

# Globalization not localization key to COVID-19 recovery and poverty alleviation

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# Overview

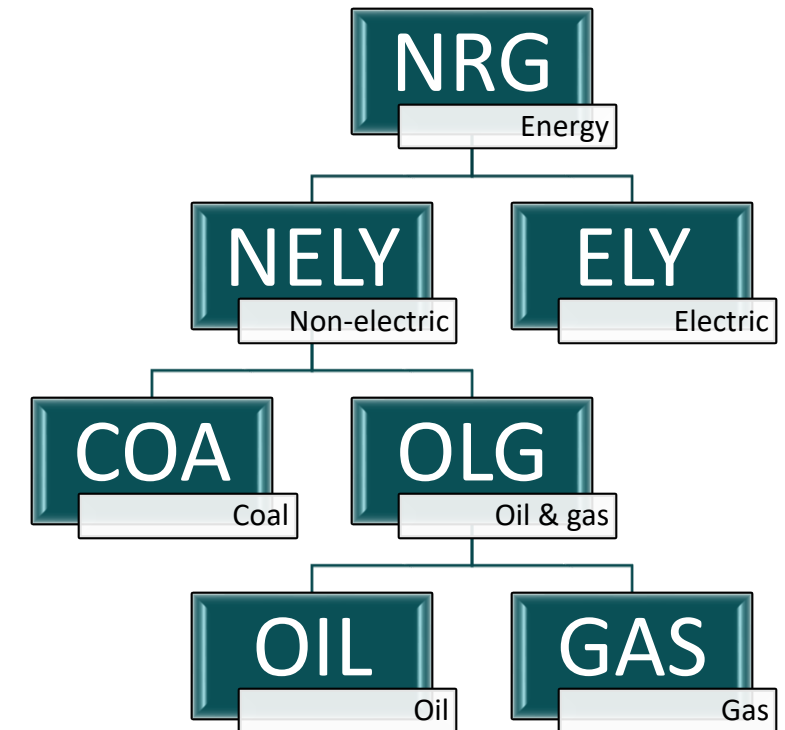
- The resilience of GVCs has been put to the test by the COVID-19 pandemic, extreme weather events, and trade tensions spurred by growing economic nationalism and protectionism. Shocks in production and trade can be transmitted from one country to another by GVCs, though GVCs can help to lessen the blow of a domestic shock such as a lockdown and can also drive economic recovery.
- What shocks to GVCs should we be anticipating in the coming years? Is it possible to design policies that can enhance resilience to trade shocks in developing countries without endangering growth?
- We use a global CGE model Envisage with microsimulations to look at potential shocks to GVCs: i) reshoring by leading economies ii) new carbon regulations to combat climate change – both changing the comparative advantages of countries.

# Methodology and Scenarios



# Global dynamic CGE model ENVISAGE

- Global recursive-dynamic CGE model
- Calibrated to GTAP-MRIO Data Base
- Pre-COVID baseline and COVID L-shaped recover scenario based on GEP from Jan 2020 and WEO Jun 2020
- Dynamics:
  - exogenous labor growth; exogenous land, energy and trade productivity
  - capital growth a function of savings; vintage capital;
  - SSP framework, complemented with the WEO forecasts.
- Coverage of emissions: CO<sub>2</sub>, Non-CO<sub>2</sub> GHGs, 9 air pollutants



# CGE Scenarios

MPO projections  
till 2022 (before  
pandemic) and  
SSP2 post 2022

**Pre-COVID-19  
Baseline**

WEO projections till 2022  
slow recovery post 2022 -  
going back to TFP rates  
from pre-COVID baseline

Leading economies  
subsidize production  
and encourage use of  
domestic inputs

