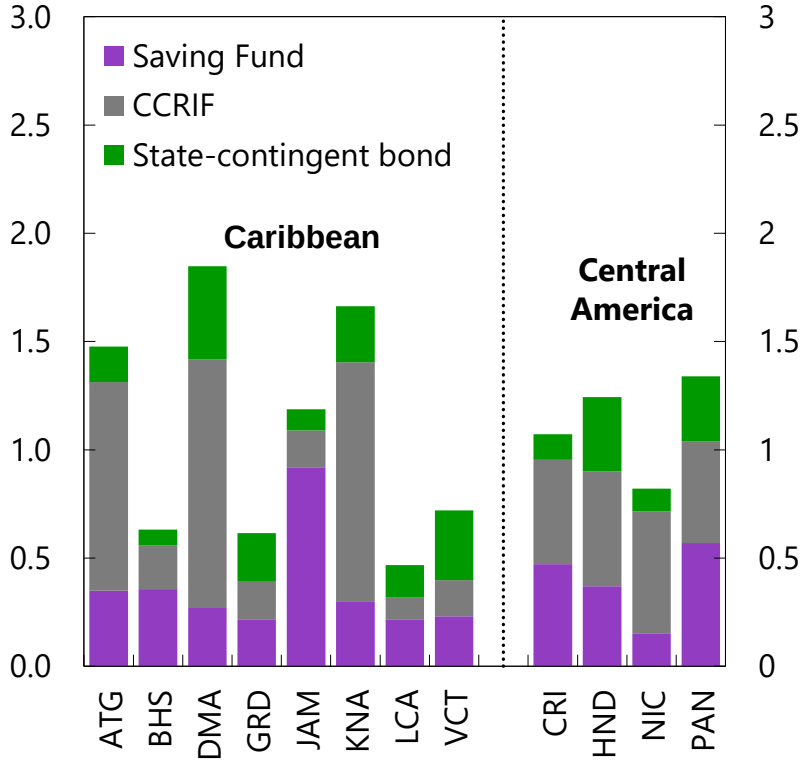
Investments in adaptation take time and may not offset physical risks entirely, therefore insurance is needed to ensure liquidity for relief and reconstruction while protecting public finances.

Private sector insurance penetration is very low and fails to align with countries' susceptibility to climate-related disaster damages.

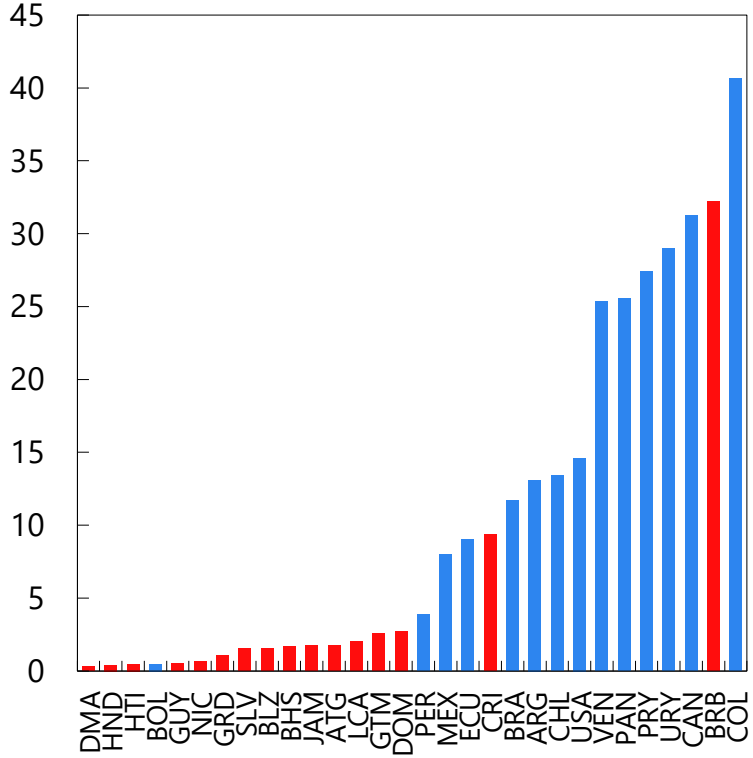
Natural Disaster Insurance Layering
(Insurance coverage; percent of GDP)



