Trends on RCI performance in Asia and the Pacific

Training on ITSS and Digital Economy Statistics
20 March 2023

ADB

PART I. WHY IS ARCII USEFUL?

Why is an RCI index useful?

- ADB adopted **Regional Cooperation and Integration (RCI) as a strategic operational priority** under Strategy 2030 given its potential to promote growth, narrow development gaps, and increase productivity and employment.
- **Asia-Pacific Regional Cooperation and Integration Index (ARCII)** offers standardized measurements to understand RCI trends and dynamics
- Comparability **across countries** and **across dimensions** is needed to provide a full picture of RCI
- RCI is a **multidimensional** and evolving process and its dimensions need to be reassessed from time to time.
- New metrics incorporate new dimensions of growing importance such as **digital connectivity** and **environmental cooperation**.

Fostering regional cooperation and integration for recovery and resilience

Challenges and opportunities

Rapidly changing nature of work and consumer behavior due to digitalization

Accelerated changes in supply and global value chains due to the pandemic and changing consumer demand

Compounding and cascading disaster risks (e.g., climate change, natural hazards)

Public debt, posing risks to financial stability

Wider, deeper, and more open RCI

Digital connectivity and technology

- Streamlining requirements for cross-border data flows
- Implementing digital standards, policies and regulations

Climate-related measures

- Integrated solutions to low-carbon transition
- Support to private sector ESG–linked investments
- Information sharing and benchmarking

Supply chain resilience and inclusiveness

- Multilateral approaches to trade facilitation
- Technology-enabled solutions for supply chains
- Support programs for SMEs and vulnerable groups

Harmonization of regulatory measures

- Alignment of RCI initiatives more closely with global agendas
- Harmonization of technical and regulatory standards
- Open platforms, knowledge sharing, and capacity building

Source: ADB. Fostering regional cooperation and integration for recovery and resilience: Guidance note (accessed September 2022).

Global risks highlight the need for a stronger regional cooperation

Multiple, simultaneous crises highlight the need for **stronger regional cooperation and integration**.

- COVID-19 pandemic
- Climate change
- Geopolitical crises (e.g. Russian invasion of Ukraine)

Source: Um, Woochong (2022, August 23-25). "Strengthening Regional Cooperation and Integration for a New Era of Collective Action" [Keynote Address]. Regional Cooperation and Integration Conference 2022, Bangkok, Thailand.

ADB, in its **2021 Development Effectiveness Review**, found that the pandemic has set back climate change efforts and past regional progress on poverty reduction, food security, education, and women's empowerment.

However, the foundations for regional cooperation have improved, with intraregional trade links and regional value chains continuing to deepen.

ADB's Work in Regional Cooperation and Integration

Highlights from RCI operations in 2021

$227 million in **cargo & energy** transmitted across borders

11 measures on cross-border **environmental cooperation**

$1.08 billion in **investments in trade** facilitated

6 measures to develop **economic corridors** supported

Source: ADB. 2021 Development Effectiveness Review

Subregional cooperation initiatives: Key progress in 2020/2021

CAREC INSTITUTE

- 213 projects worth $39.3 billion as of end 2021. with Transport (75%) and energy (22%)
- CAREC 2030 implementation for post-pandemic recovery

SASEC

- Over 73 projects worth $17.43 billion.
- Multimodal transport corridor development strengthened
- Clean energy and subregional power transmission

Greater Mekong Subregion

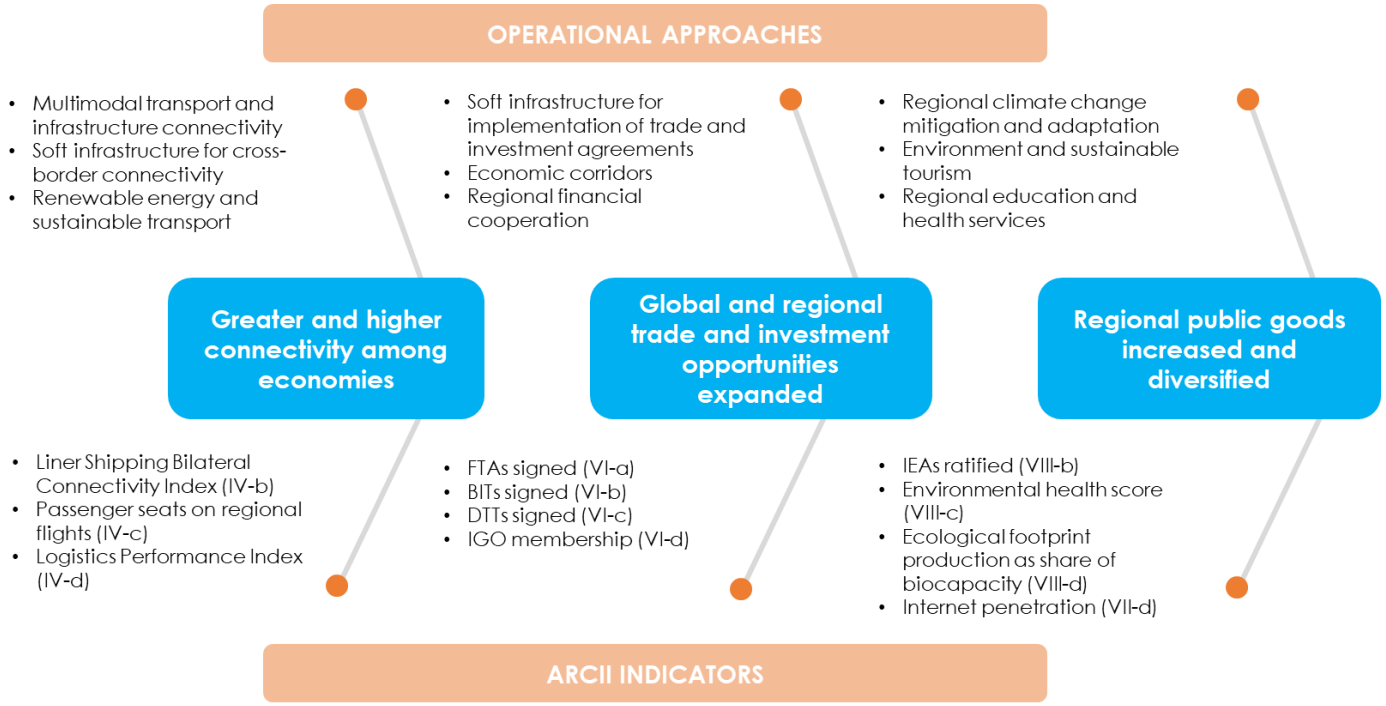
- 109 projects worth $27.7 billion.
- 12,000 kilometers of new or upgraded roads; about 700 km of railway lines installed
- 3000 megawatts of electricity generated and 2600 km transmission lines installed

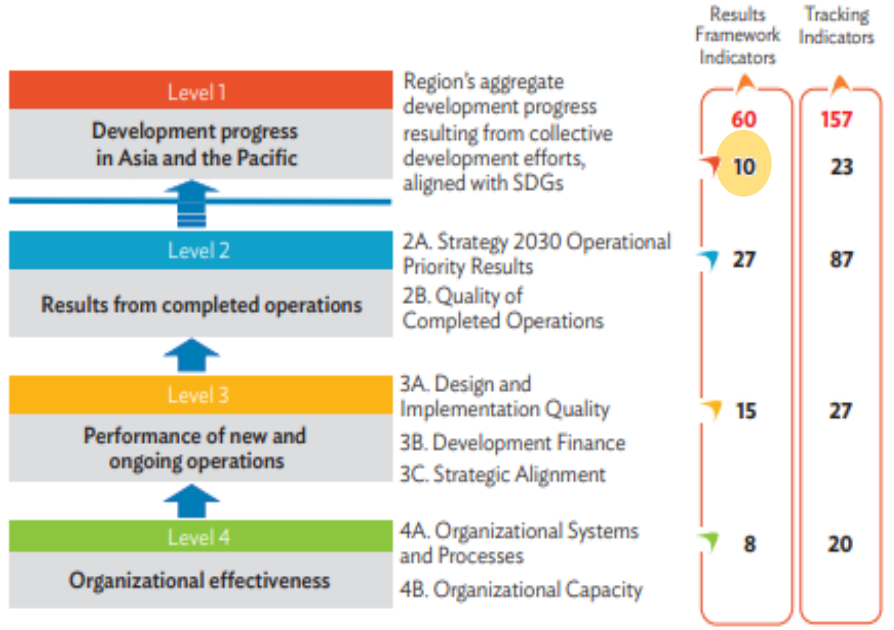
PACIFIC

- Systems Strengthening for Effective Coverage of New Vaccines expanded to include COVID-19 vaccines
- Investments in transport connectivity, renewable energy and ICT.

ARCII offers RCI measures well aligned with ADB's OP7 and RCI operational priorities

- A customized version of ARCII is reported as a Level 1 indicator of ADB's Corporate Results Framework in its annual Development Effectiveness Review (DEfR).





ADB = Asian Development Bank, SDG = Sustainable Development Goal.

Source: S. Nakhooda. 2020. Asia-Pacific Regional Cooperation and Integration Index: Strategy 2030 Results Framework Indicator. Presented at the Virtual Inception Workshop on New Approaches to Measuring and Assessing Regional Cooperation and Integration. 16–17 April. Asian Development Bank.

Source: Asia-Pacific Regional Cooperation and Integration Index: Enhanced Framework, Analysis, and Applications

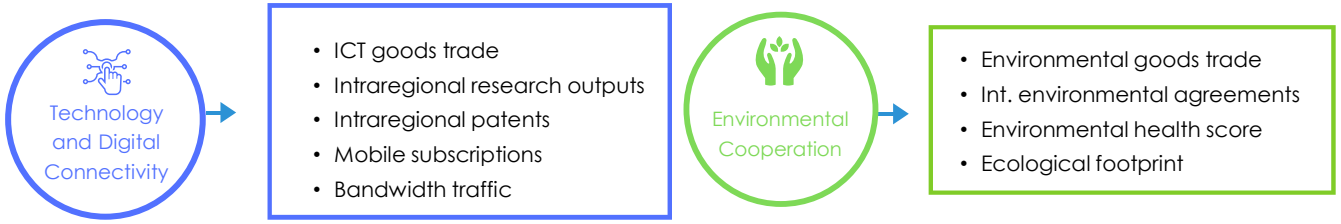
Asia's regional integration has been resilient amid the pandemic

Intraregional shares (% of total)

	2021	2020	2001
Trade	58%	59%	53%
FDI	40%	69%	54%
Equity	23%*	21%	12%
Debt	22%*	19%	8%
Migration	35%**	35%	43%

Notes:
*Data as of June 2021.
** Data for migration corresponds to latest available years (2019/2020)

Enhanced ARCII framework



New dimensions

PART II. DATA QUALITY and METHODOLOGY

New dimensions and indicators are included to capture evolving new RCI dynamics

New dimensions

- Technology and digital connectivity
- Environmental cooperation

New indicators

in existing dimensions

- Money and finance integration
  - Chinn-Ito Index
  - Regional exchange rate correlation
- Regional value chain
  - Value added contribution
- Infrastructure and
  - International flight passenger capacity
- People and social integration
  - Cultural goods trade
  - Trademark applications
- Institutional arrangements
  - Intergovernment organization membership

Enhanced ARCII Index: Improved data coverage

Trade and Investment Integration	Money and Finance Integration	Regional Value Chain	Infrastructure and Connectivity	People and Social Integration	Institutional Arrangements	Technology and Digital Connectivity	Environmental Cooperation
Exports	Equity Liabilities	Trade Complementarity Index	Trade Costs	Outbound Migration	Free Trade Agreements Signed	ICT goods	Environmental goods trade
Imports	Bond Liabilities	Trade Concentration Index	Liner Shipping Connectivity Index	Tourists	Embassy Presence	Research outputs	Environmental agreements
Trade Intensity Index	Deposit Rates	Intermediate Good Exports	Passenger seats	Remittances	Business Investment Treaties Signed	Patent applications	Environmental health score
FDI Inflows	Chinn-Ito Index	Intermediate Good Imports	Logistics Performance Index	Cultural Proximity	Double Taxation Treaties Signed	Persons using internet	Ecological footprint
FDI Outflows	Exchange rate	Value-added Contributions	Doing Business Index	Cultural goods	IGO	Mobile subscriptions	
				Trademark applications		Internet bandwidth	

Good Complete data or <5% of missing data

Medium Patchy data for some economies; between 5 to 10 percent of missing data

Deficient Patchy data for some economies; >10% missing data

Evolution of the ARCII Framework: Enhanced ARCII Index

Trade and Investment	Money and Finance	Regional Value Chain	Infrastructure and Connectivity	People and Social Integration	Institutional Arrangements	Technology and Digital Connectivity	Environmental cooperation
Exports	Equity liabilities	Trade complementarity index	Trade costs	Outbound migration	Free trade agreements signed	ICT goods trade	Environmental goods trade
Imports	Bond liabilities	Trade concentration index	Liner shipping connectivity index	Tourists (inbound plus outbound)	Bilateral investment treaties signed	Research outputs	International environmental agreements ratified
Trade intensity index	Deposit rates	Intermediate good exports	Flight passenger capacity	Remittances	Double taxation treaties	Patent applications	Environmental health score
FDI inflows	Capital account openness	Intermediate good imports	Logistics performance index	Cultural proximity	Inter-government organization membership	Internet penetration	Ecological footprint
FDI inflows plus outflows	Exchange rate correlation	Value-added contribution	Doing business index	Cultural goods trade	Embassy presence	Mobile subscriptions	
				Trademark applications		International internet bandwidth	

Source: Asia-Pacific Regional Cooperation and Integration Index: Enhanced Framework, Analysis, and Applications

Overview of ARCII construction

Data collection

Obtain data for each indicator from the ARIC database or other sources

Impute missing data

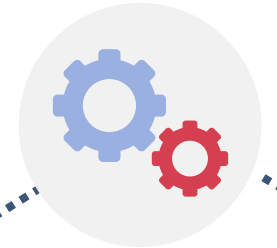
Possible imputation methods include linear interpolation, averaging, regression imputation and substitution by closest available observation

Normalization

Perform panel min-max normalization across the dataset of economies

First stage PCA

Perform the first stage PCA to generate sub-indexes for each dimension



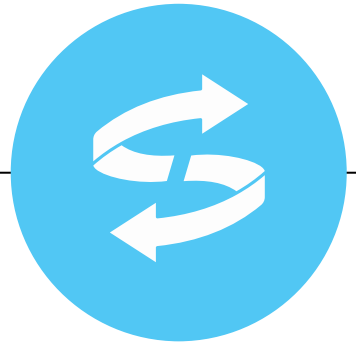
Second stage PCA

Perform the second stage PCA

Overall ARCII

Computation of ARCII indicators: general structure

Types of data



Bilateral level

- Data representing exchanges between two countries (reporter and partner)
- Examples: IMF-DOTs dataset, ESCAP-World Bank trade cost database

National level

- Contains national/state level information
- Examples: Logistics Performance Index, Environmental Health Score, Doing Business Index

Indicator formula (ratio)

Proportion of intraregional values to world values:

$$\frac{Intraregional\ value_{ij}}{Total\ \text{value}_{iw}}$$

National level indicators:

$$\frac{Value\ for\ reporter\ country}{1}$$

Proportion relative to number of subregional counterparts:

$$\frac{Number\ of\ intraregional\ arragements}{Number\ of\ countries\ in\ subregion\ -1}$$

Imputation of missing data

Cold deck imputation	• Copying the closest available observation (e.g., carrying over the value of 2018 to 2019 (if missing)
Averaging	• Taking the average value between two years (e.g., if 2015 is missing, average 204 and 2015 values)
Linear interpolation	• Assumes a linear relationship between data points – straight line between two given points
Regression imputation	• Replaces missing data with the predicted values based on a regression equation. $$DBI_j = 3.216 + 19.83LPI_j + \varepsilon_j$$ $$LPI_j = 0.912 + 0.032DBI_j + \varepsilon_j$$

PCA application in ARCII

Normalization

- Normalization prior to PCA is required to bring the indicators to the same standard, i.e., standardize the units.
- Normalized values fall with in the range of zero to one, based on all sample years and countries.