**COVID-19  
L-shape  
recovery**

**Reshoring by  
Leading  
Economies**

**Developing  
countries  
response**

**Reshoring  
by All**

**GVC Friendly  
policies and TF**

**NDCs**

**EU Green  
Deal**

**Carbon Border  
Adjustment  
Mechanism**

All regions implement  
NDC with region-specific  
carbon tax

In addition to NDCs EU  
implements more ambitious  
mitigation target

EU implements stylized CBAM

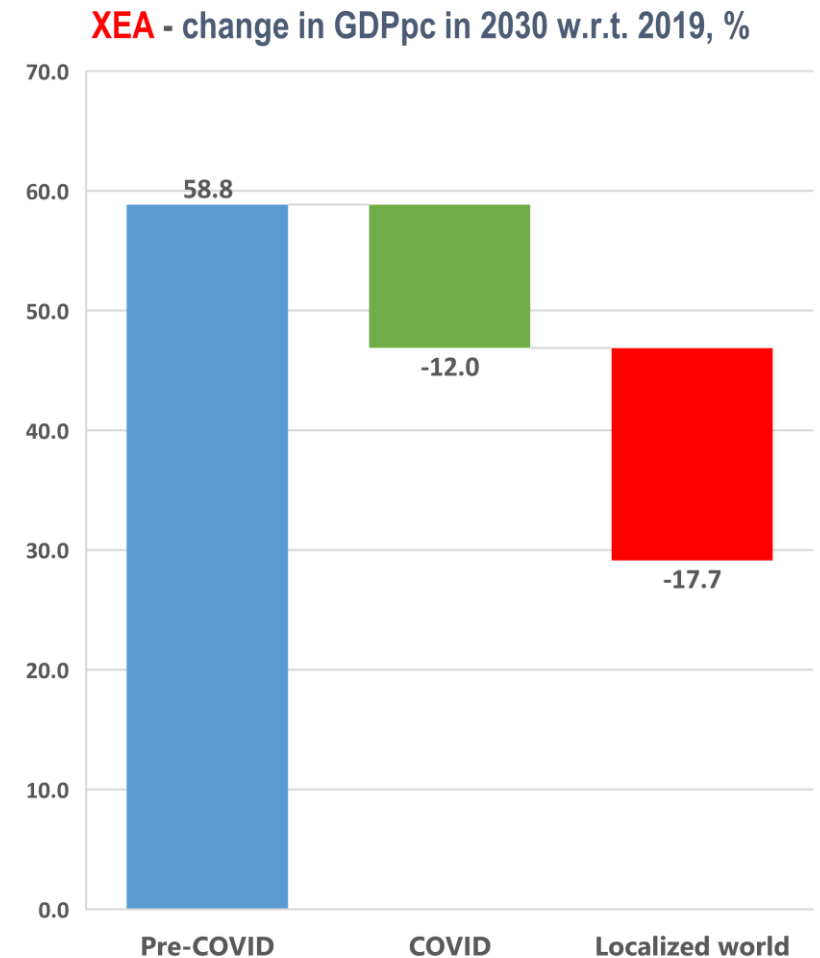
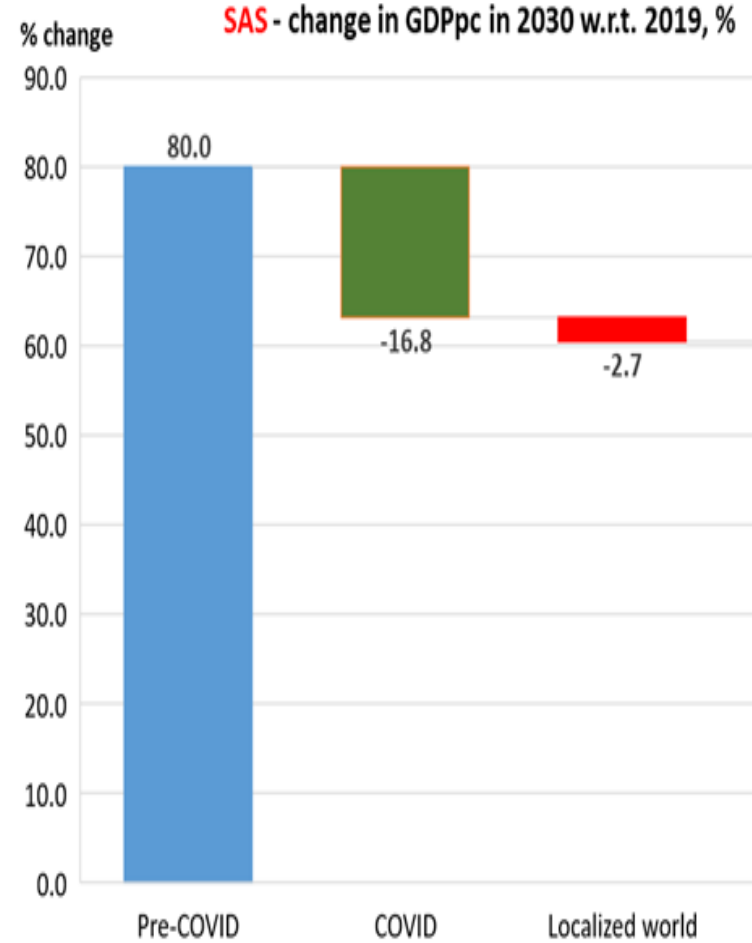
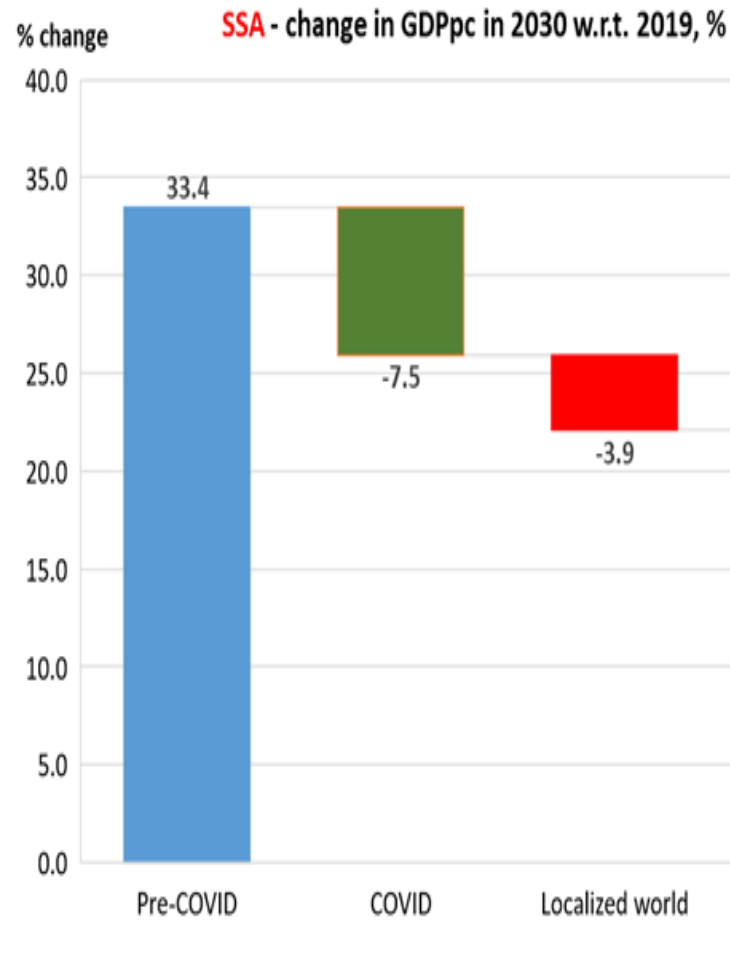
Eliminate tariffs on  
intermediate inputs,  
increase flexibility of  
production, TF measures

| Scenarios                                             |                                                                                                                                                                                       |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pre-Covid baseline                                    | Pre-COVID MPO projections from Fall 2019 (World Bank 2019), includes trade war tariffs and existing FTAs, after 2022 - SSP2                                                           |
| Covid L-shape recovery                                | WEO projections till 2022, slow recovery post 2022 – going back to the TFP growth rates from pre-COVID baseline (emissions consistent with IEA forecast, so used as the new baseline) |
|                                                       | 5 percent increase in the costs of imports                                                                                                                                            |
|                                                       | Sharp drop in international tourism (World Travel and Tourism Council)                                                                                                                |
|                                                       | Shift in household demand away from services that require close in-person interactions (U.S. retail sales data)                                                                       |
|                                                       | Food supply shock (World Bank's Commodity Markets Outlook - October 2020)                                                                                                             |
|                                                       | Shift toward communication technologies in the service sectors and away from transportation activities, particularly air transportation                                               |
|                                                       | Reduction in global oil prices (International Energy Agency – 2020)                                                                                                                   |
| Reshoring Leading Economies                           | Subsidy to local agriculture and manufacturing production (amounting to 1 percent of GDP in the corresponding region)                                                                 |
|                                                       | Barriers to imports (25 percentage point surcharge)                                                                                                                                   |
|                                                       | Harder to substitute domestic production for imports (reducing trade elasticities by 50 percent)                                                                                      |
| Reshoring all                                         | As above but all countries (similar to OECD, 2020)                                                                                                                                    |
| GVC Friendly Liberalization + Trade Facilitation (TF) | Tariff elimination on all intermediate inputs                                                                                                                                         |
|                                                       | Easier to substitute domestic for imported inputs (increasing trade substitution elasticity by 50 percent)                                                                            |
|                                                       | Reduce costs to trade by implementing trade facilitation measures (Moise and Sorescu (2013) & World Trade Report (2015))                                                              |
| Nationally Determined Contributions (NDCs)            | Emissions reduction targets under the Paris Accord (Chepeliev et al. (2021) & Böhringer et al. (2020))                                                                                |
| EU Green Deal                                         | Cut emissions by 55 percent in 2030 relative to 1990 levels (EC 2019)                                                                                                                 |
| Carbon Border Adjustment Mechanism (CBAM)             | Ad valorem equivalent tax imposed on region- and commodity-specific carbon content of imports to the EU                                                                               |