Annual Fiscal Cost of Insurance
(Percent of GDP)



Non-life Aggregate Insurance Premiums per Average Annual Climate-Related Damages[2]



Sources: EM-DAT database; World Bank, October 2019 Global Financial Development database; National authorities and IMF staff calculations.
[1]Authorities' data and disaster loss function estimates from Caribbean Catastrophe Risk Insurance Facility (CCRIF). Calibrated to achieve coverage of 99 percent of disaster loss. Includes risk of tropical cyclones and earthquakes.
[2] Non-life insurance premiums represent the latest available annual data for each country (mostly 2017-19). Average climate-related damages are for the periods 1980-2020. Data labels use International Organization for Standardization (ISO) country codes.

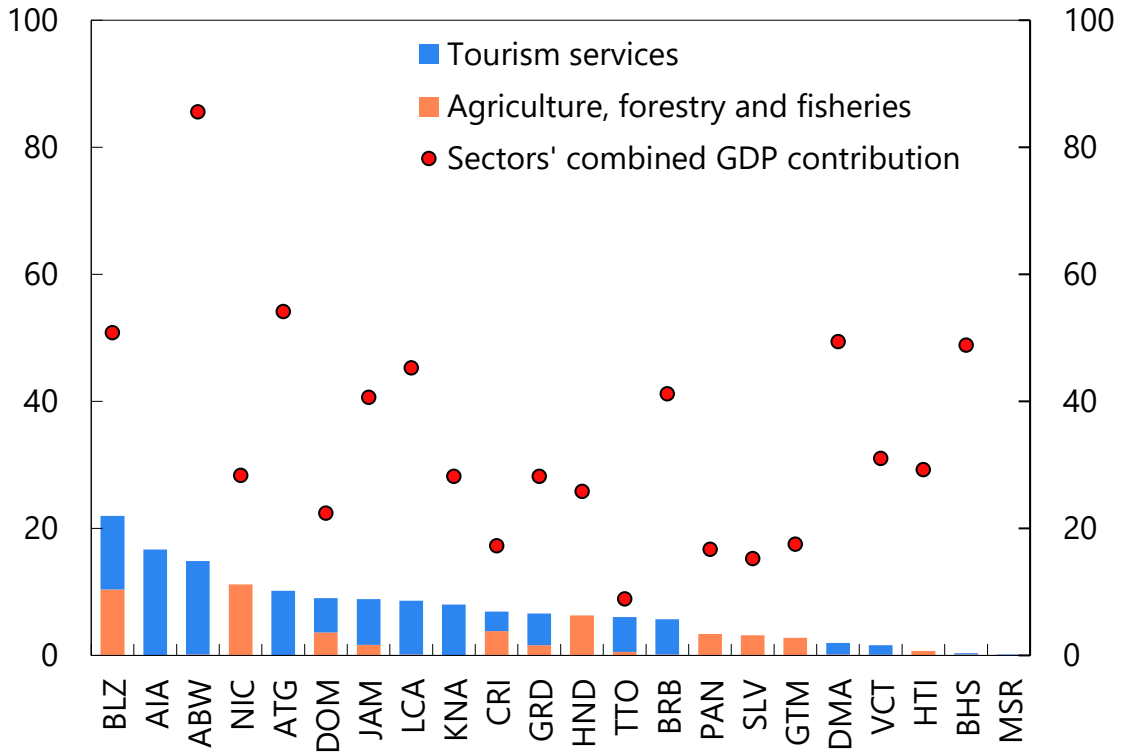
Financial resilience is important to cope with indirect disaster risk to the financial sector

The composition of bank credit has leaned away from sectors most vulnerable to physical disaster risks, such as tourism and agriculture.

However, prolonged climate disruptions to tourism flows could have large effects on credit risk.