First stage of the PCA

In the first stage, the PCA is applied to the indicators in each dimension to create a dimensional composite index for the specific dimension.

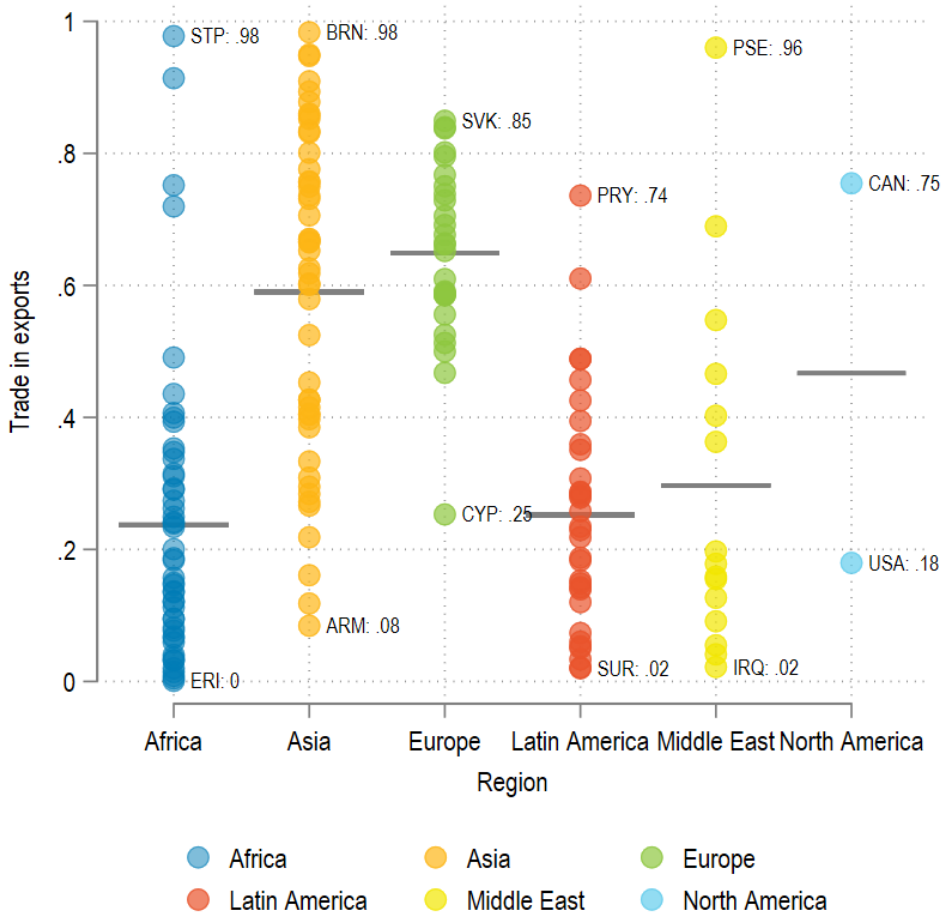
Second stage of the PCA

In the second stage, the PCA estimates weights for the dimensional indexes to generate the overall ARCII estimate.

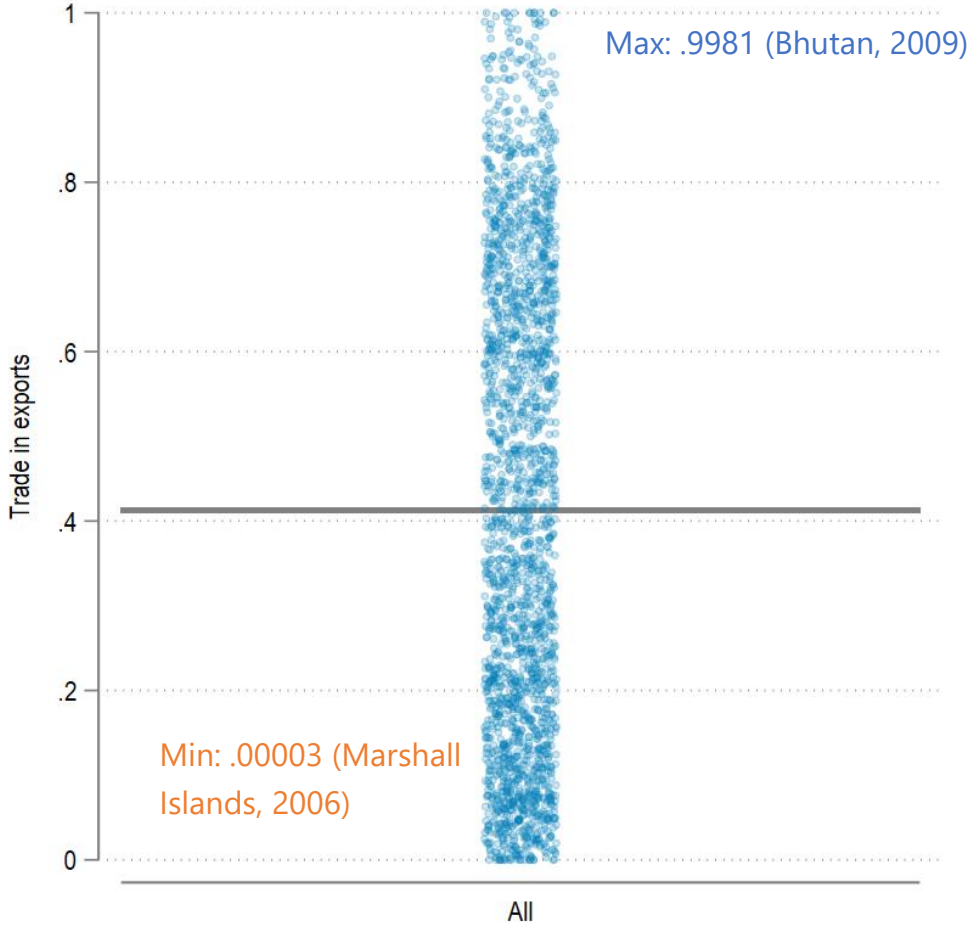
Panel min-max normalization allows comparability of progress across different economies through the years

Example: Proportion of intraregional goods exports to total goods exports

a. Raw data (2018)



b. Normalized data



Generate dimensional indexes (1)

01

IMPORT DATA

Import normalized data into program (e.g., EViews, Stata) to run the PCA

02

APPLY THE PCA

Run the PCA on the normalized data and extract the ff. information: factor loadings, eigenvalues

03

RETAIN QUALIFIED COMPONENTS

Keep the PCs which pass the Kaiser and Joliffe criterion

04

COMPUTE FOR THE WEIGHTS

Compute the following: 1) square of loadings (as % of eigenvalues); 2) % share of each eigenvalues per PC to total. Compute for weights*

05

GENERATE DIMENSIONAL INDEX

Apply weights to normalized indicator values and take the sum.

Generate dimensional indexes (2)

03

RETAIN QUALIFIED COMPONENTS

DETERMINED BY DIMENSION

- **Kaiser criterion**: choosing components with associated eigenvalues exceeding one
- **Joliffe criterion**: admit PCs with eigenvalues over 0.7 when PCs chosen by the Kaiser criterion accounts for an insufficient portion of the variation

04

COMPUTE FOR WEIGHTS

What you need:

- Eigenvalues per principal component
- Factor loadings

Formula:

- Sum (Eigenvalue per PC/total eigen value x Squared loadings/Eigenvalue per PC)

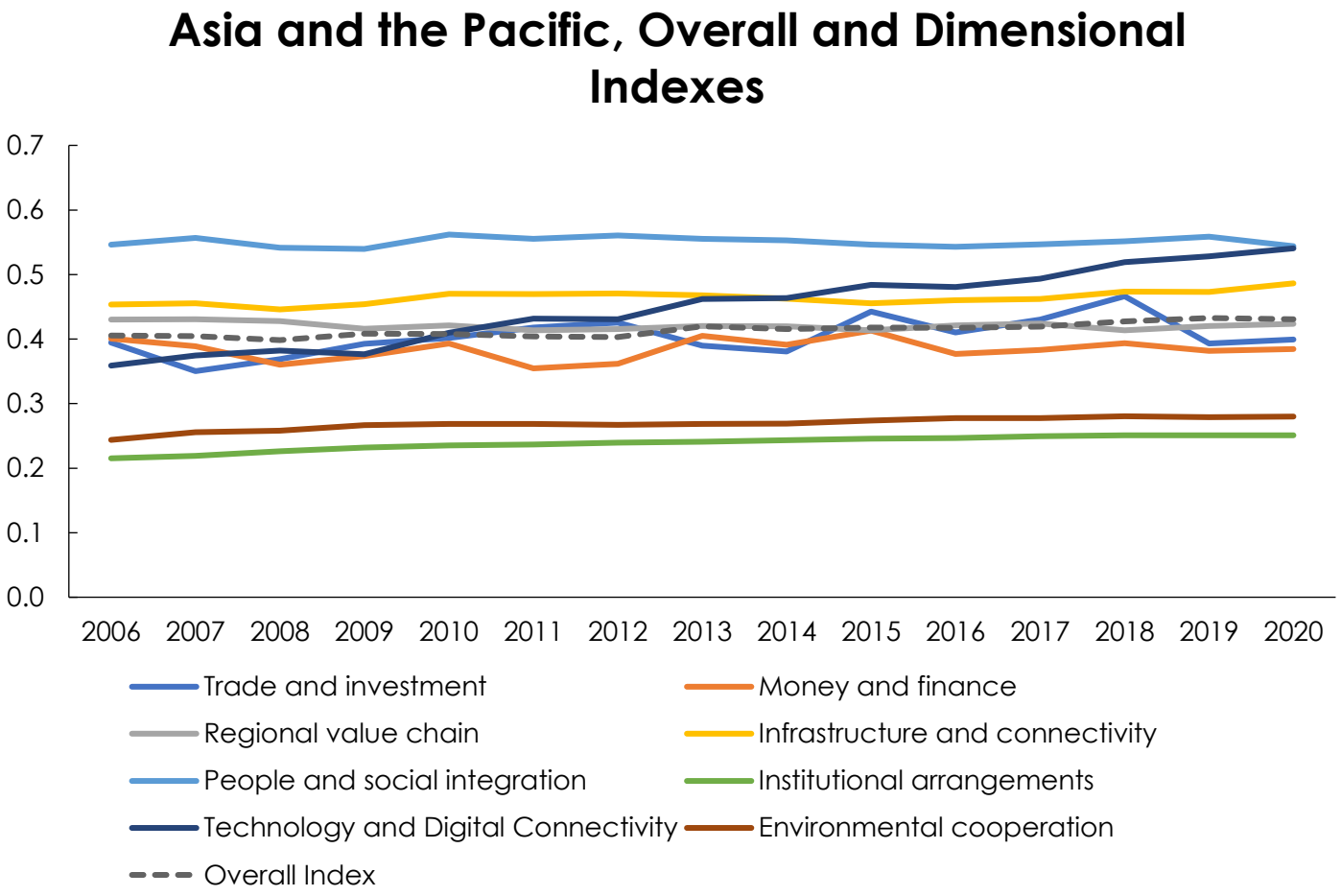
Generate the overall index

- Trade and investment
- Money and finance
- Regional value chains
- Infrastructure and connectivity
- People and social integration
- Institutional arrangements
- Technology and digital connectivity
- Environmental cooperation

- Apply the PCA on the computed dimensional indexes and repeat steps 3 and 4.

PART II. RESULTS

Regional integration trends in Asia have remained relatively stable



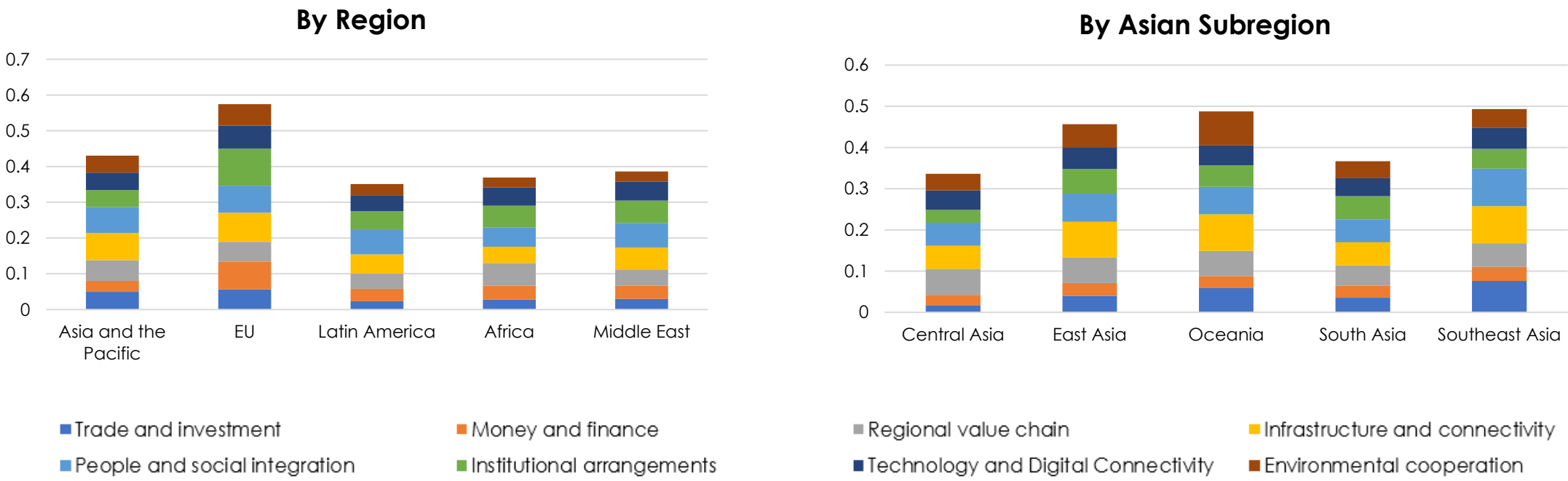
- Updated estimates of the overall ARCII for Asia show a **balanced trend** from 2006, with a 7% estimate increase between 2006 and 2020.
- The increase is explained by progress in **trade and investment**, better **infrastructure** and, increasingly, better **digital connectivity** within the region.

Drivers of RCI in Asia and subregions underscore several areas for improvement

RVCs, **infrastructure and connectivity** and **people and social integration** are the largest contributing dimensions to Asia's RCI

Southeast Asia and **East Asia** remains at the forefront of RCI - with similar contributions by dimension

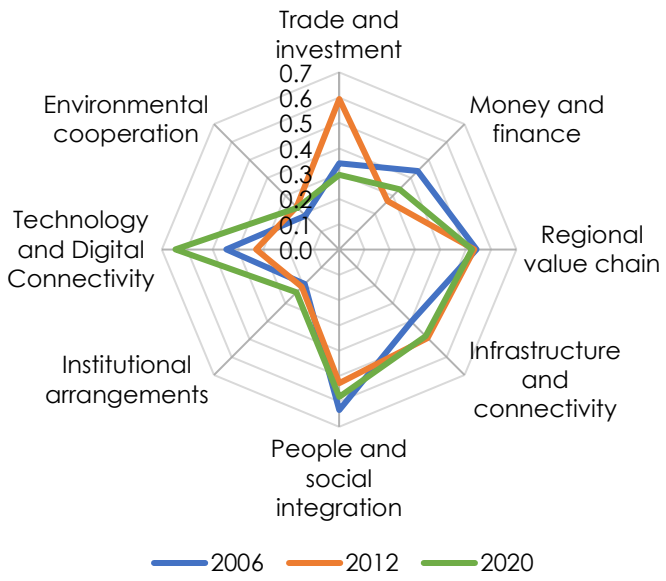
Dimensional Contribution to the overall ARCII Estimate (2020)



Note: Dimensional contributions are computed as the weight of a dimension multiplied by the dimensional index.
Source: Asian Development Bank. Asia-Pacific Regional Cooperation and Integration Database. https://aric.adb.org/database/arcii (accessed September 2022).