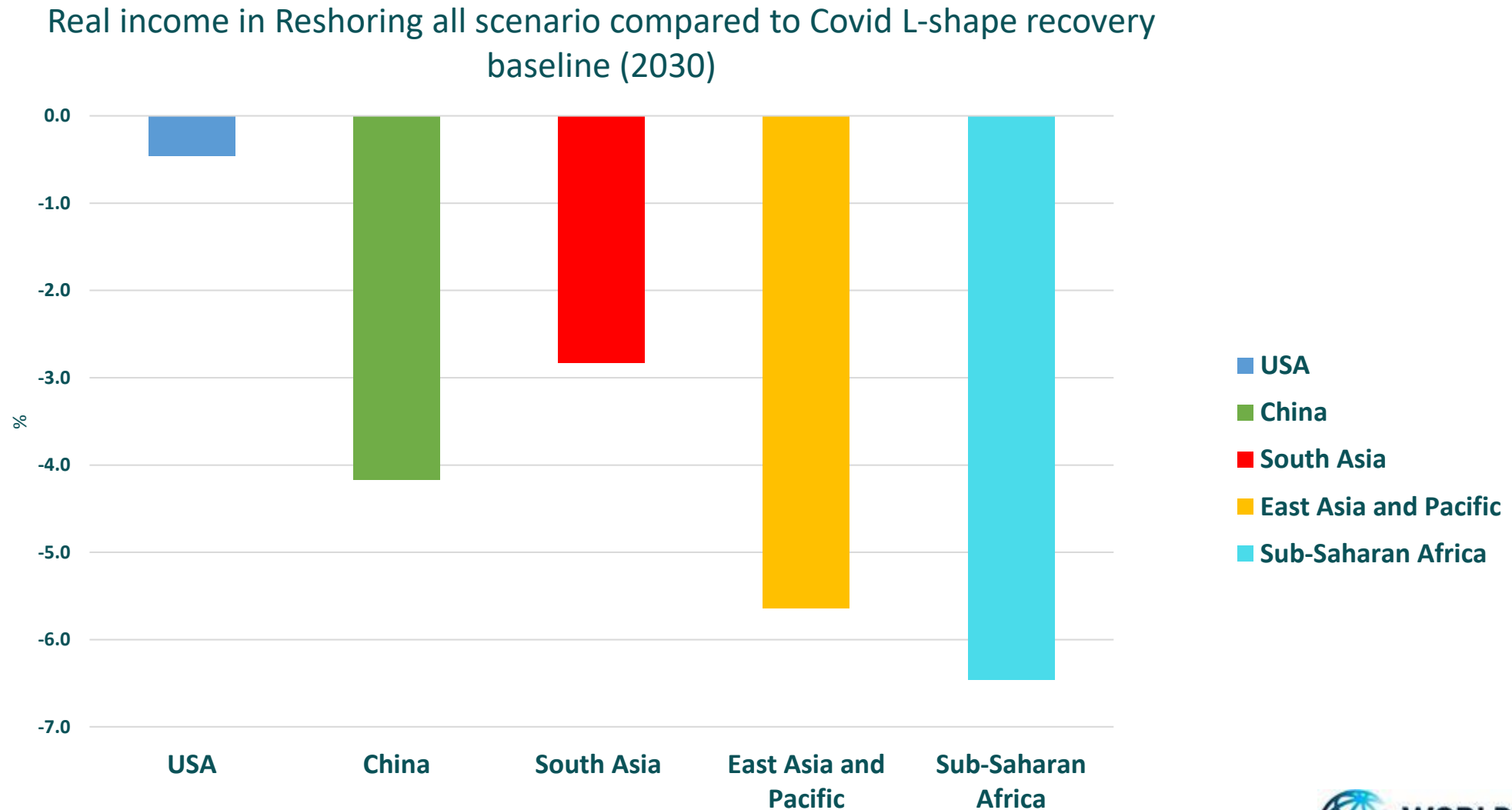
# Impacts of reshoring



# Developing countries can experience much stronger post-COVID recovery in a globalized world...

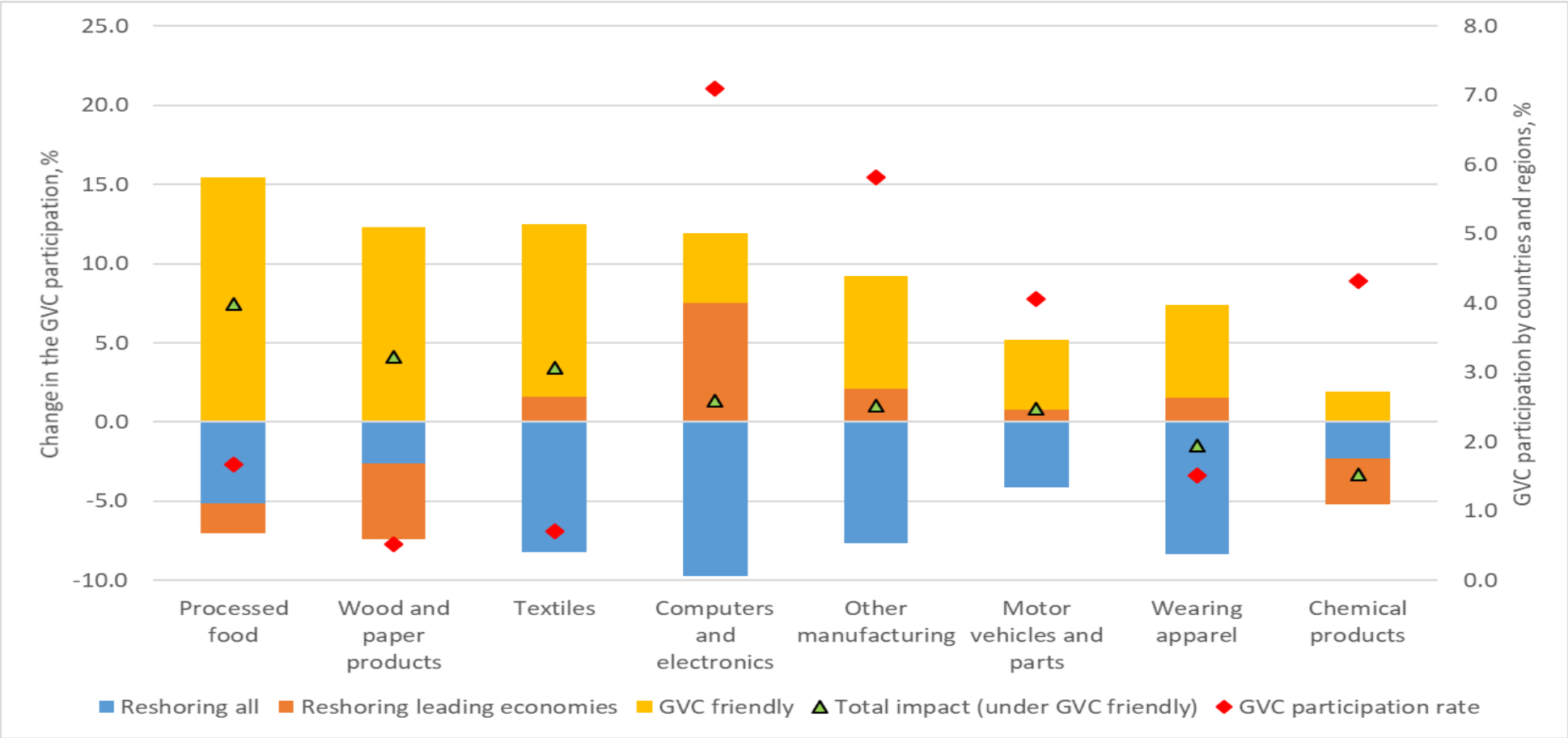


# Welfare in Africa and East Asia hit hardest by reshoring of production

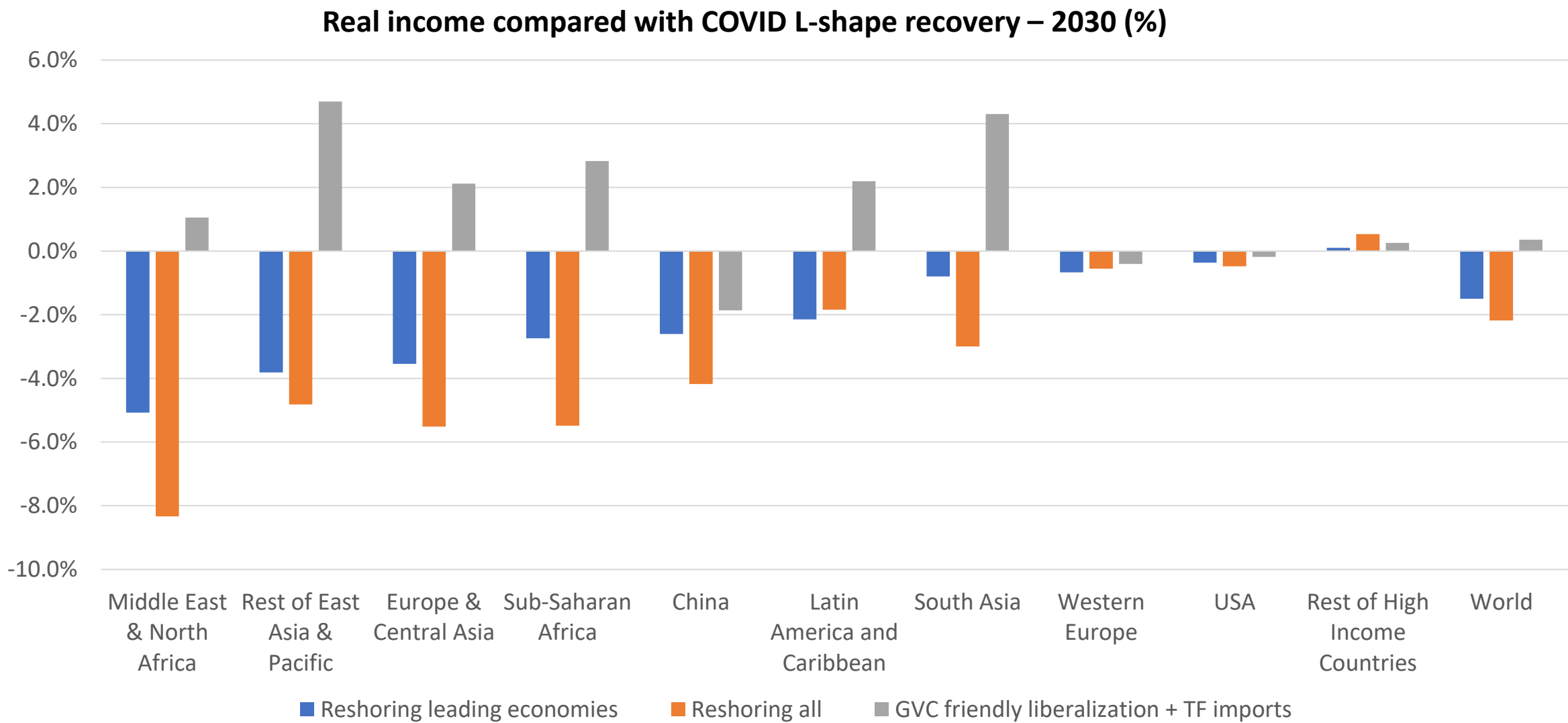


If all countries reshore their production, global average GVC participation rate for the sectors highly involved into GVCs could fall by over 6% in 2030 relative to the post-COVID baseline.

**Change in the global average GVC participation for selected sectors compared with COVID L-shape recovery in 2030 (deviations from the L-shaped Covid recovery, percent)**