Banking System Credit Exposures to Vulnerable Sectors

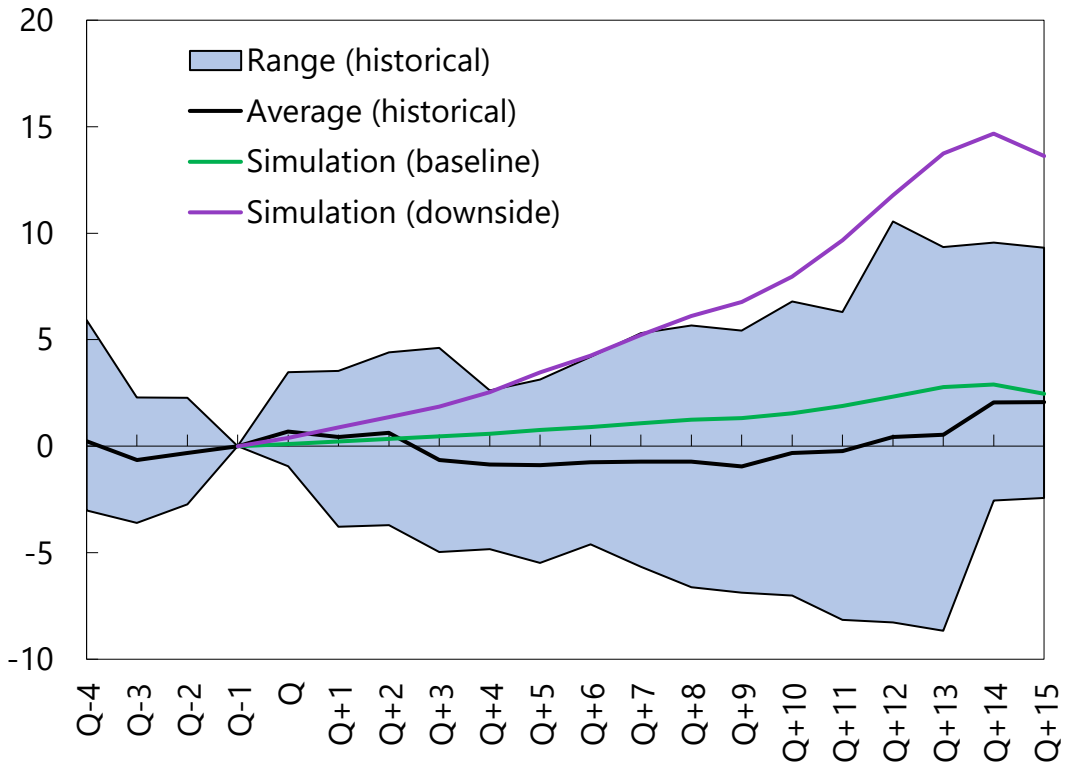
(Percent of total loans (LHS); percent of total GDP (RHS))



Sources: National authorities; World Bank; World Travel and Tourism Council; and IMF staff calculations.
Note: Anguilla and Montserrat's GDP contribution data are not available. El Salvador, Guatemala, Haiti, Honduras, Nicaragua, and Panama's tourism credit exposure data are not available. Information by country regarding exposure range from Dec. 2019 to May 2021. GDP exposures are based on data as of 2018 and 2019. Data labels use International Organization for Standardization (ISO) country codes.

Eastern Caribbean Currency Union: Historical and Simulated Non-performing Loans after Hurricane Events

(Percentage of total loans; predisaster quarter Q-1 = 0)



Sources: Eastern Caribbean Central Bank, Emergency Events Database; National Oceanic and Atmospheric Administration; and IMF staff calculations.
Note: Historical average and range drawn from 16 major storm events from 2000 to 2019. Baseline simulation draws from the historical average stayover arrival shock of 20 percent cumulatively in the first year after the largest hurricane events from 1989 to 2019. The downside simulation assumes cumulative 80 and 40 percent stayover arrivals shocks in the first and second post disaster years, respectively.