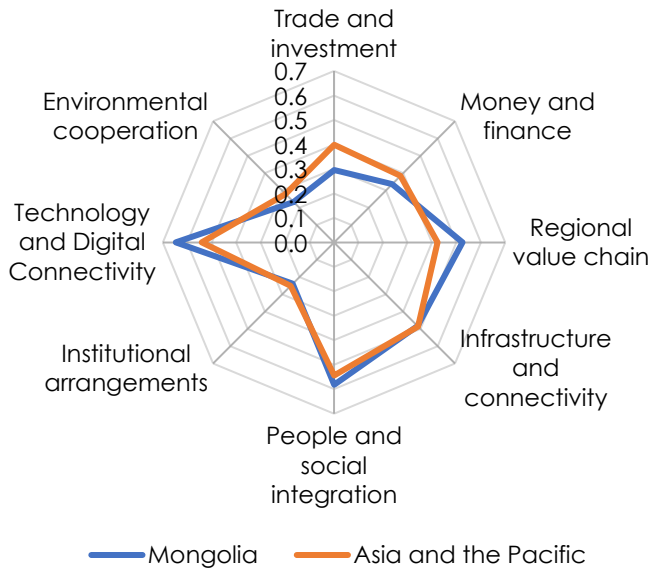
Providing regional and subregional comparability: the case of Mongolia

Mongolia 2006, 2012, 2020



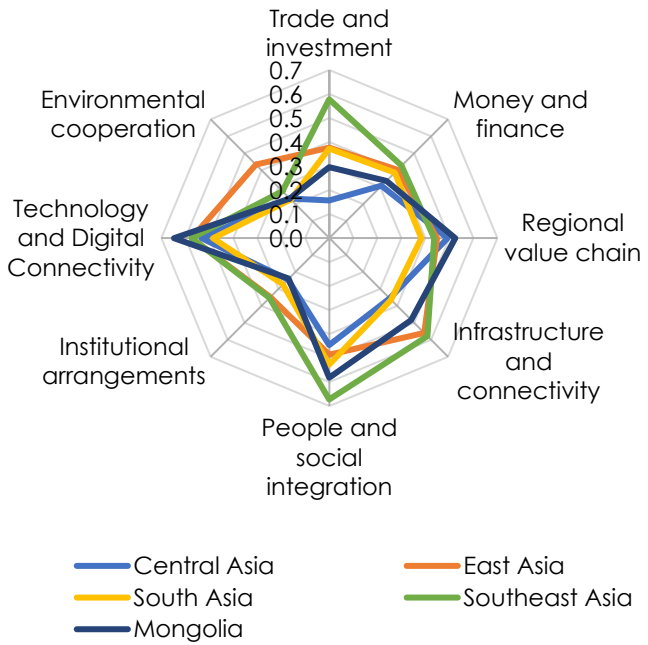
Trade and investment integration and institutional arrangements has improved since 2006.

Mongolia vs. Asia and the Pacific, 2020



Mongolia performed better than the Asian average in the **regional value chain**, **people and social integration**, and **technology and digital connectivity**.

Mongolia vs. Asia subregions, 2020

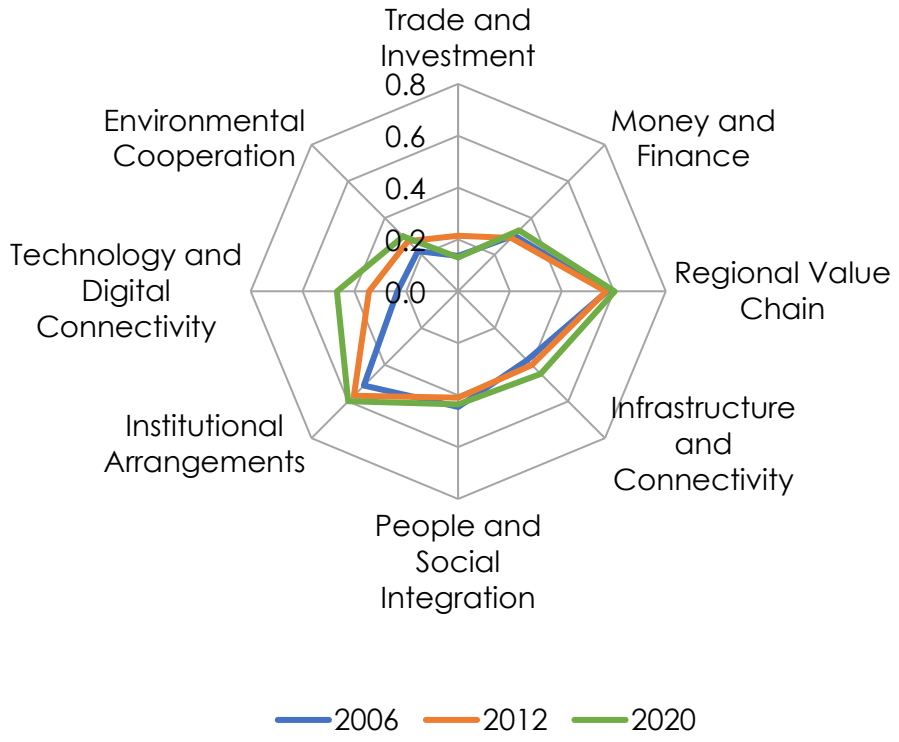


When compared to Asian subregions, Mongolia is comparably well-integrated in some dimensions.

Notes: Worldwide normalization is used for all estimations, where the indicators are normalized using global maximum and minimum values across all regions.
Higher values denote greater regional integration.
Source: ADB. Asia-Pacific Regional Cooperation and Integration Index Database (accessed September 2022).

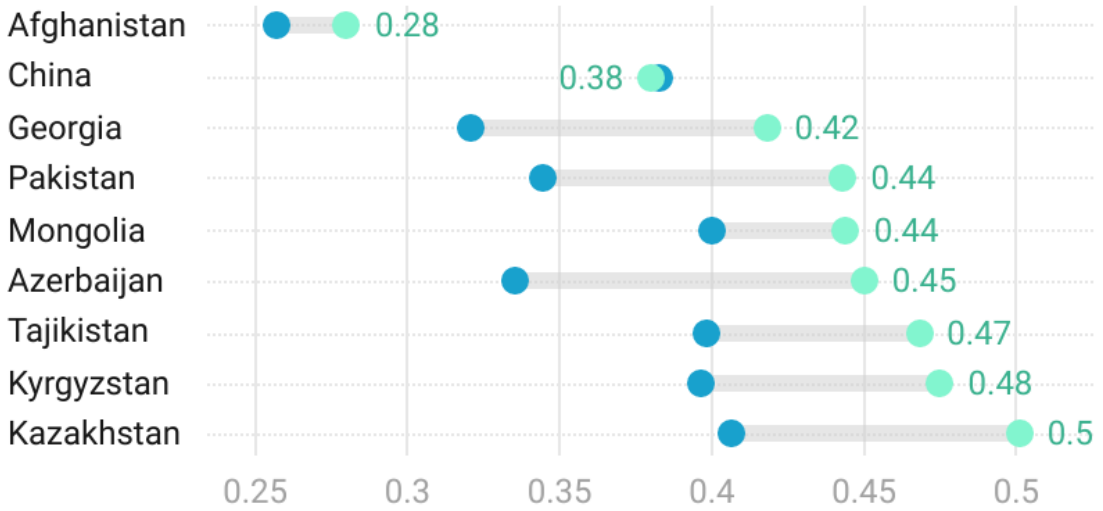
Intra-subregional index using the enhanced ARCII framework

Intra CAREC RCI index
2006, 2012, 2020



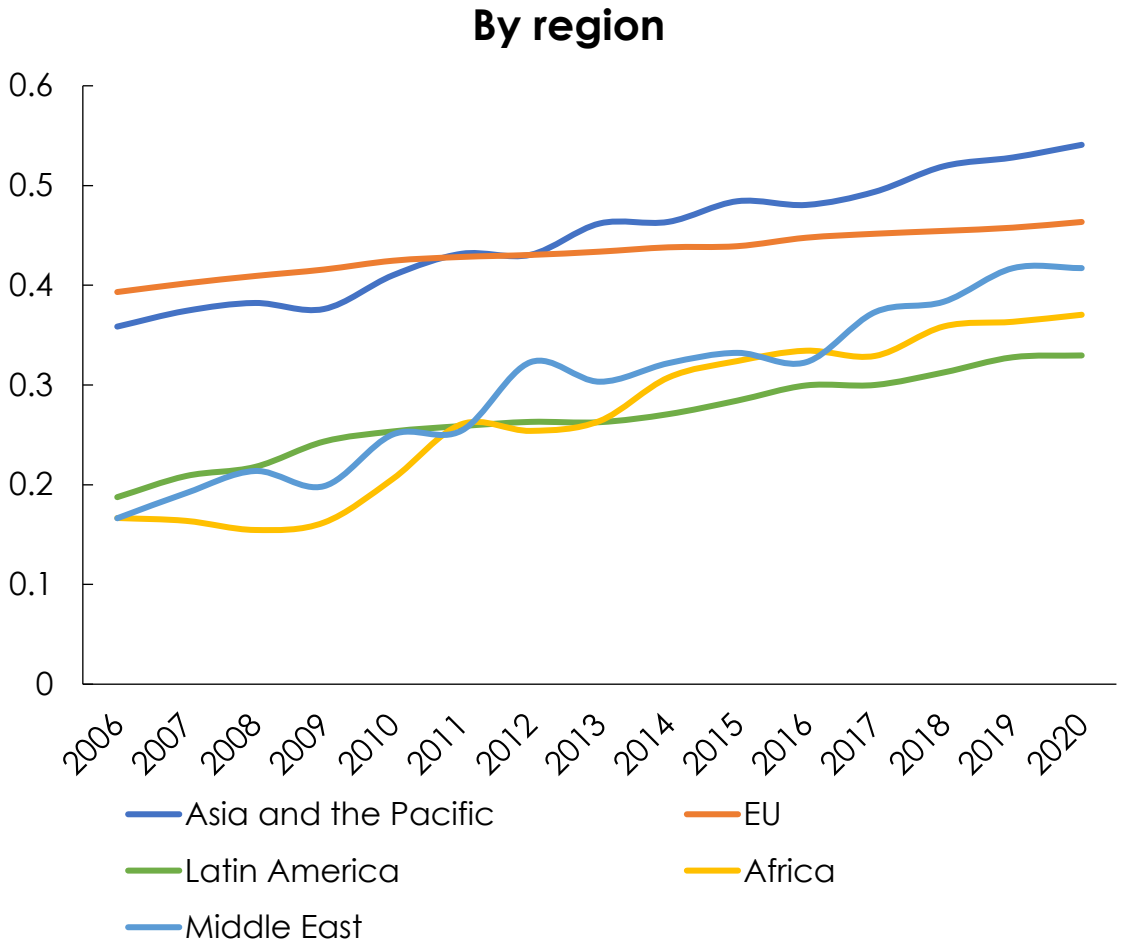
Further RCI **within** CAREC and **with** Asia will mitigate risks and build resilience

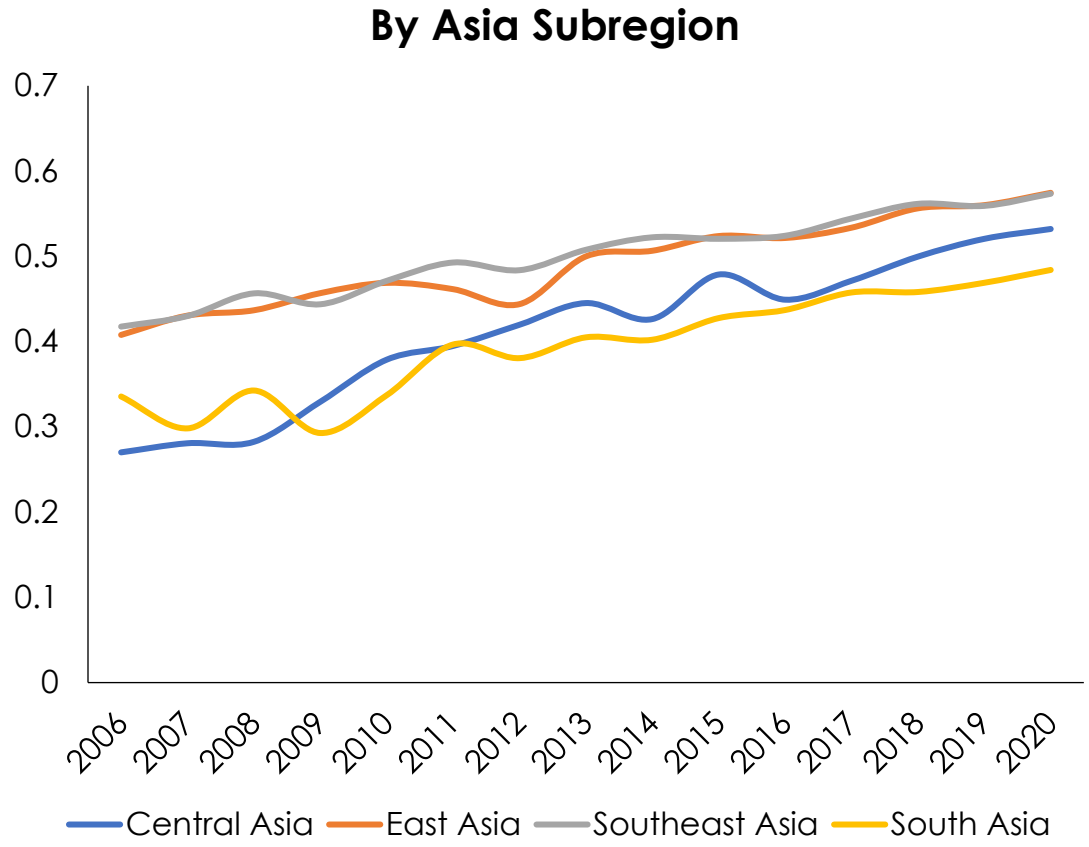
Intra-CAREC RCI by economy 2006-2020



[1]Dimensional estimates pertain to regional integration within the APEC-Asia region. Indicators are normalized using maximum and minimum values across economies in the APEC-Asia region and all sample years. PCA weighting is performed for the APEC-Asia region. APEC-Asia economies : Australia; Brunei Darussalam; People's Republic of China; Hong Kong, China; Indonesia; Japan; Republic of Korea; Malaysia; New Zealand; Papua New Guinea; The Philippines; Singapore; Thailand; Viet Nam.
[2]Note: Dimensional estimates pertain to regional integration within CAREC region. Indicators are normalized using maximum and minimum values across economies in the CAREC subregion and all sample years. PCA weighting is performed for the CAREC subregion. CAREC economies: Afghanistan, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Mongolia, PRC, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan.
Source: ADB calculations.