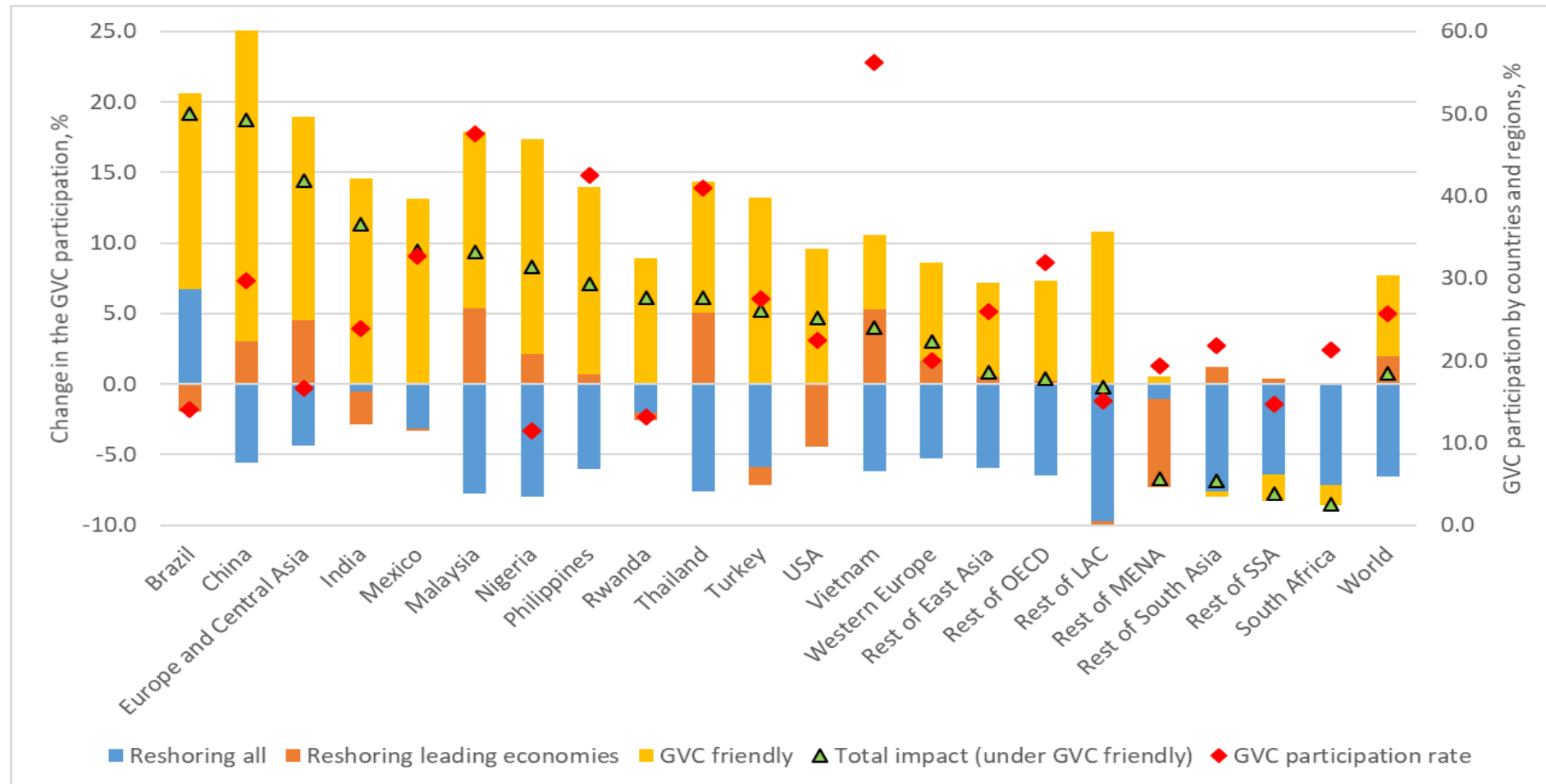


The best policy response to reshoring by leading countries is to make developing economies more GVC-friendly rather than respond in kind



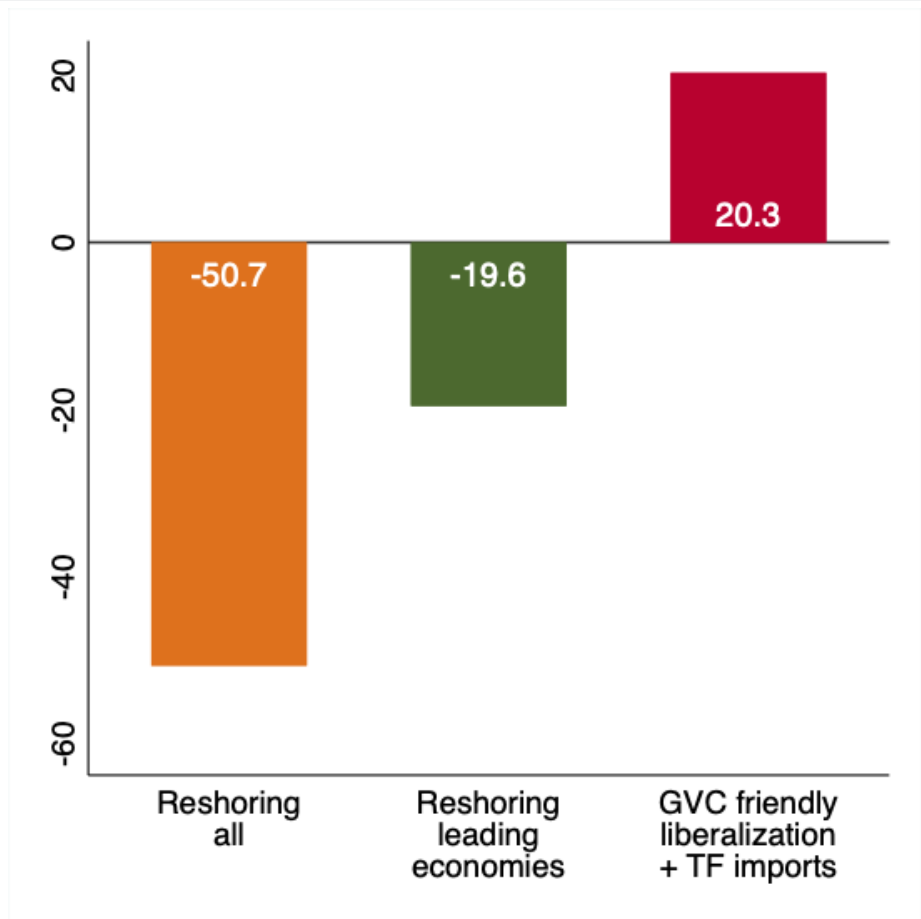
# Implementation of the GVC friendly policies by developing countries outweighs negative impacts of the re-shoring by leading economies and boosts GVC participation in the MRIO sectors

**Change in the GVC participation for the MRIO sectors by regions compared with COVID L-shape recovery in 2030  
(deviations from the L-shaped Covid baseline, percent)**



Reshoring production could increase the number of people living in extreme poverty by 51 million; a GVC-friendly liberalization could lower it by 21.5 million people