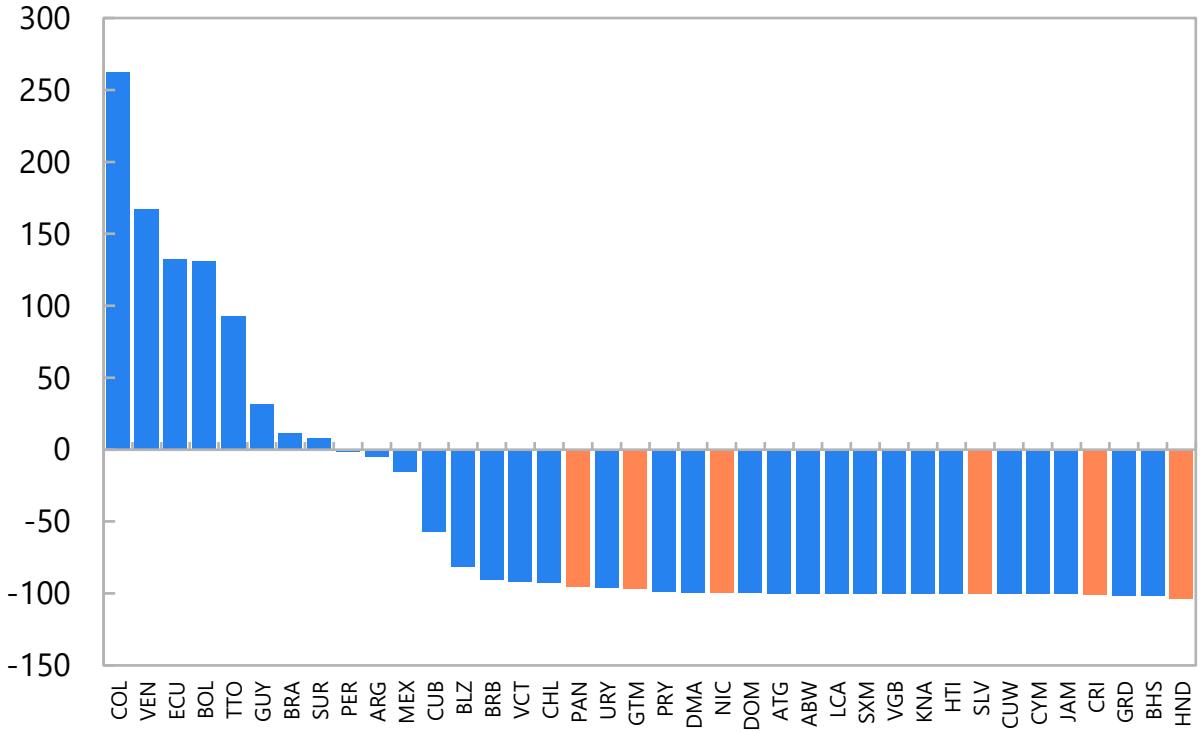
IV. Green Transition Opportunities and Risks

Exporters and importers of fossil fuels have different transitional risk profiles

Fossil fuel exporters are most exposed to transition risks, but many LAC countries rely on energy imports.

Net Exports of Fossil Fuels[1]

(Net exports/Total Energy Supply Ratio, Average 2017-21)