Asia has made significant progress in technology and digital connectivity, although subregional gaps persists

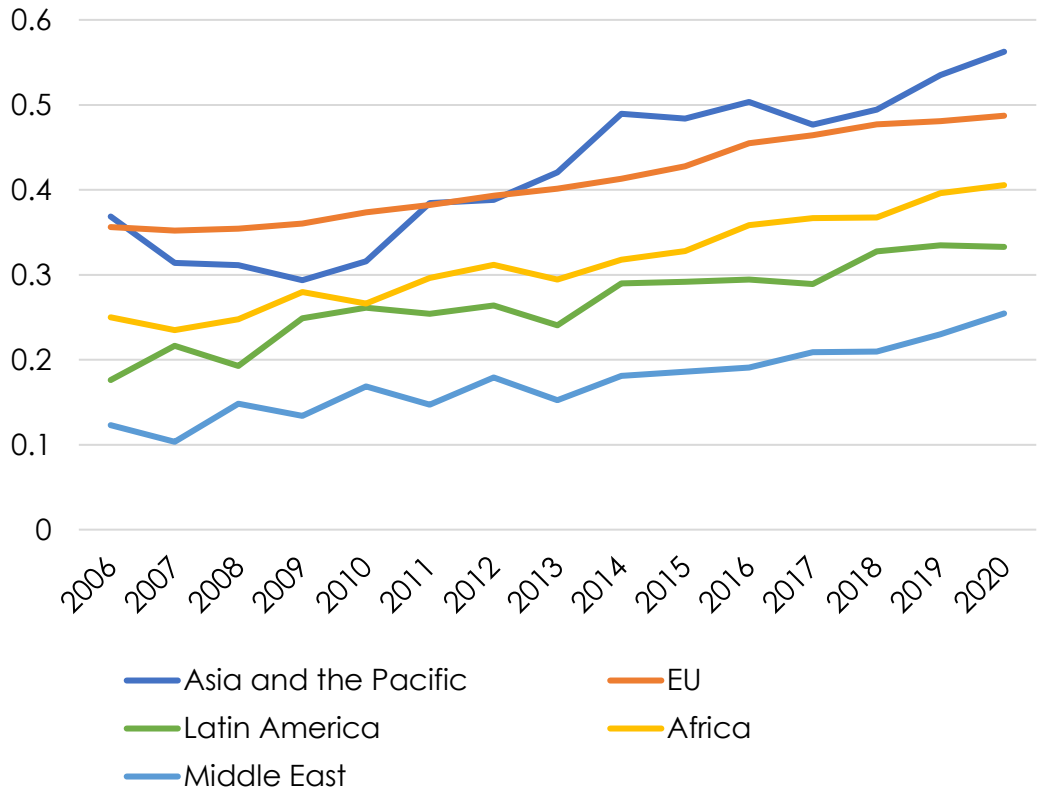




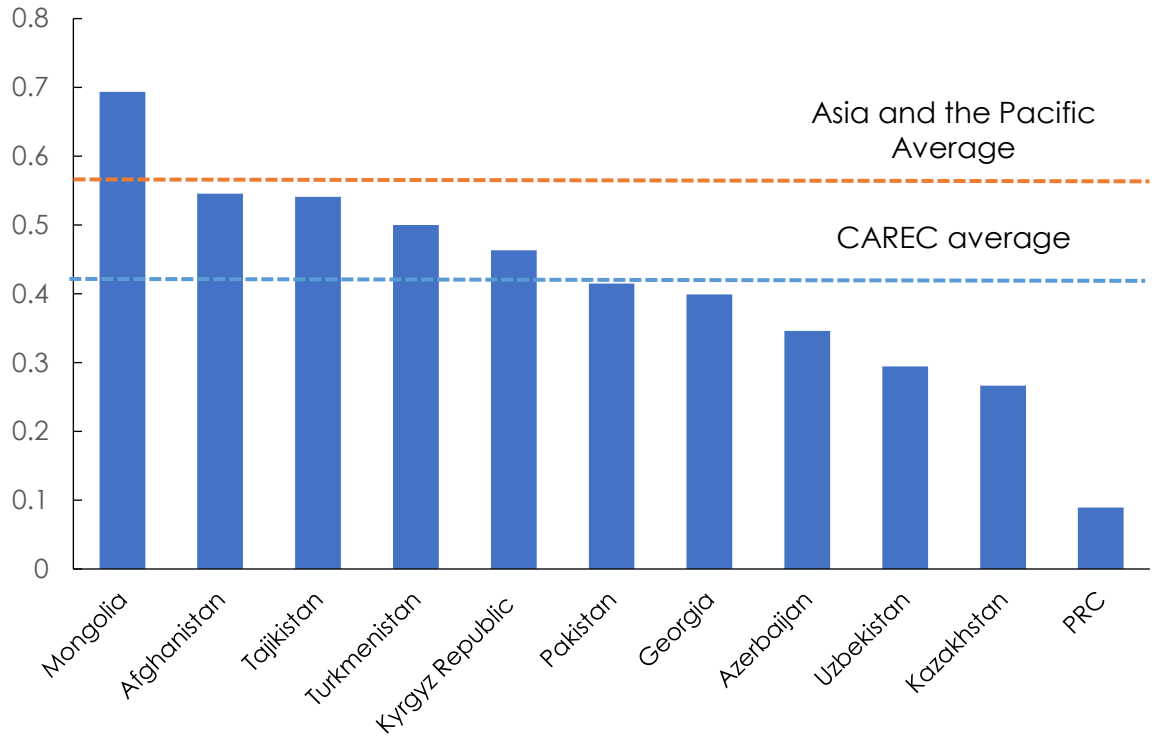
Asian economies have improved on their regional collaboration through research outputs

Research outputs with intra-regional collaborators relative to research outputs with all international collaborators

By region, 2006-2020



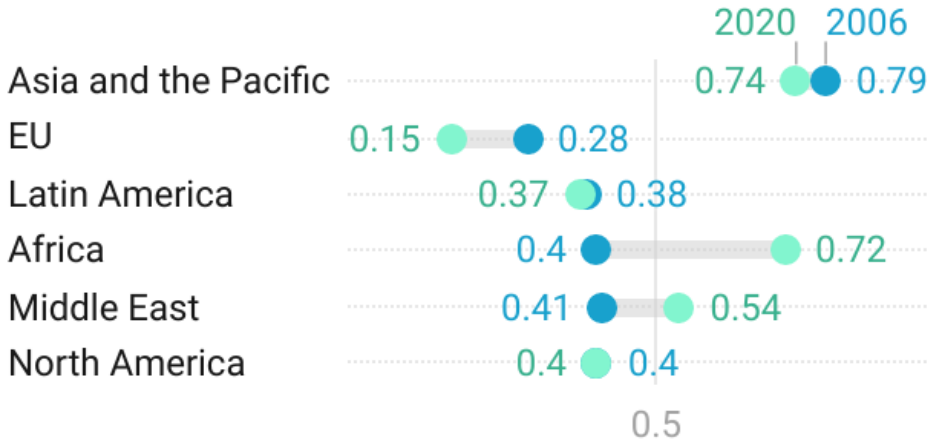
By CAREC economy, 2020



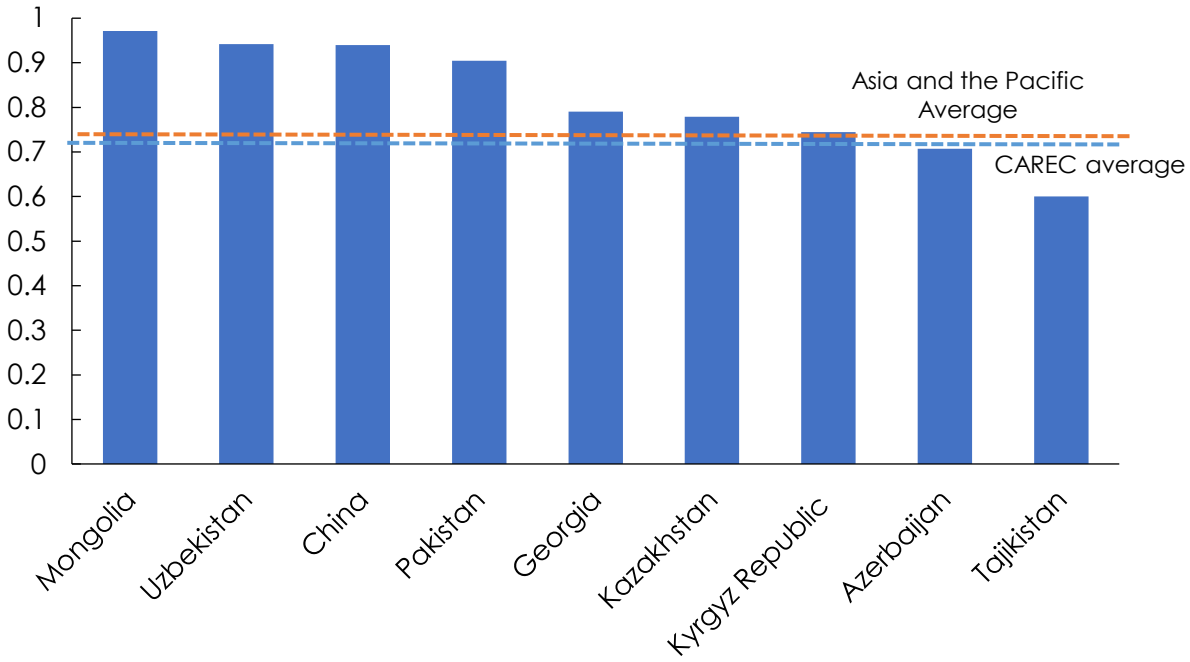
Intraregional patent applications relatively higher than other regions, despite experiencing a marginal decrease between 2006 and 2020

Patent applications made with intra-regional residents relative to patent applications made with all foreign residents

By region, 2006 and 2020



By CAREC economy, 2020



Intra-Asia internet bandwidth traffic has increased over time

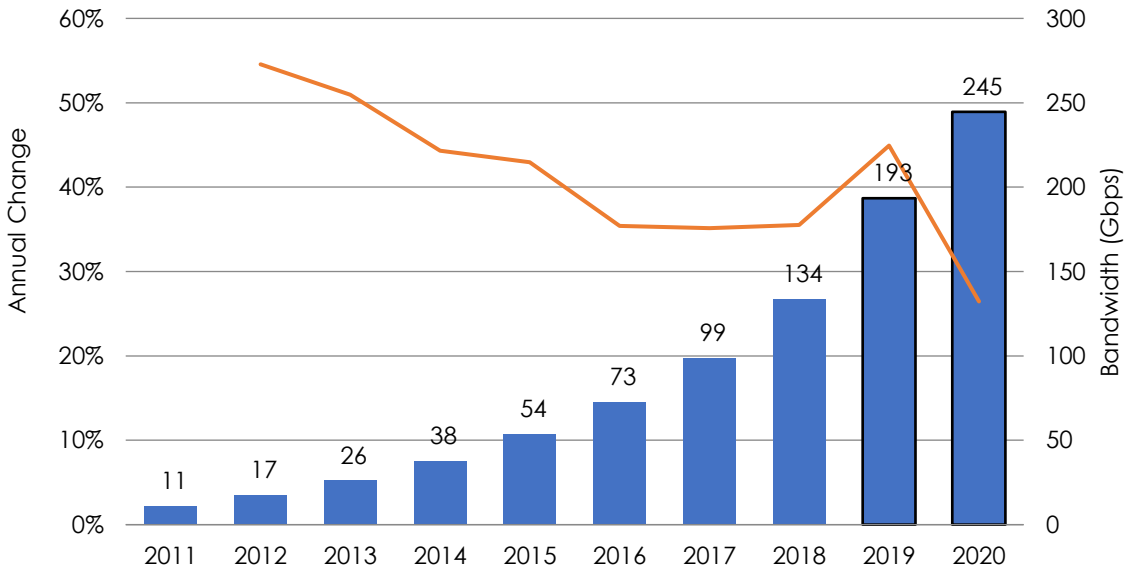
- International internet bandwidth capacity within Asia reflects high internet traffic among Asian countries, showing well-established digital connectivity within the region.

International internet bandwidth by regional routes (Gbps)

Region	2011	2020	Share to total (%)	
			2010	2020
Asia - Asia	2,650	83,363	36.0	56.2
Asia - U.S. & Canada	3,680	35,180	50.0	23.7
Asia - Europe	831	24,298	11.3	16.4
Asia - Middle East	99	3,182	1.3	2.1
Asia - Oceania	57	2,064	0.8	1.4
Asia - Africa	39	127	0.5	0.1
Asia - Latin America	0	0	0.0	0.0

Source: TeleGeography

International Internet Bandwidth Connected to Mongolia, 2011-2020



Source: TeleGeography

PART III. DO IT YOURSELF

Index customization: a more nuanced and complete picture of recent RCI developments

Excluding the indicators measuring conditions for and/or the depth of a country's integration into the global economy

Including an indicator capturing a country's membership in deep regional integration arrangements

Excluding the indicators and RCI dimensions with possible gaps or inaccuracies in the data on Eurasia economies

Including indicators measuring the degree of an economy's involvement in RCI relative to its size (as measured by GDP)

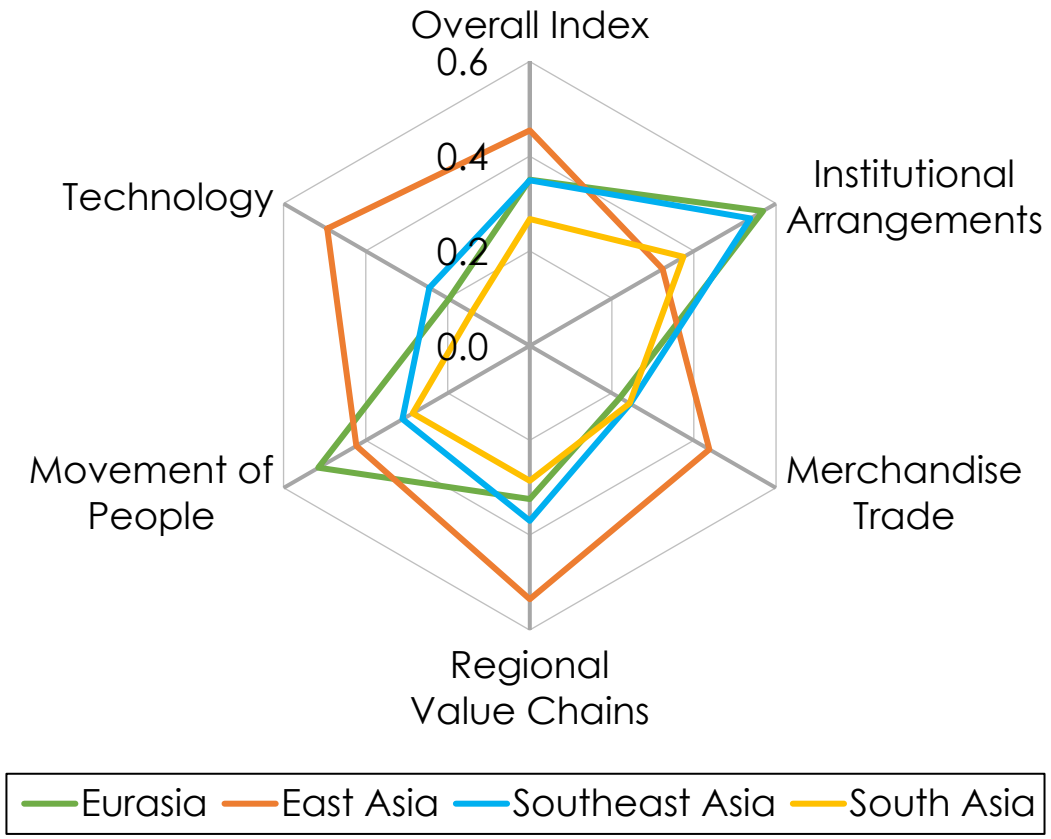
Including indicators that contain additional information on RCI in Eurasia and on which data with adequate coverage and quality can be obtained from online sources

Customizing Index Framework

Institutional Arrangements	Trade	Regional Value Chain	Movement of People	Technology
Free Trade Agreements Signed	Goods exports	Intermediate goods exports	Inbound visitors	ICT goods trade
Business Investment Treaties Signed	Goods imports	Intermediate goods imports	Outbound visitors	ICT goods trade (over GDP)
Double Taxation Treaties Signed	Total trade (over GDP)	Total intermediate goods trade (over GDP)	Total departures and arrivals	Patent applications
Embassy		Value-added	Remittance inflows	
Intergovernment organizations			Remittance outflows	
			Total remittances (over GDP)	