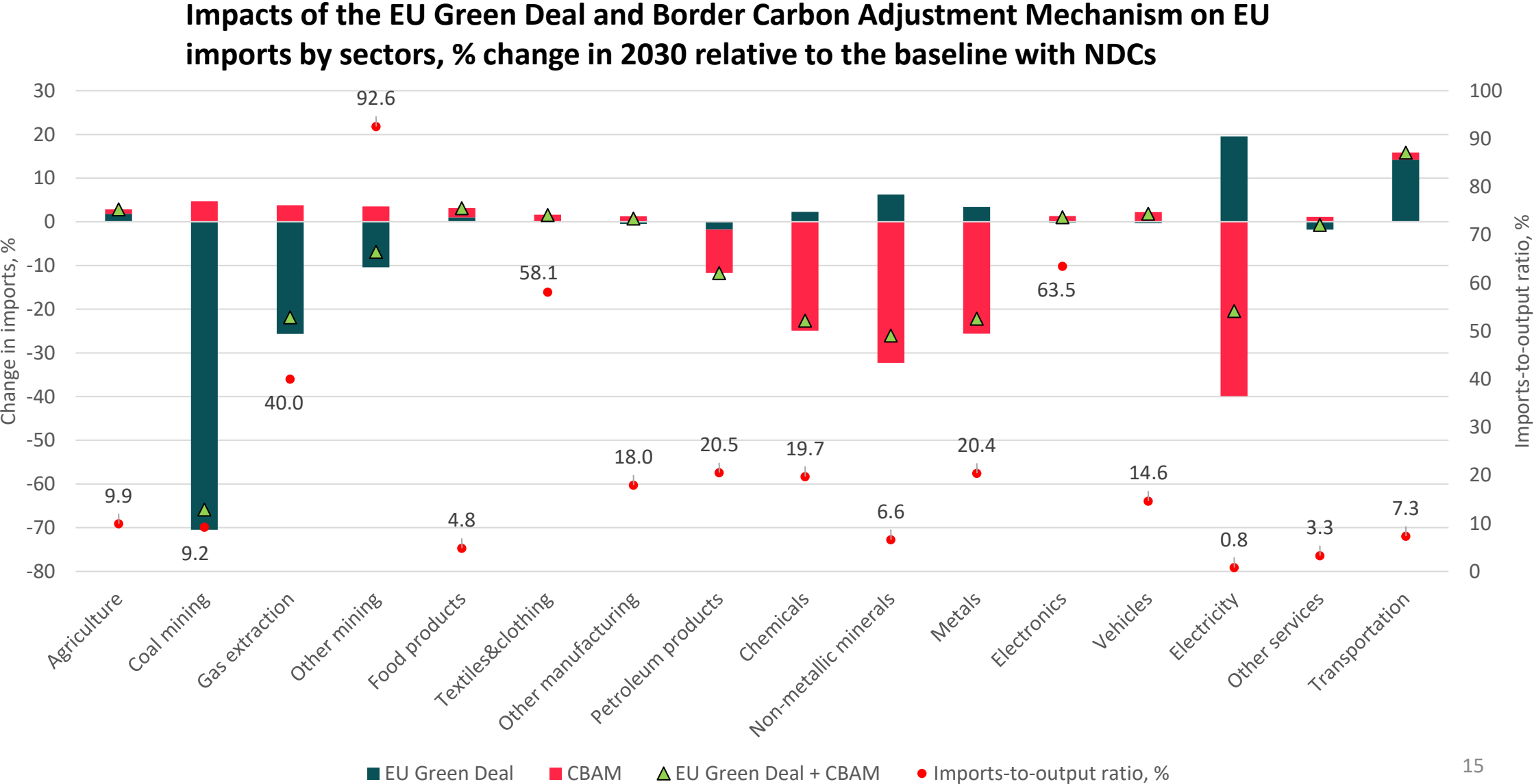
People lifted from extreme poverty, with respect to COVID L-shape recovery  
millions



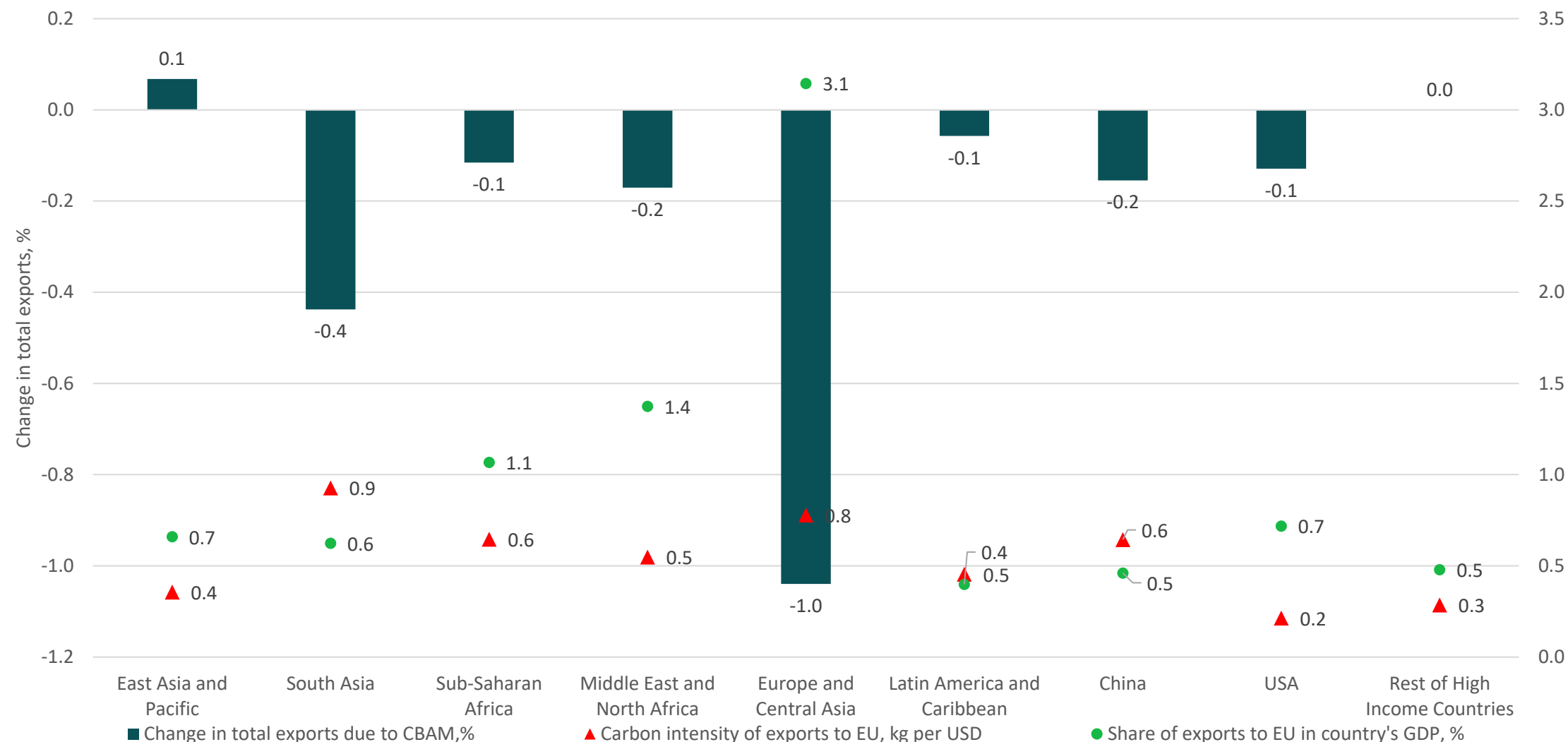
# Impacts of carbon mitigation



The EU Green Deal is likely to reduce imports of fossil fuels and petroleum products, while stylized CBAM mostly impacts ETS sectors