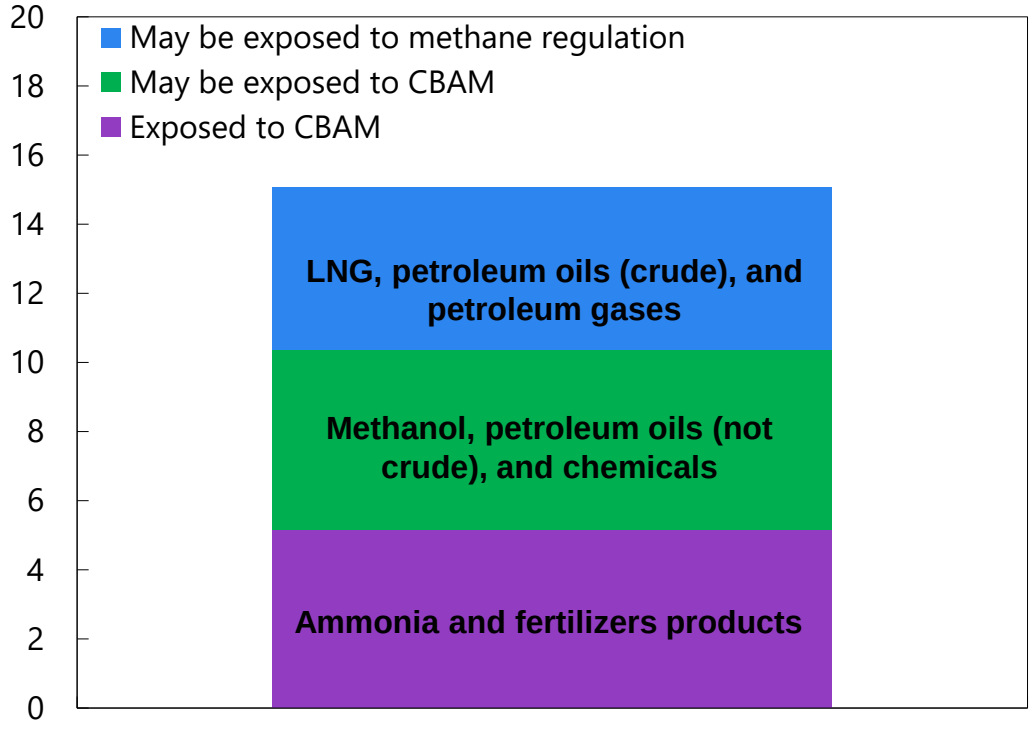


Sources: Tovar, Nagle, and Gutiérrez (Forthcoming).
Note: Countries highlighted in orange belong to the Caribbean.
[/] Exports, imports and total energy supply are expressed in terajoules (TJ). Net exports estimates account for international marine and aviation bunkers.

Exports with high emissions content will face new barriers at foreign markets

Trinidad and Tobago: Exports at Risk to the EU Trade-related Emissions Regulation

(In Percent of Total Exports)

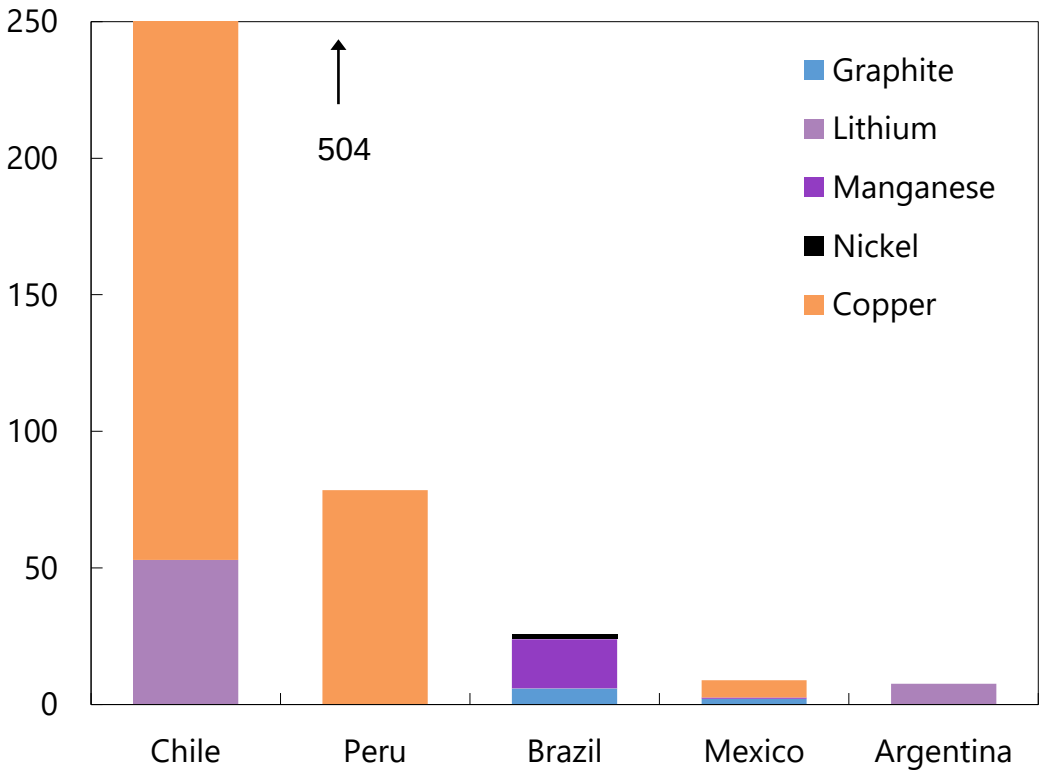


Sources: Sources: UN Comtrade, European Commission, IMF World Economic Outlook, and IMF staff calculations

Energy transition may benefit some LAC countries and may bring jobs to the electricity sector

Some countries can leverage abundant critical metals resources needed for the global low-carbon transition.