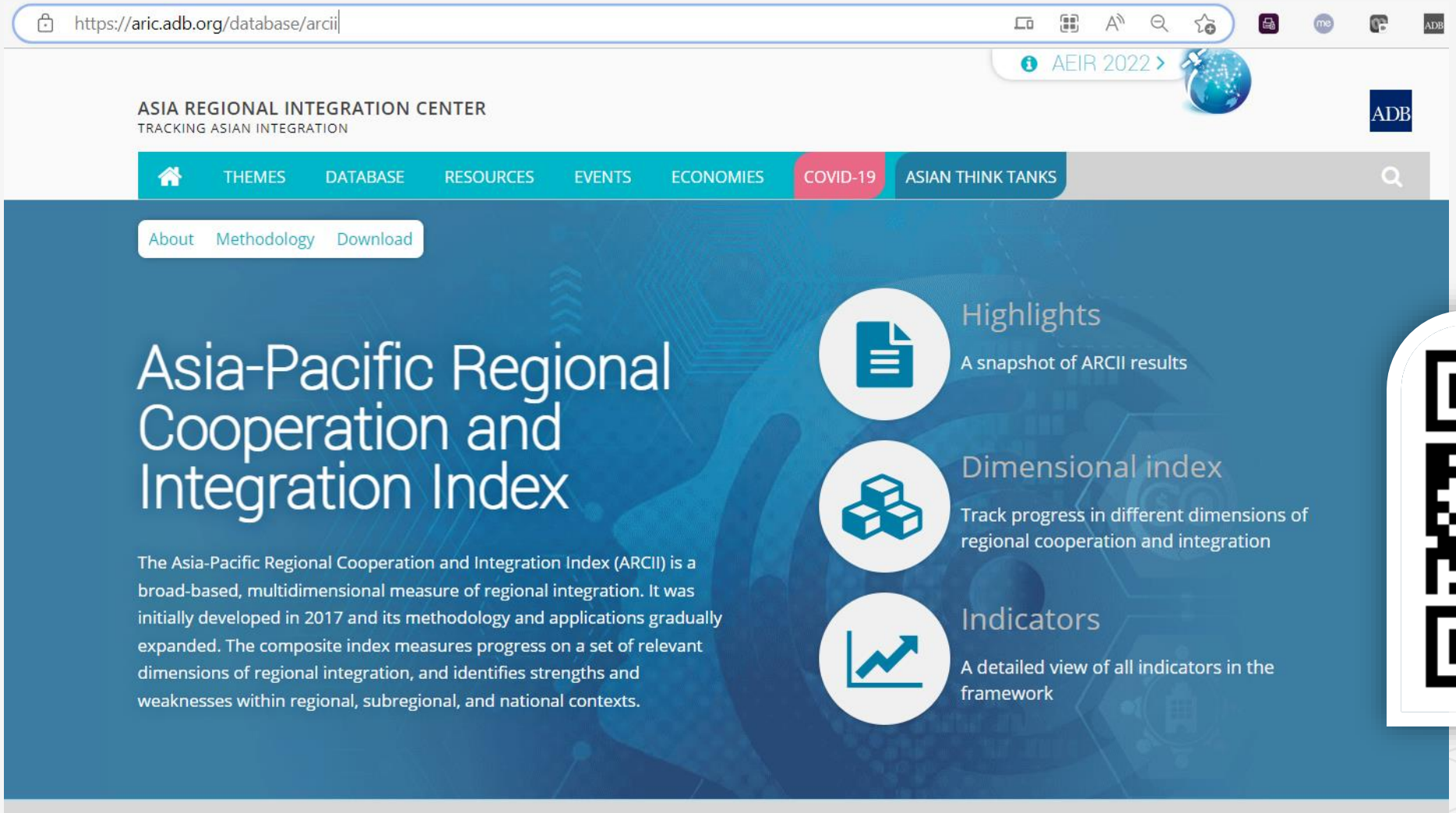
Example: customized intra-subregional index results for Eurasia

Average Dimensional Scores of Economies in Selected Subregions under Customized ARCII Framework, 2018

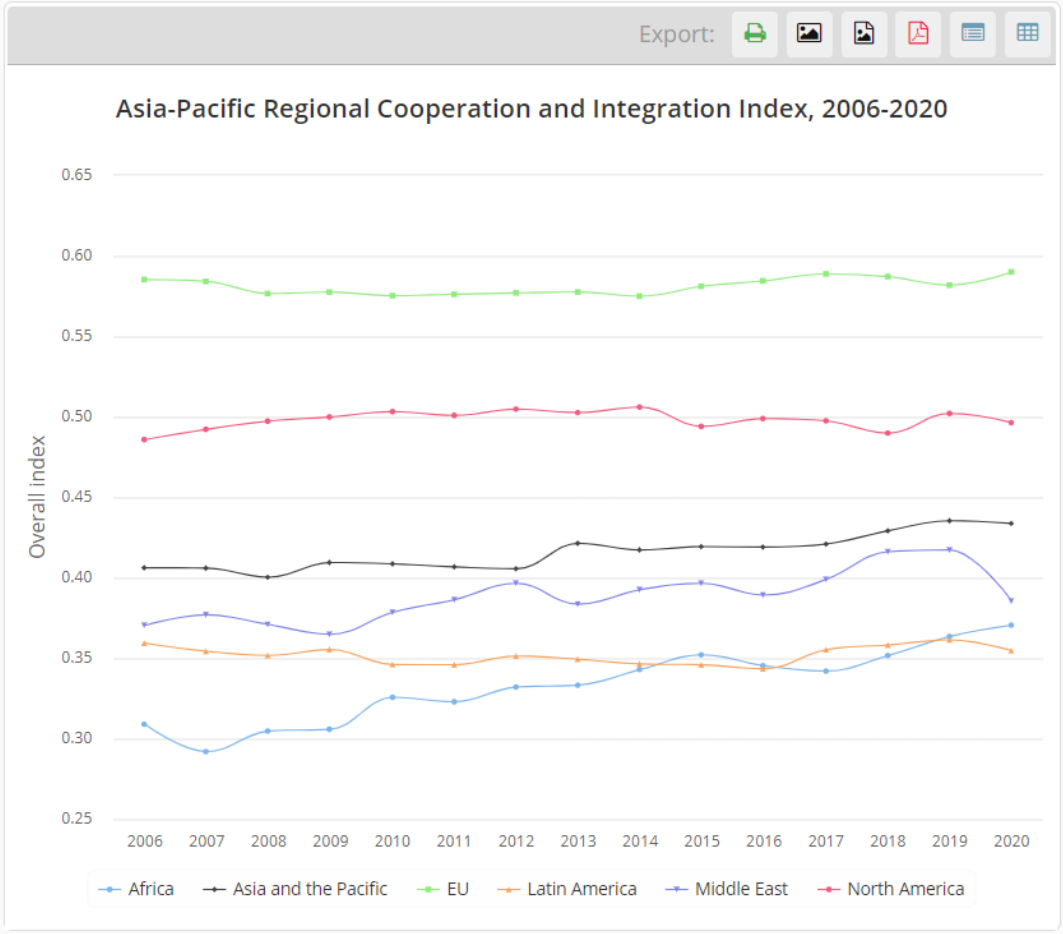


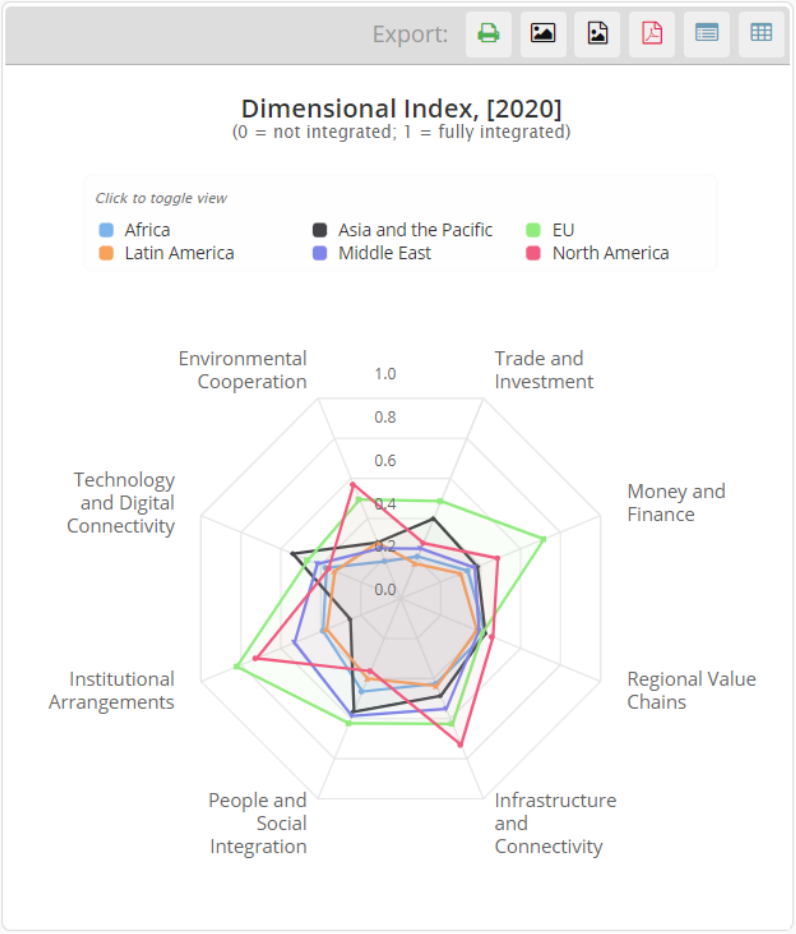
- The customized index complements information from national data sources while considering other aspects such as economic size
- Results show considerable progress in **institutional integration** and **movement of people,** but RCI of Eurasia in in merchandise trade and **regional value chains** lags behind most of the other regions.
- Applying the customized framework to compare Asian subregions showed that RCI in **institutional arrangements** and the **movement of people** were more advanced in Eurasia than in East Asia, Southeast Asia and South Asia.

Online ARCII database



Regional comparison: ARCII provides an avenue for tracking the overall progress of different regions across different dimensions throughout the years

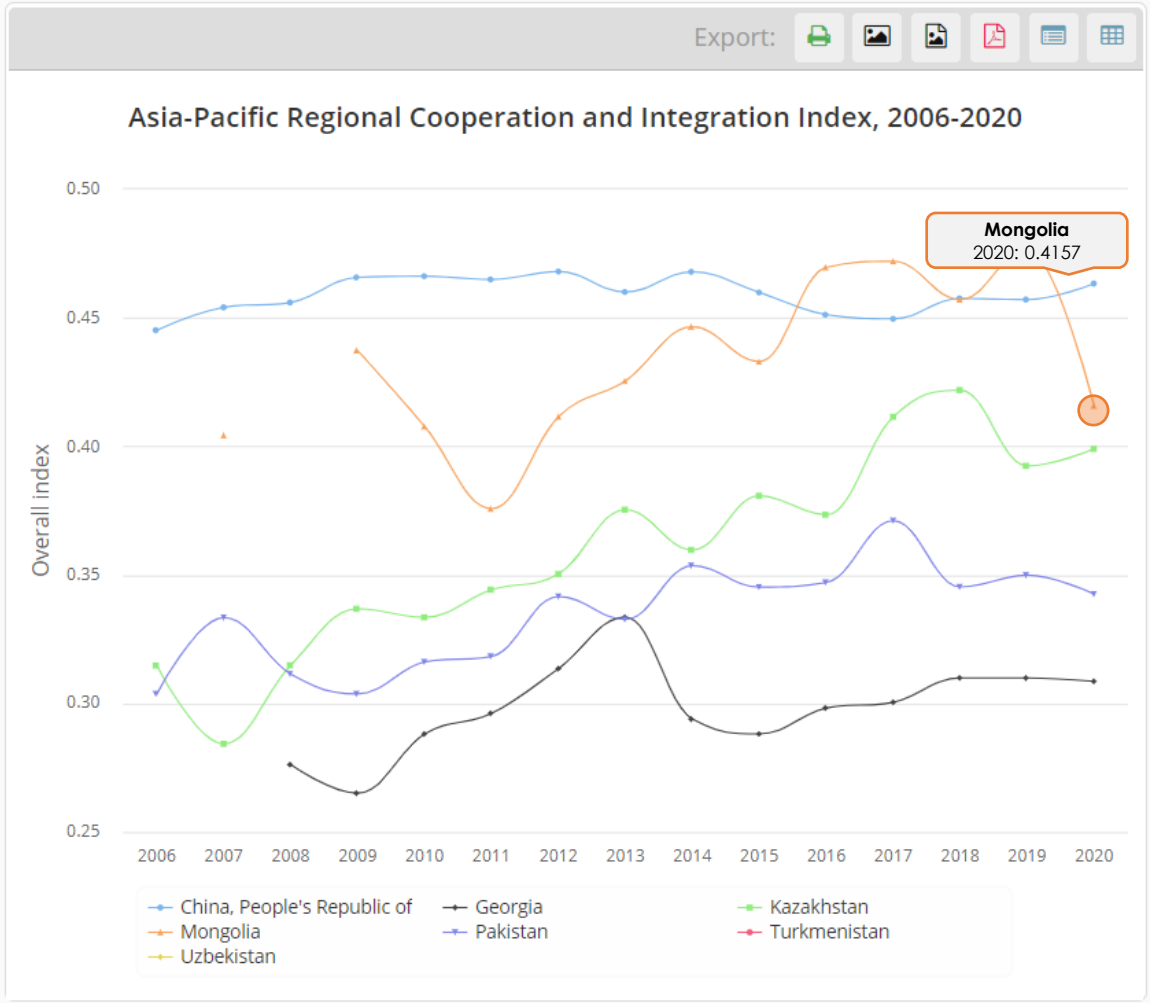




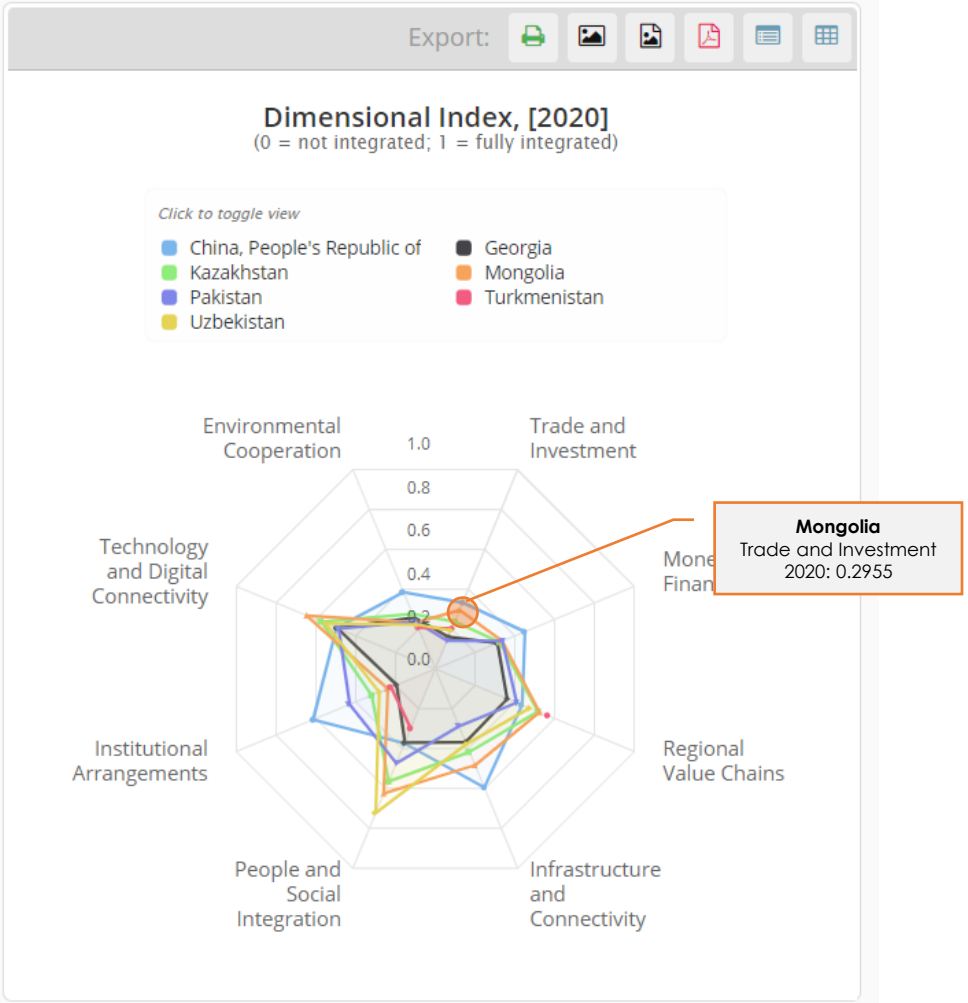
EU and **North America** exhibit the highest scores in the overall index in 2006-2018. The other regions experience improved levels of integration in the same period.