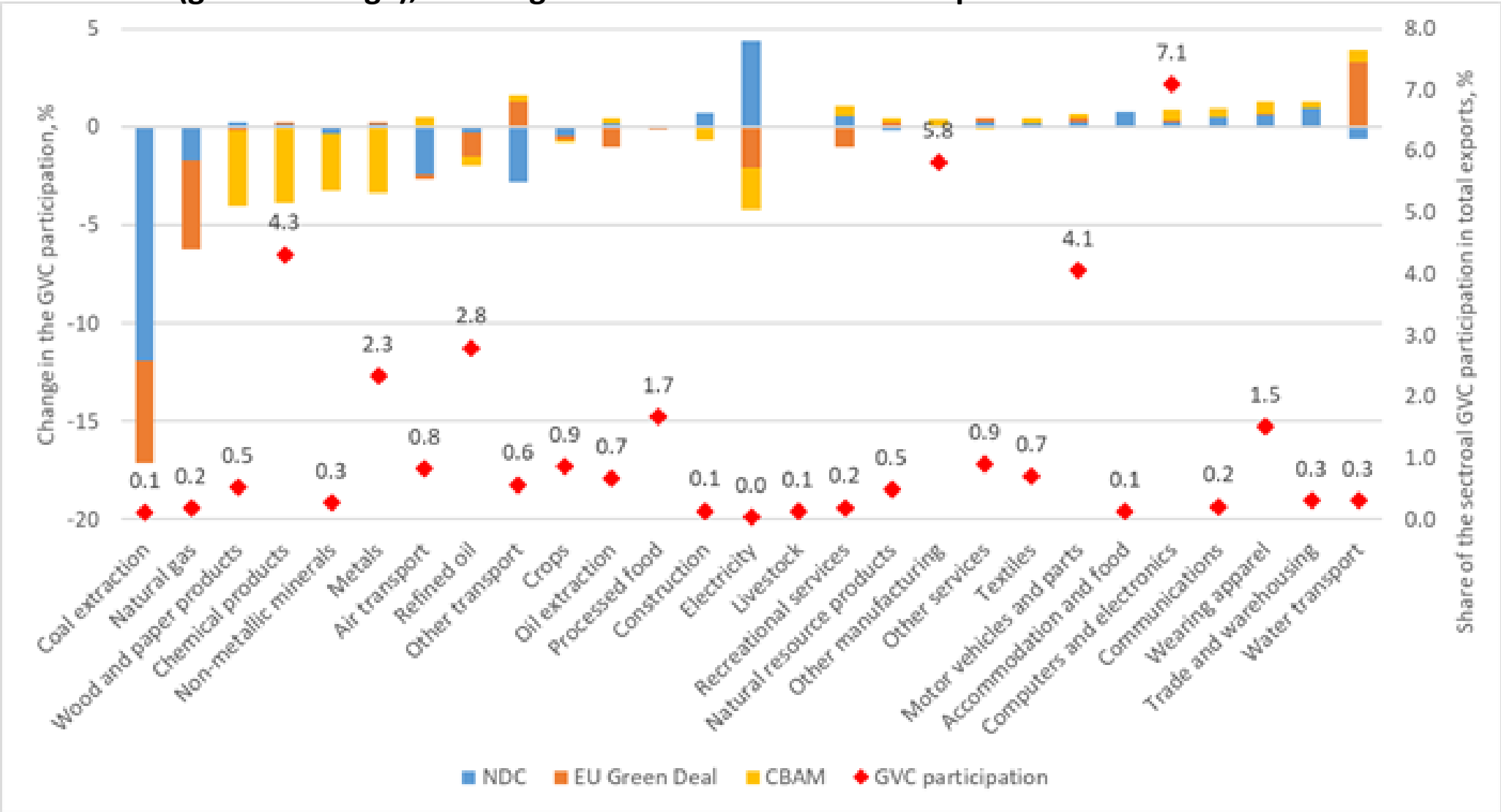


# EU Green Deal and CBAM lead to a decline of carbon intensive exports to the EU. The biggest export losses would be expected in ECA and South Asia



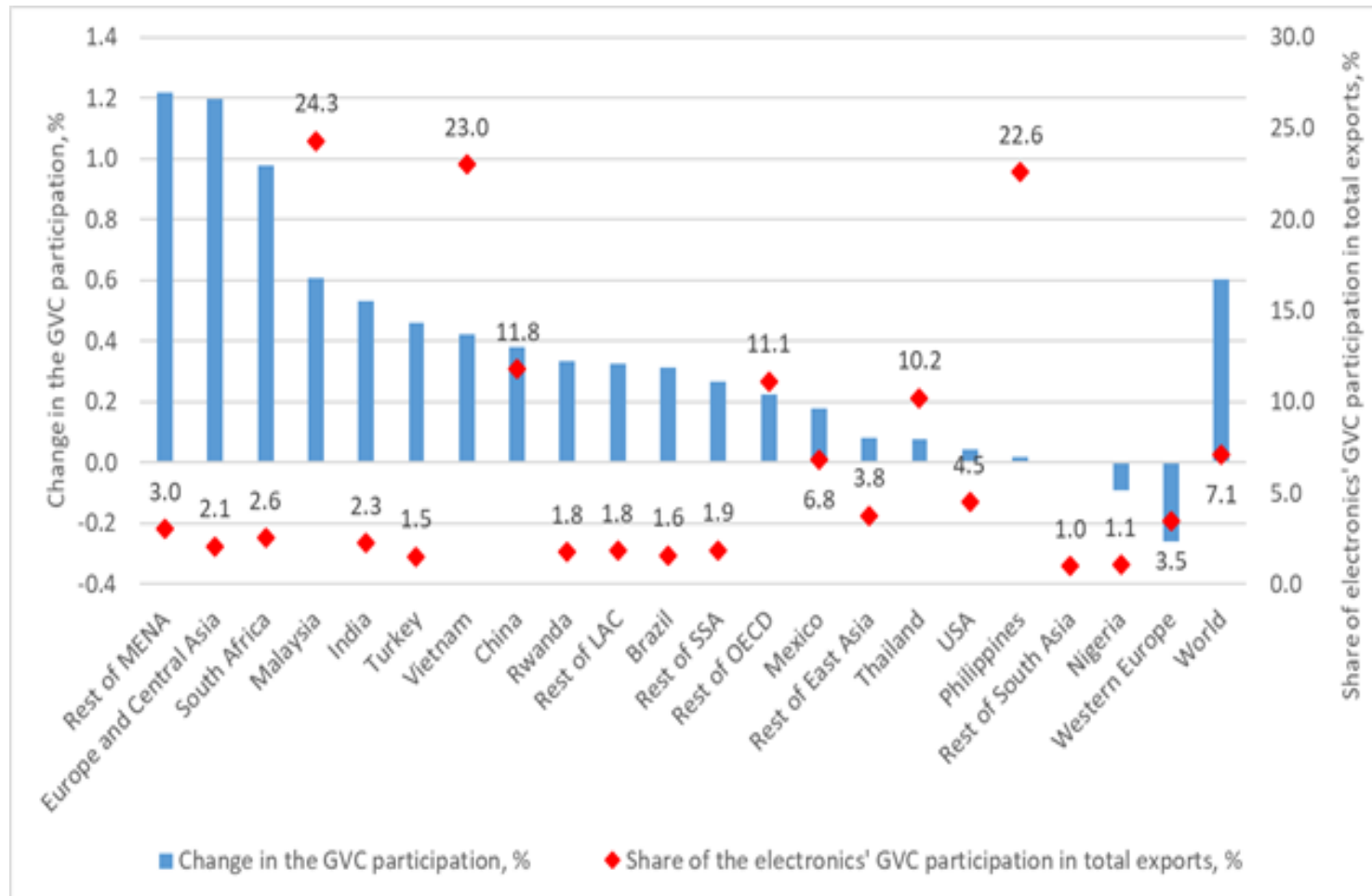
New opportunities will arise for countries that are relatively carbon efficient in key tasks along GVCs