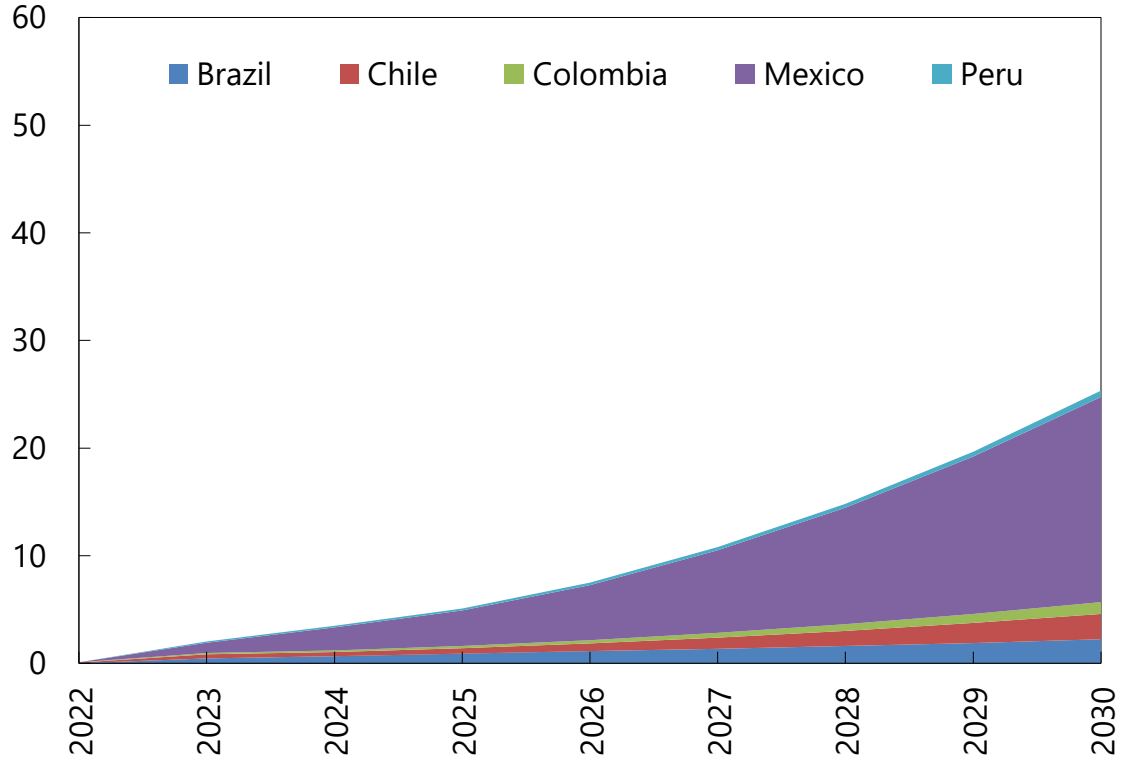
Reserves of Selected Critical Metals
(Percent of GDP)



Sources: UN Comtrade; USGS 2023; and IMF staff calculations.
Note: Metal reserves to GDP ratios are calculated using metal prices inferred from country-level export data. Mineral reserves indicate a portion of mineral resources that can be utilized in economic activities presently.

By the end of the decade, around 25 thousand jobs are expected to be created in the electricity sector as a result of greener electricity generation.

Climate Policy Assessment Tool and LA-5 Net Cumulative Jobs in the Electricity Sector
(in thousands of persons per year)