The regions show divergent performances by dimensions, but **EU** and **North America** lead most of them.

Country level analysis: ARCII allows comparison of a country's regional integration against that of its neighbors within the same region

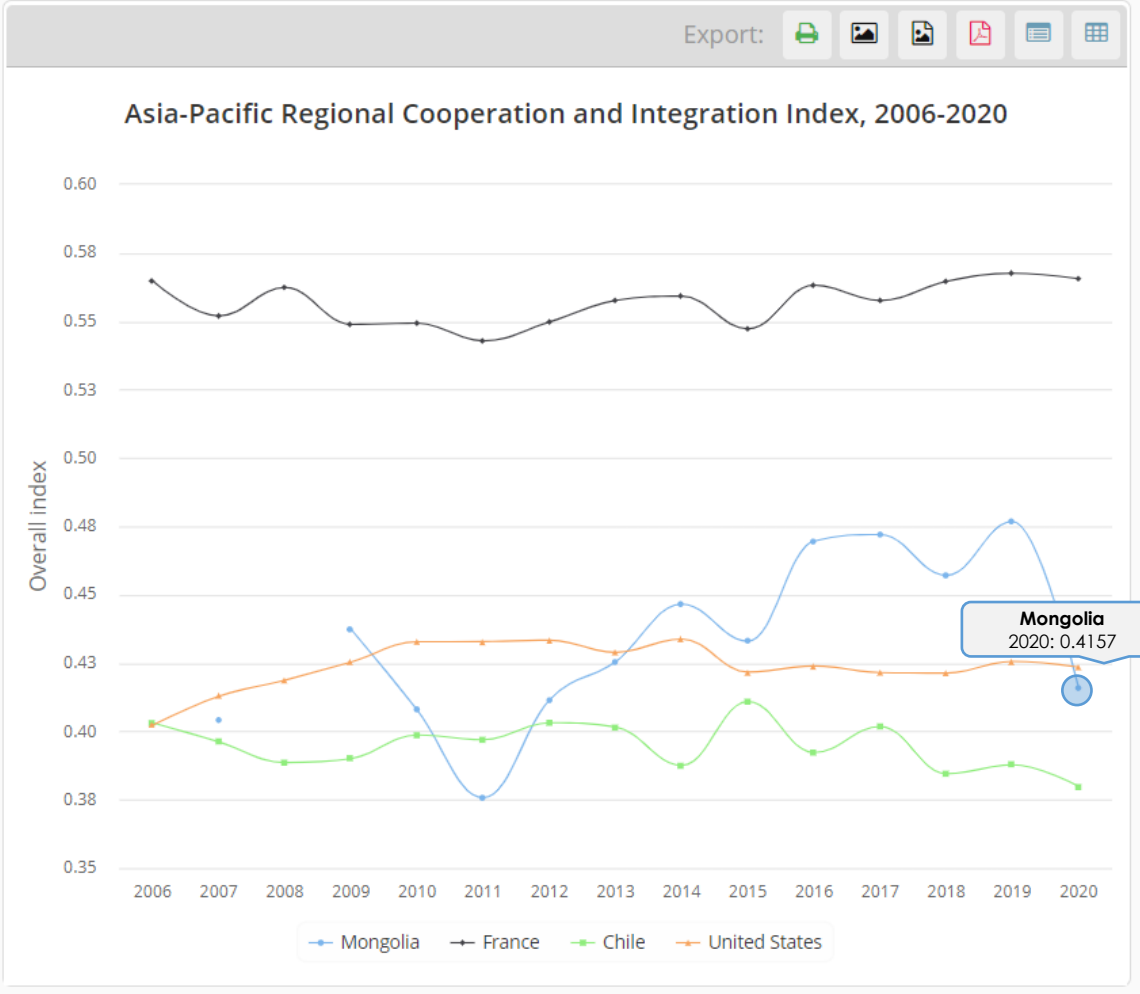


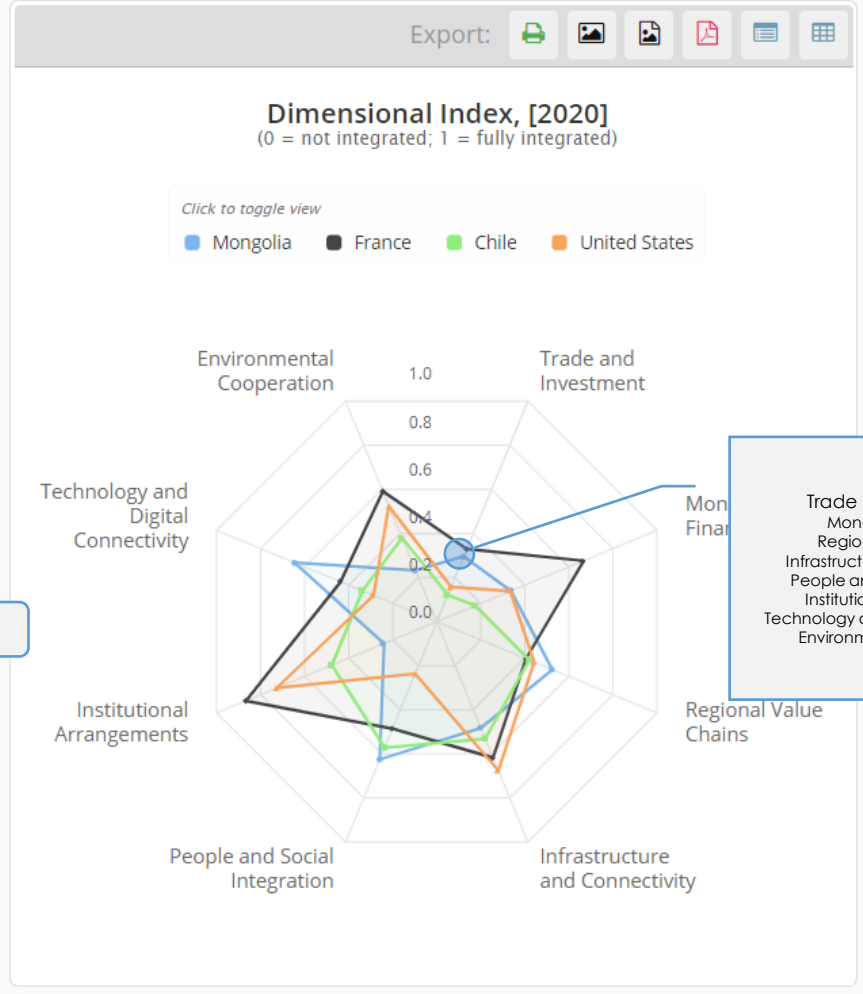
Mongolia is more integrated with Asia and the Pacific in 2006-2020, relative to most of the countries selected.



Mongolia shows above-average performance across the ARCII dimensions in 2020.

Country level analysis: ARCII allows comparison of a country's regional integration against that of a country in another region



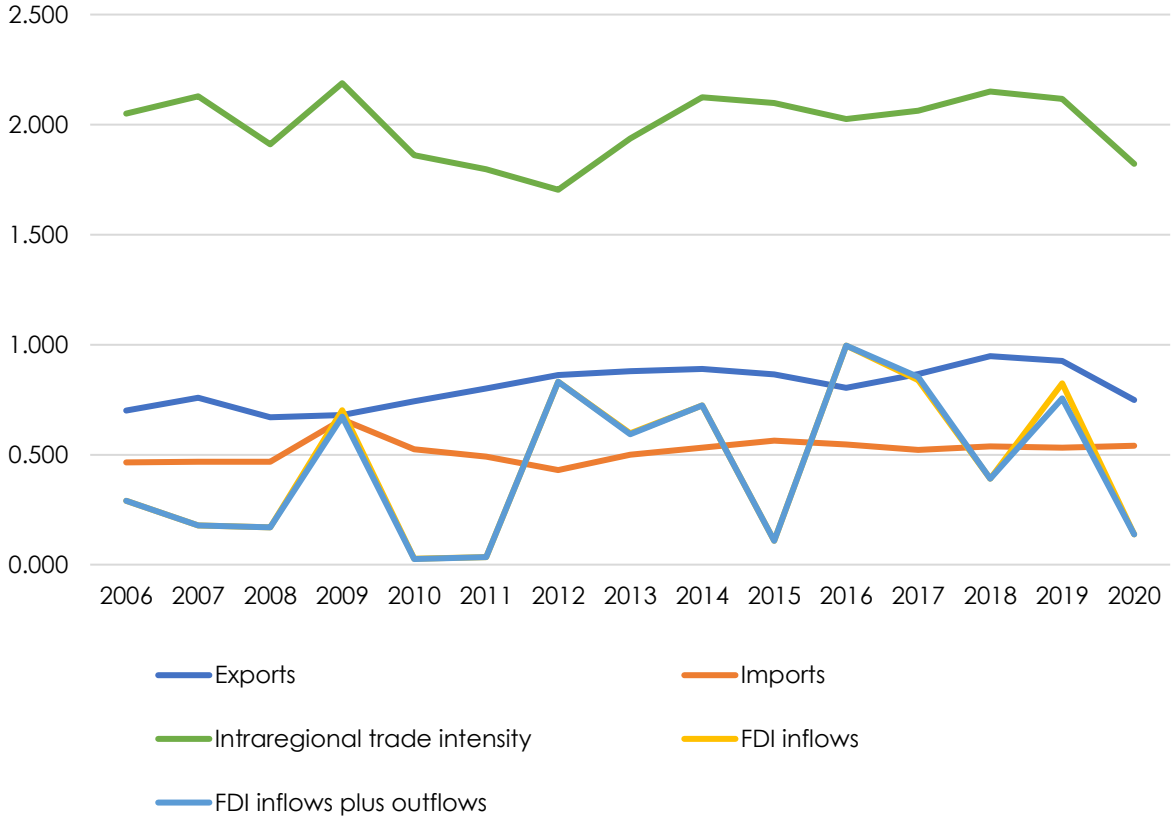


Large gaps exist among the four countries selected, with France, a country in EU, being the most regionally integrated. In most years, **Mongolia**'s integration with Asia and the Pacific follows.

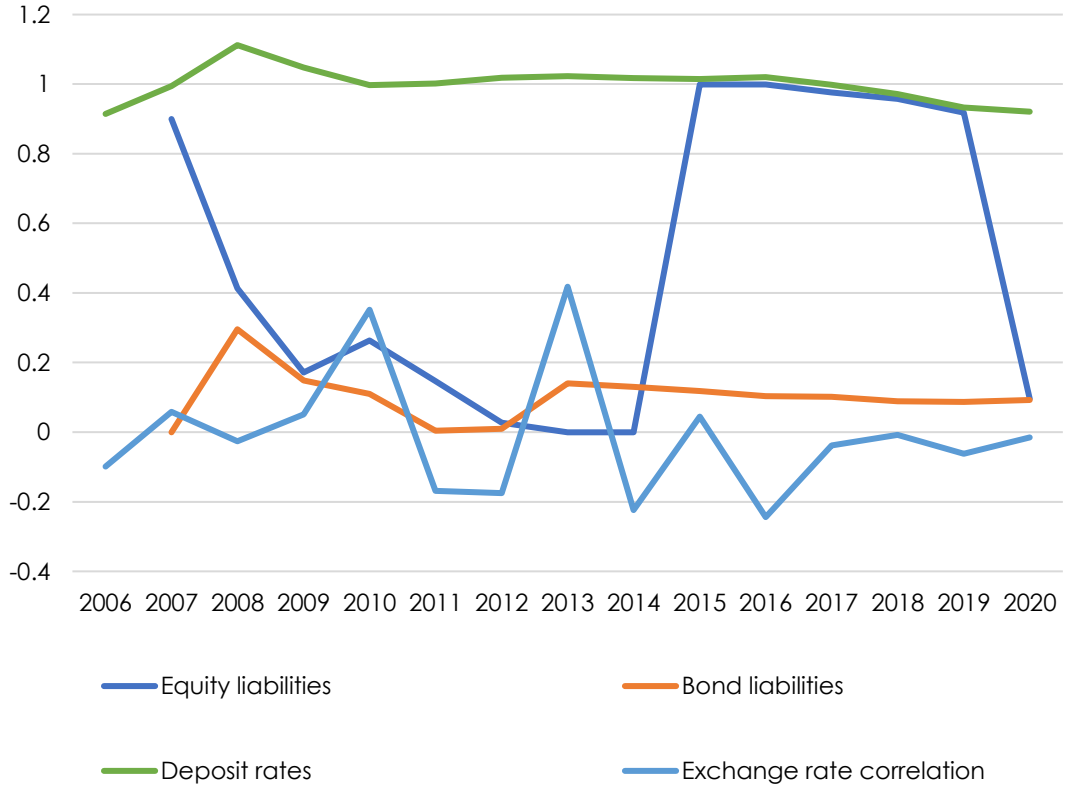
Mongolia's integration with Asia exceeds that of the other countries in the **technology and digital connectivity**, **regional value chains**, and **people and social integration**.