Impacts of climate mitigation policies on GVC participation by sectors (global average), % change in 2030 relative to the the post-COVID baseline



Sectors with the strongest backward and forward linkages in GVCs become even more integrated

**Impacts of the CBAM on GVC participation for the electronics sector by countries and regions, % change in 2030 relative to the EU Green Deal baseline**



## Key findings



- Globalization will strengthen the recovery from the COVID-19 pandemic while localization will weaken it.
- Developing countries can take steps to increase their resilience to future shocks through unilateral reduction of tariffs on inputs, implementing trade facilitation measures, and diversifying sources of inputs.
- A “hostile” environment for GVCs, with a shift towards global reshoring, could drive an additional 52 million people into extreme poverty. The hardest hit would be the poor in Sub-Saharan Africa, with 80 percent of the new poor caused by reshoring.
- A GVC “friendly” environment could boost integration into GVCs, incomes, and lift almost 22 million additional people out of poverty by 2030. It would also improve the incomes of the bottom-40 percent.

- Depending on how policies are implemented, climate mitigation measures in advanced economies could result in reshaping of GVCs away from carbon-intensive activities.
- Climate policies would impact developing countries differently, depending on the extent of carbon-intensive sectors as part of their economies, with countries in Europe and Central Asia potentially the most vulnerable.
- A stylized modeling of Carbon Border Adjustment Mechanism (CBAM), as part of the EU Green Deal, suggest new opportunities will arise for countries that are relatively carbon efficient in key tasks along GVCs in sectors such as computers and electronics, motor vehicles and parts, and other light manufacturing.
- The design and implementation of carbon border adjustment schemes will be critical in determining their impact on trade and incomes in developing countries.

# Technical Annex

# GTAP Data Base

- GTAP Data Base:
  - GTAP v. 10
  - 31 sectors and 21 countries/regions
  - GTAP-MRIO version
  
- Energy and emissions accounting:
  - Extended energy balances from IEA are incorporated in the database.
  - Fossil fuel combustion emissions are estimated for each reference year and country/region.
  - Non-CO2 GHG emissions and air pollution datasets are available, but have not been used in the current assessment.

GTAP 10 – 121 countries



# Sectoral aggregation

| Abbreviation | Sector name                                   | Abbreviation | Sector name                                |
|--------------|-----------------------------------------------|--------------|--------------------------------------------|
| CRP          | Crops                                         | ELE*         | Computer, electronic and optical products  |
| LVS          | Livestock                                     | OME*         | Other machinery and equipment              |
| NRS          | Natural resource products                     | MVH*         | Motor vehicles and parts                   |
| COA          | Coal extraction                               | OTN*         | Other transport equipment                  |
| OIL          | Oil extraction                                | XMN*         | Other manufacturing                        |
| GAS          | Gas extraction and distribution               | ELY          | Electricity                                |
| PMT*         | Meat products (incl. fisheries)               | CNS          | Construction                               |
| OFD*         | Other food                                    | TRD          | Trade incl. warehousing                    |
| TEX*         | Textiles                                      | AFS          | Accommodation, food and service activities |
| WAP*         | Wearing apparel                               | WTP          | Water transport                            |
| LEA*         | Leather products                              | ATP          | Air transport                              |
| WDP*         | Wood and paper products                       | XTP          | Other transport                            |
| P_C          | Refined oil                                   | CMN          | <b>Communications</b>                      |
| CHM*         | Chemical products (incl. rubber and plastics) | ROS          | Recreational and other services            |
| NMM          | Non-metallic minerals                         | XSV          | Other services                             |
| MET          | Metals                                        |              |                                            |

\*MRIO Sectors

# Regional aggregation

| Abbreviation | Countries     | Abbreviation | Regions                           |
|--------------|---------------|--------------|-----------------------------------|
| USA          | United States | WER          | Western Europe                    |
| CHN          | China         | XSS          | Rest of Sub-Saharan Africa        |
| BRA          | Brazil        | XHY          | Rest of high-income               |
| MEX          | Mexico        | XLC          | Rest of Latin America & Caribbean |
| IND          | India         | XEA          | Rest of East Asia                 |
| TUR          | Turkey        | XSA          | South Asia                        |
| ZAF          | South Africa  | ECA          | Europe & Central Asia             |
| RWA          | Rwanda        | XMN          | Middle East & North Africa        |
| NGA          | Nigeria       |              |                                   |
| VNM          | Viet Nam      |              |                                   |
| PHL          | Philippines   |              |                                   |
| THA          | Thailand      |              |                                   |
| MYS          | Malaysia      |              |                                   |

# Carbon border adjustment mechanism – stylized representation

- Border carbon adjustment tax – concept behind:
  - Import fees levied by carbon-taxing countries on goods manufactured in non-carbon-taxing countries.
  - Main idea – to protect energy-intensive trade-exposed industries by eliminating the competitive advantage enjoyed by exports from countries that don't tax carbon emissions
  - These tariffs would also create incentives for non-carbon taxing countries to adopt carbon taxes.
- A European Green Deal mentions introduction of the Carbon Border Adjustment Mechanism (CBAM) to avoid carbon leakage:
  - Fully compatible with World Trade Organization (WTO) rules.
  - Will start with a number of selected sectors and will be gradually extended.
  - Transparency and conformity with WTO rules are currently viewed as major obstacle.
  - Estimating carbon footprint at the commodity level is also difficult and would require additional emission reporting, presumably at the factory level.
  - EU is planning to provide additional details on potential CBAM implementation around mid-2021.

# Methodological framework – embodied emissions

- Emissions embodied into exports are estimated for all regions and sectors represented in the model and for each simulated year:
  - Region-specific CO<sub>2</sub> emissions per unit of output by industries are used to estimate the CO<sub>2</sub> emissions associated with bilateral trade flows.
  - We assume that the production technology is based on fixed proportions (i.e. in a given sector and country, the same production technology is used to produce domestic and exported commodities).
  - This allows to decompose emissions from domestic output into components associated with the domestic demand and exports.
- For every commodity, the total CO<sub>2</sub> emissions associated with fossil-fuels combustion and embodied in trade flows from region  $r$  to region  $s$  ( $f_{rs}$ ) are estimated as:

$$f_{rs} = F_r(E - A_r)^{-1}e_{rs}$$

where  $F_r$  is a vector of region-specific CO<sub>2</sub> emissions per unit of output by industries,  $E$  is an identity matrix,  $A_r$  is the technological matrix, which represents the industry requirements of domestically produced products in region  $r$  and  $e_{rs}$  corresponds to the bilateral trade flow from region  $r$  to region  $S$ .

- Border adjustment tax is then implemented in the form of ad valorem equivalent on the emissions embodied into bilateral imports of commodities to EU from other destinations taking into account country-specific carbon content