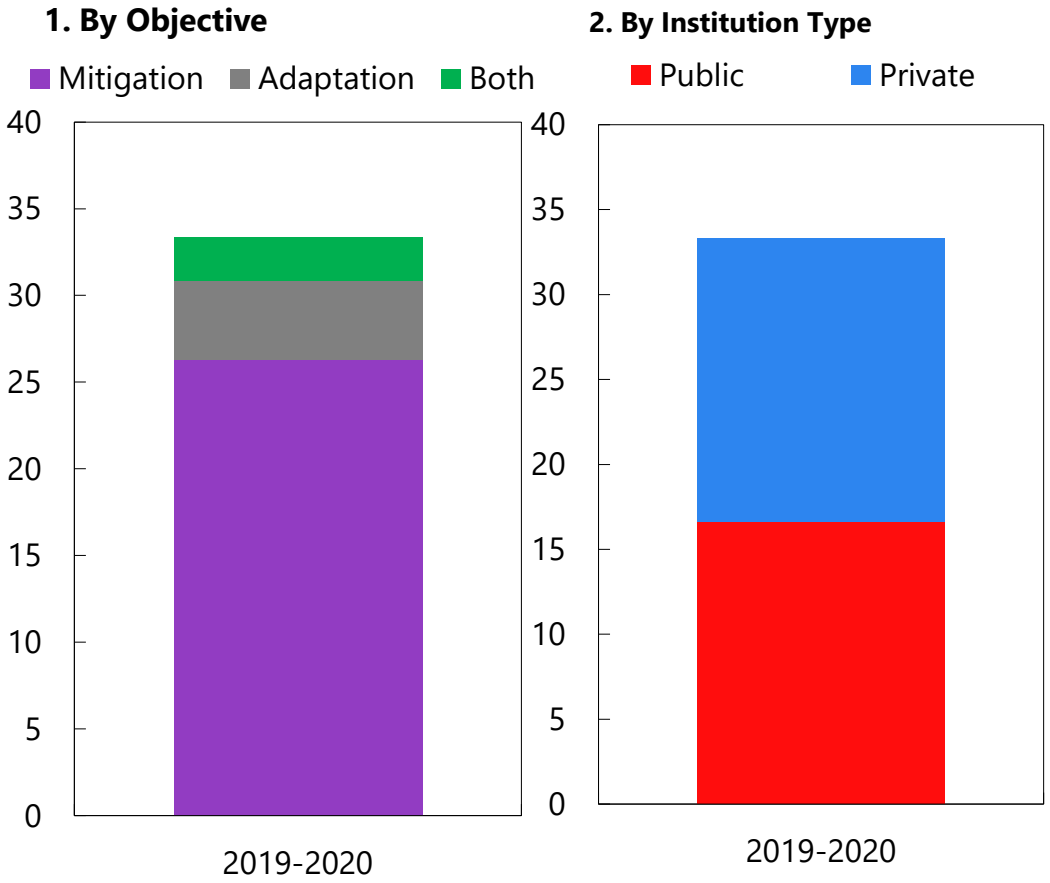
Sources: Climate Policy Assessment Tool; Green Energy and Jobs Tool; and IMF staff calculations.
Note: LA-5 = Latin America five (Brazil, Mexico, Colombia, Chile, and Peru)

V. Climate Financing Gaps

Mobilizing climate finance will require coordinated efforts.

Finance for adaptation is low compared to mitigation

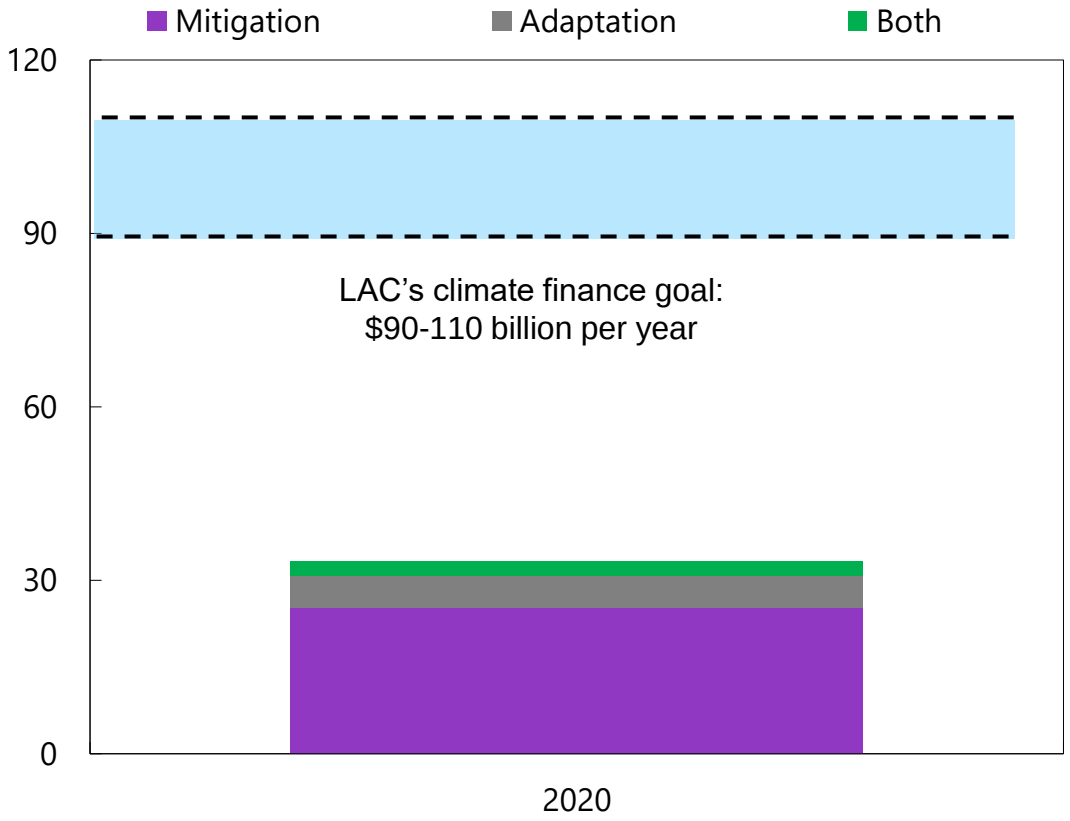
Latin America and the Caribbean: Climate Finance
(Billions of US dollars)