Decrease in Mongolia's overall ARCII in 2020 may be explained by trends in FDI and equity liabilities

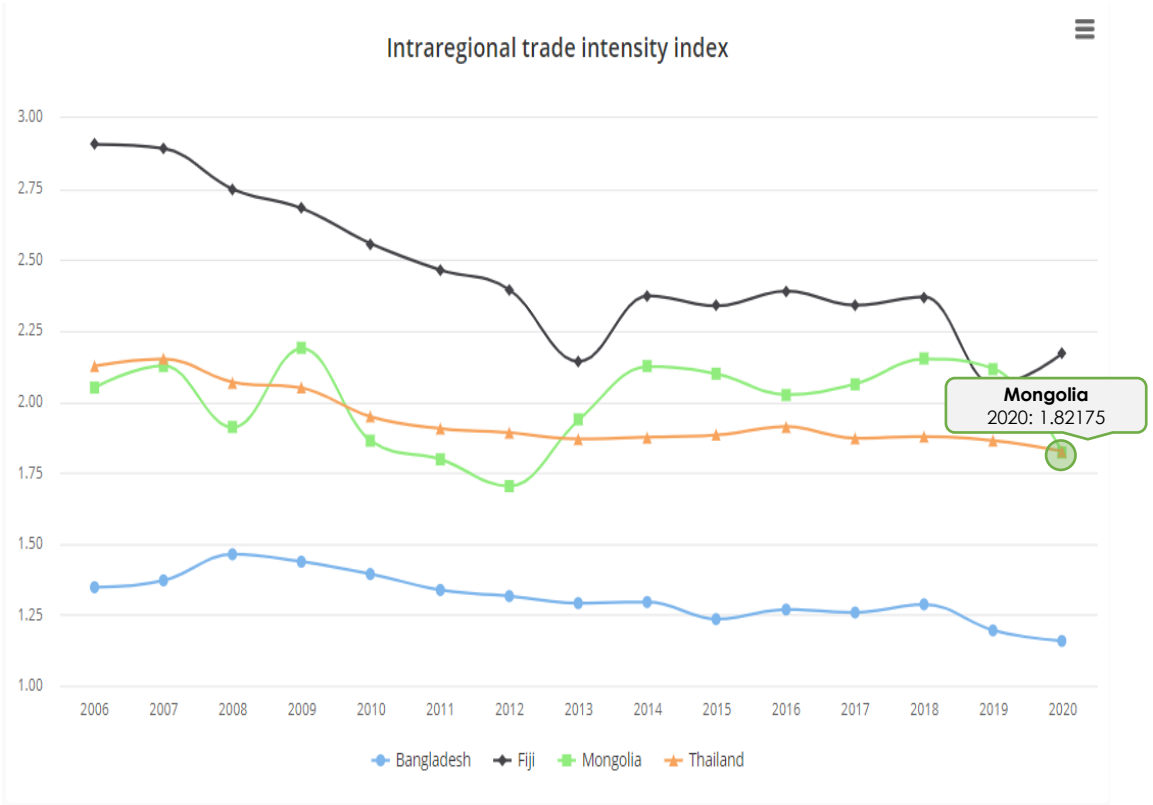
Trade and investment indicators



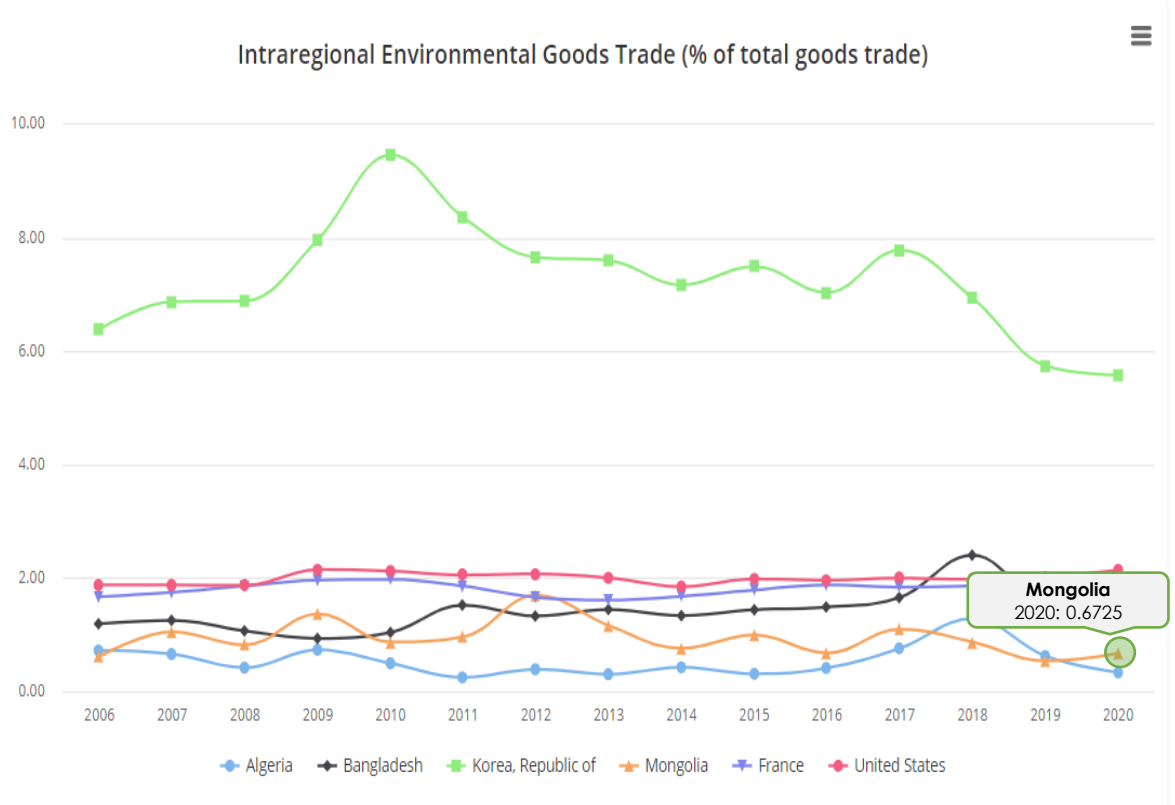
Money and finance indicators



Country level analysis: Country performances in regional integration of can be compared down to the indicator level



Bangladesh, Fiji, Indonesia, and Thailand exhibit a downtrend in intraregional trade intensity index. **Mongolia** is second to Fiji, but the rate of its decline is lower than Fiji's.



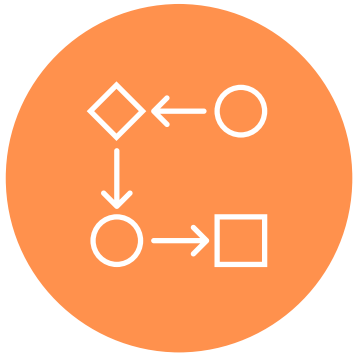
Fluctuations in the environmental goods trade of the **Republic of Korea** with Asia and the Pacific is more apparent than that of other countries such as **Mongolia** which exhibit relatively stable trends.

PART III. APPLICATIONS

Potential uses of ARCII

PBL/RBLs and policy reform

- Can be an input in policy planning and national budgeting process
- Provide insights in selecting government projects to prioritize
- RCI dashboards are useful in tracking the performance of a country in key policy areas



Benchmarking

- Gauge progress in economic integration vs. regional performance
- Compare integration of an economy at the indicator or dimension level
- Assess performance against set goals
- Understand how deep the linkages of a country with its own region vs. outside, and the vulnerabilities

New indicators

- Bilateral environmental agreements
- Global value chain indicator from ADB-MRIOT
- Services exports/imports
- International students
- Carbon dioxide emissions

Potential uses of ARCII

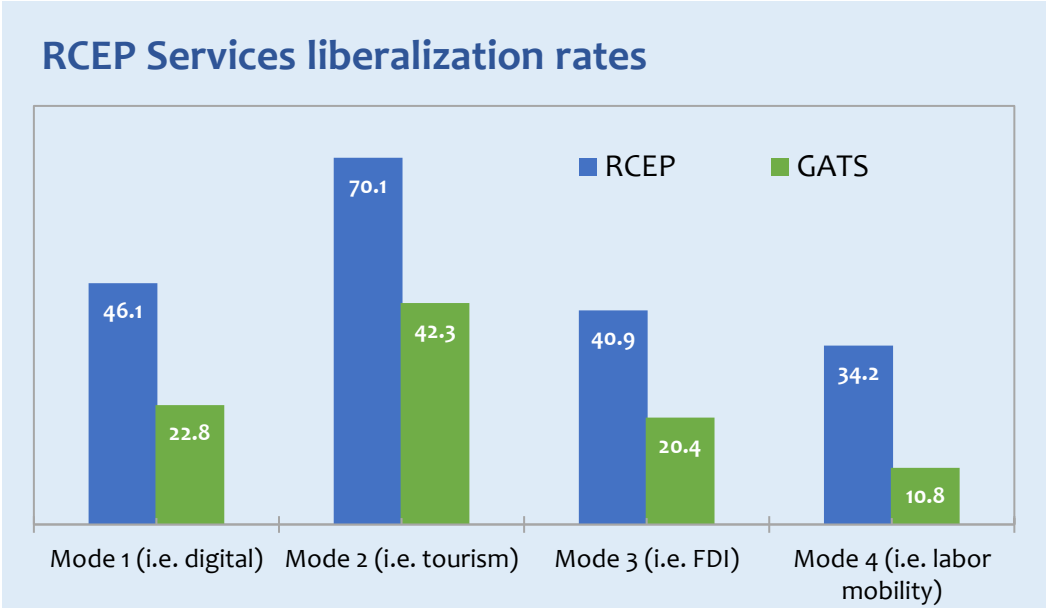
Informing the Regional Comprehensive Economic Partnership (RCEP) process

RCEP exemplifies commitment to integration among 12 participating APEC economies:

- Reduces tariffs
- Simplifies documentation of rules of origin to support regional supply chains
- Goes further than the General Agreement on Trade in Services (GATS) in liberalizing services trade

RCEP can still go much further in liberalizing digital services trade.

ARCII indicators and dimensions can be used to track progress on objectives defined above above.

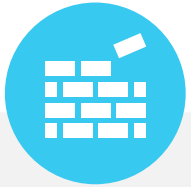


Source: Crivelli, Marand, Pascua (forthcoming), based on ADB-ERIA RCEP Services Commitments database

Capacity building program on the ARCII can be expanded at the subregional or even country level

Capacity-building program (ADB TA 9763) to support to ADB RCI; will be held in separate rounds for different subregions.

Knowledge sharing



Program to highlight the option for index customization, equipping users with tools to adapt the ARCII framework to their strategies.

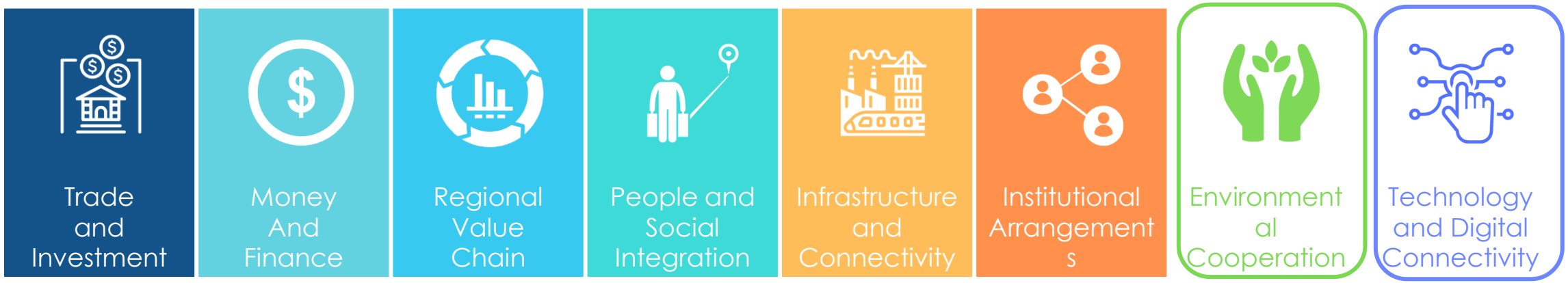
ARCII customization

The standard/customized ARCII can serve as a benchmark metric that could aid in the evaluation and assessment of RCI strategies across economies

Progress tracking

How does regional integration relate to globalization?

- Regional cooperation and integration is often thought to provide economic opportunities while being less exposed to the global competition and risks of full liberalization.
- Regionalization can be a strategy for countries that wish to build economic and financial resilience and a more controlled **path toward globalization.**
- The **Global Integration Index (GII)** is built upon Huh and Park's (2021) work but is updated and extended substantially. Two new dimensions of technology and digital connectivity, and environment were added to reflect their growing roles in deepening the globalization processes.
- For the **Regional Integration Index (RII)**, the indicators are defined in terms of regional values wherever applicable



How does regional integration relate to globalization?

Globalization and regionalization are intertwined processes. Globalization involves forging both ***regional*** and ***extra-regional*** linkages.

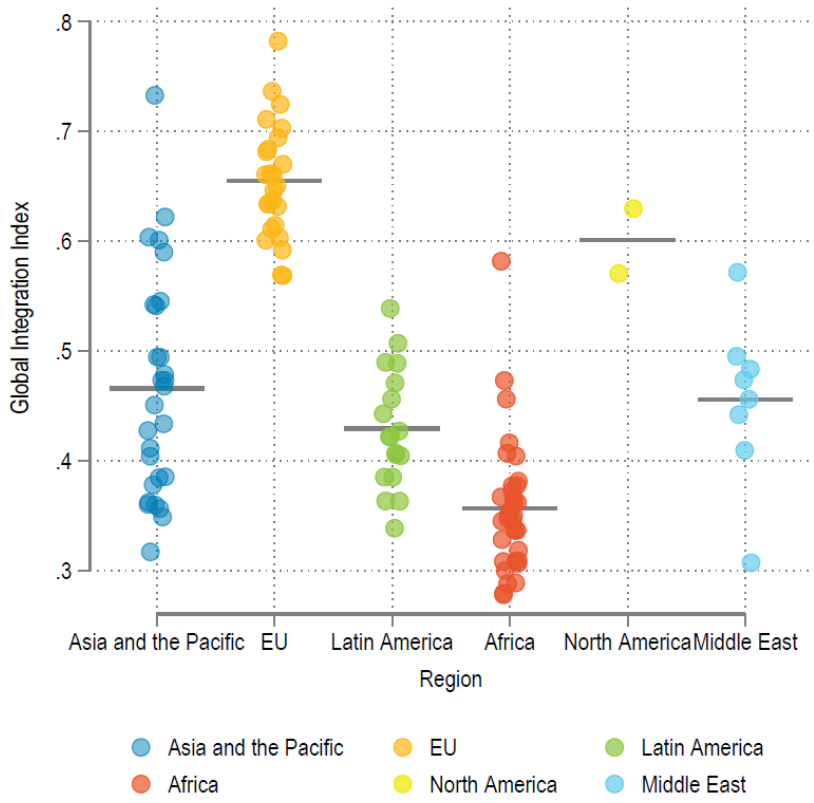
RCI can provide economic opportunities while being less exposed to the risks of full liberalization. It can be a strategy for countries to build a more controlled **path toward globalization.**

Regional and extra-regional channels have strengthened in Asia and other regions over the past two decades, but the pace and components of globalization differs across economies.

As economies seek to balance the pace of globalization, they may consider their external vulnerabilities, and the role that RCI policies may play in mitigating these while supporting global integration.

A **Global Integration Index (GII)** informs policy makers on regional and extra-regional linkages, while a **Regional Integration Index (RII)** can measure the former. The RII is not identical to ARCII, and its construction allows comparability with GII.

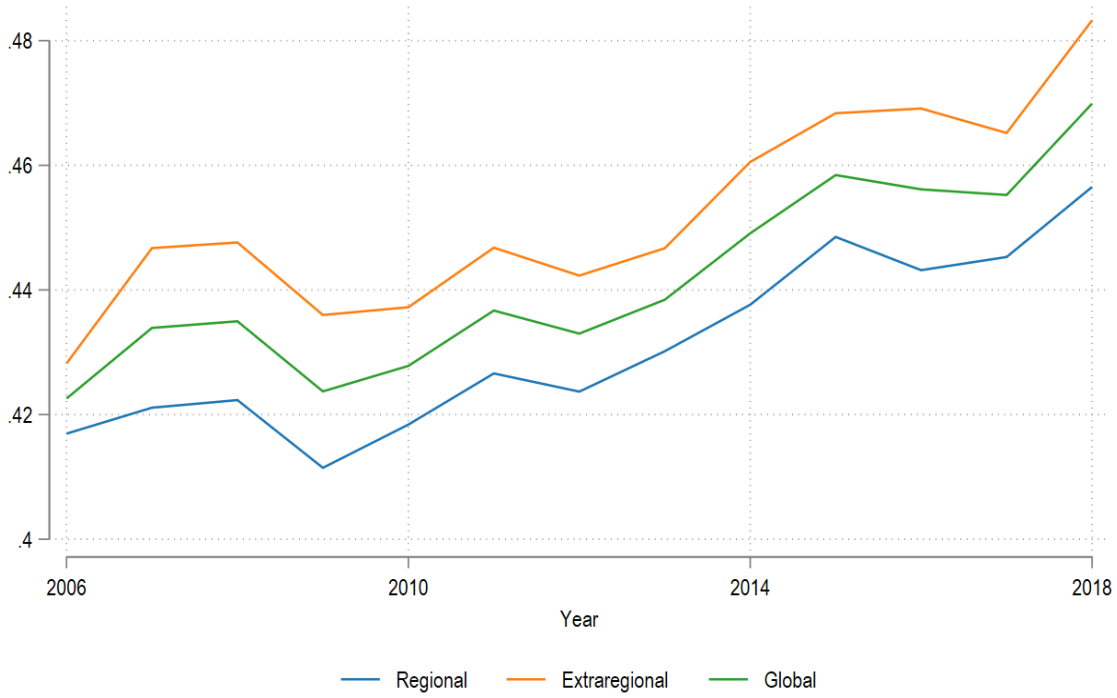
Global integration index, by Region



Source: Asian Development Bank calculations using data from ADB. Asia-Pacific Regional Cooperation and Integration Index Database. https://aric.adb.org/database/arcii (accessed October 2022).