Source: Climate Policy Initiative and IMF staff calculations.
Note: SOE = state-owned enterprises.

Large gap between climate financing goals and financing mobilized.

LAC: Actual Climate Financing vs. Goals
(Billions of US dollars, annual)



Source: Climate Policy Initiative "Global Landscape of Climate Finance 2021 report", Turner Report and IMF staff calculations.
Note: LAC = Latin America and the Caribbean..

Thank you!

Background slides

The IMF's Resilience and Sustainability Facility (RSF)

Highly concessional

- 20 year maturity
- 10 ½ year grace period
- SDR rate

Catalytic

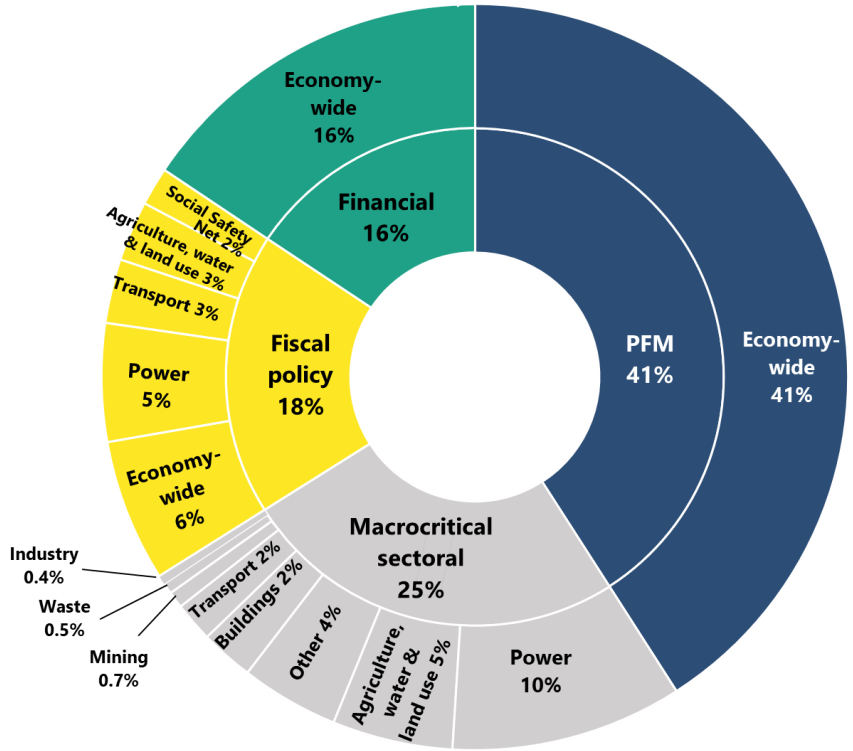
- Access: max. 150 percent of quota or SDR1 bn.
- Adaptation and mitigation plan with list of projects to attract investment

Requires UCT quality program

- Internalization of macroeconomic costs and returns
- Identification of external and fiscal financing requirements

RMs have focused on green PFM, financial sector, and fiscal policy reforms.

RMs: Coverage by Area of Expertise and Sector
(Percent of total RSF RMs)



Note: Values may not add due to rounding.