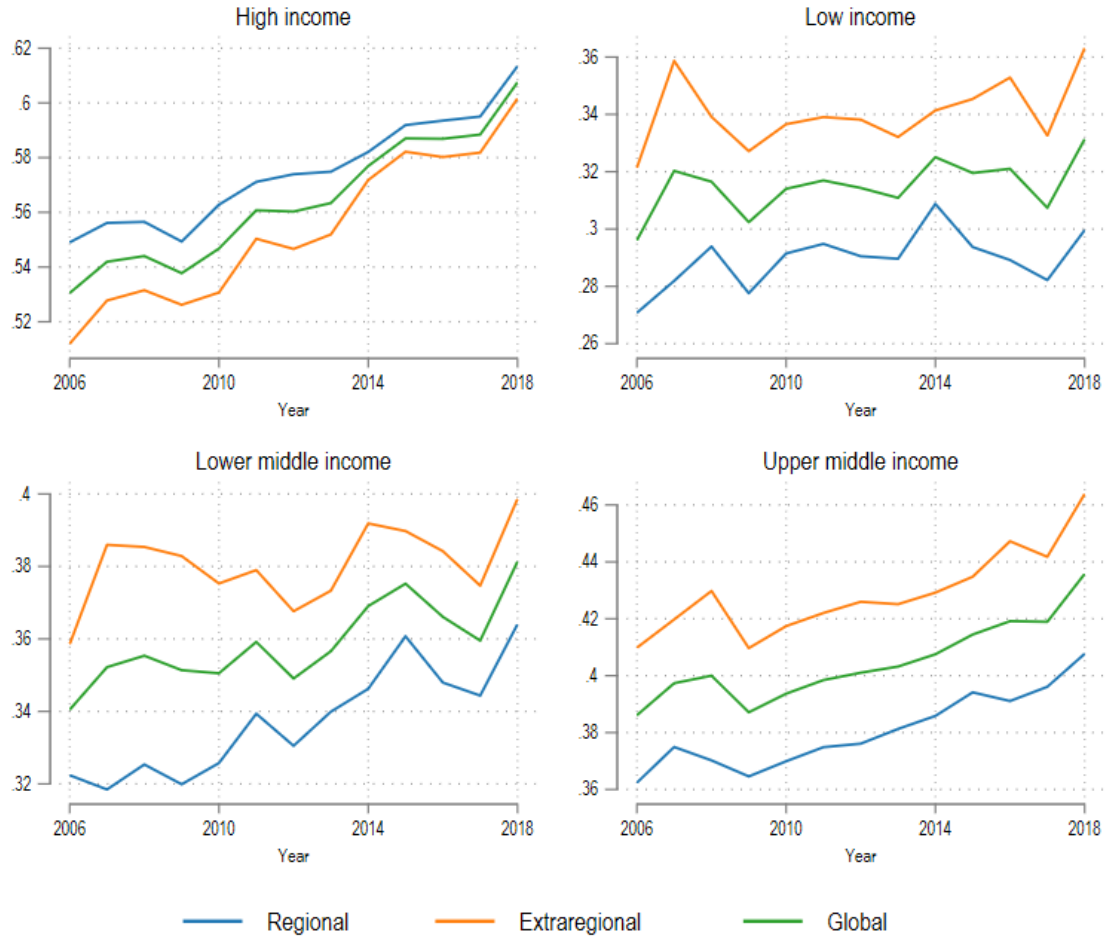
Global integration shows an increasing trend, and follows the same path as regional and extra-regional integration

Regional, Extra-regional, and Global Integration Indexes, Overall



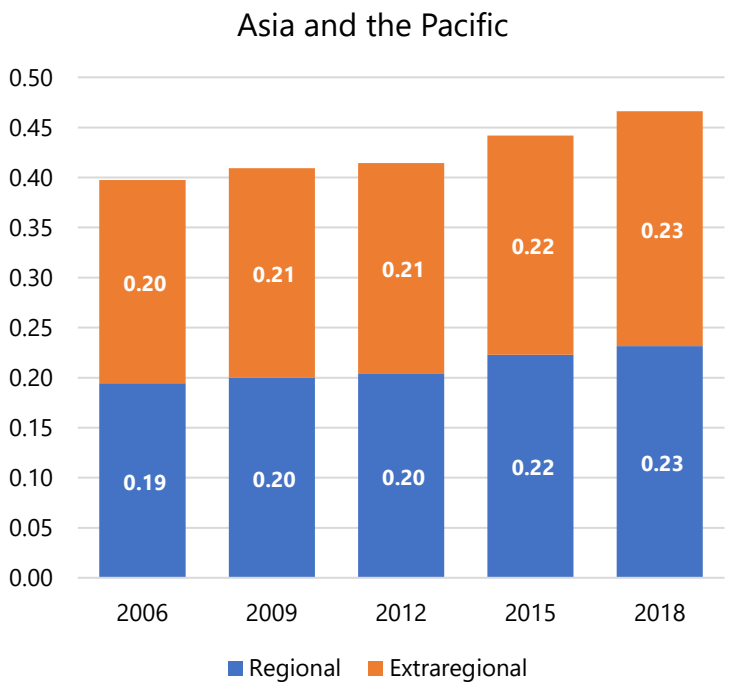
Data source: ARCII database. Preliminary calculations by Huh.

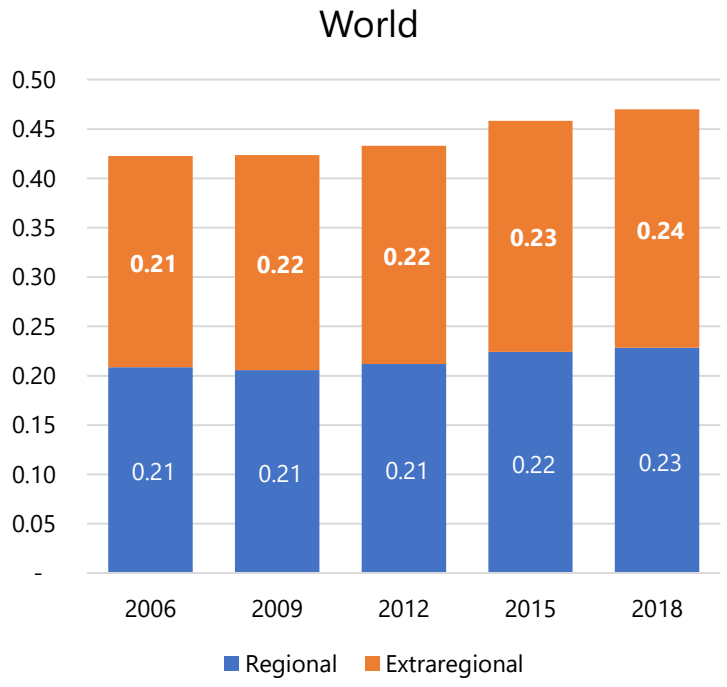
Regional, Extra-regional, and Global Integration Indexes, By income group

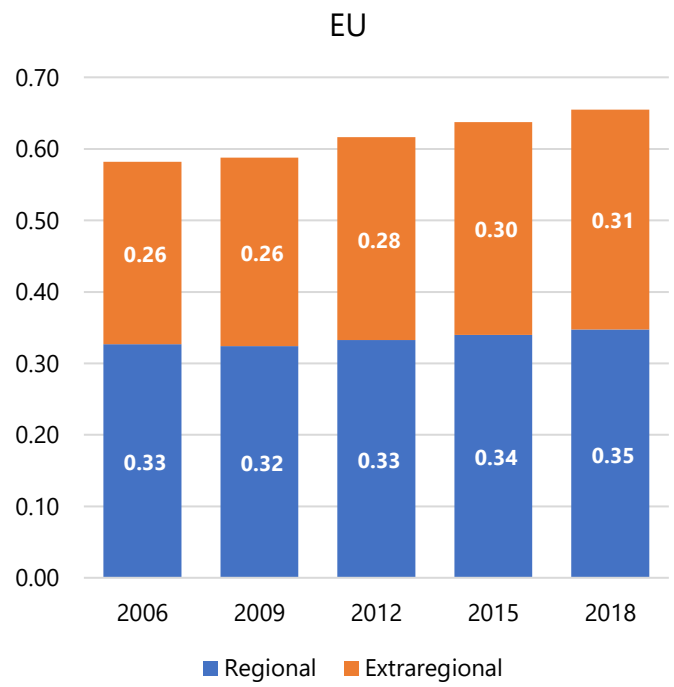


The relative contributions of regional and extra-regional integration to global integration vary by region

- When averaged over all countries, regional and extraregional integration have roughly equal contributions to global integration, with extraregional integration being slightly higher. The same is true for Asia and most of other regions.
- For countries in EU, which have deep regional ties, regional integration contributes more than extraregional integration to its globalization







Note: Contributions of regional integration index (RII) [and extraregional integration index (EII)] are computed as the weight of the index multiplied by the index.
Data source: ARCII database. Preliminary calculations by Huh.

Global integration linkages also impact development outcomes

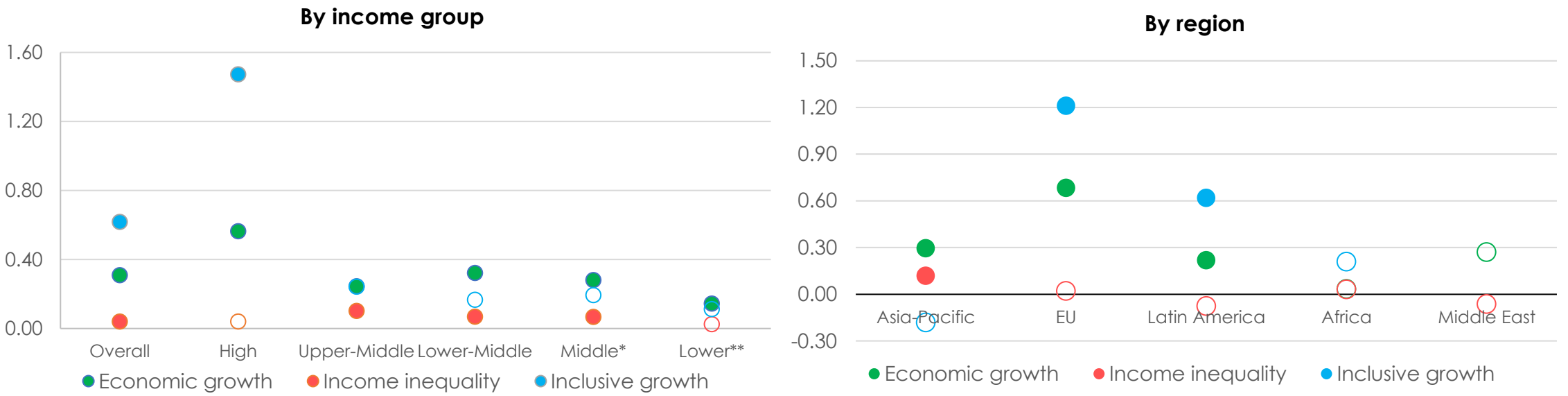
Assessing the impact of global economic integration

Promotes economic growth across all income groups

Induces income inequality in several income groups

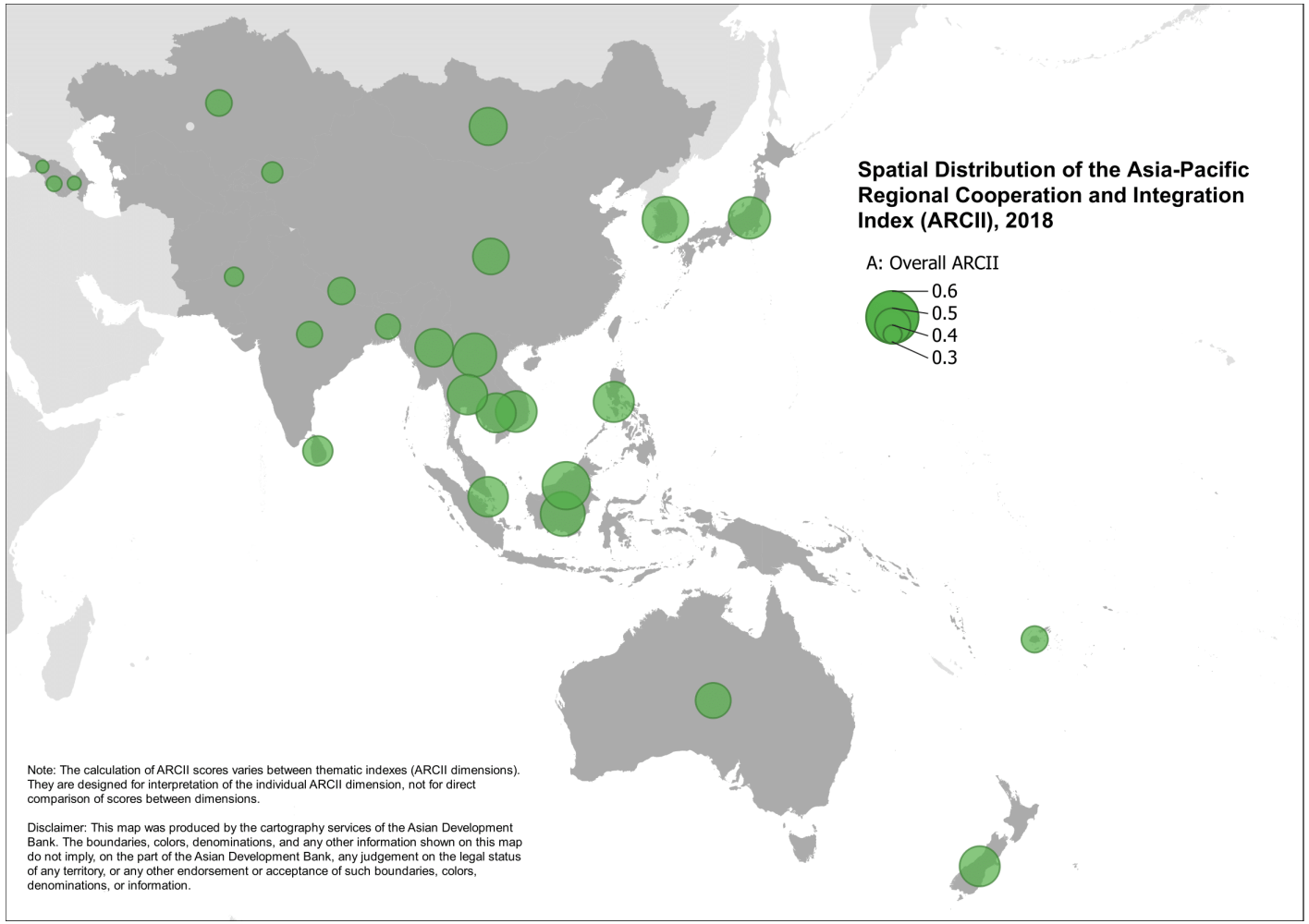
Fosters inclusive growth for high income group

Estimated impact of Global Integration on growth, inequality and inclusive growth



Notes: Dots describe regression coefficients assessing the association of global integration index with GDP growth, income inequality (using the Gini Index developed by the World Inequality Database) and inclusive growth (defined by growth adjusted for income inequality). Hollow dots denotes coefficients not significant at 10% level.
*Upper and lower-middle income; **Lower-middle and low income

Spatial analysis suggests that location exerts influence on an economy's level of regional integration



- An economy's geographic location can play an important role in its ability to forge linkages with other economies in a region.
- The overall ARCII and dimensional indexes depict that neighboring economies generally have similar index estimates.

Thank you!

ANNEX

Enhanced ARCII framework: New dimensions and expanded regional coverage

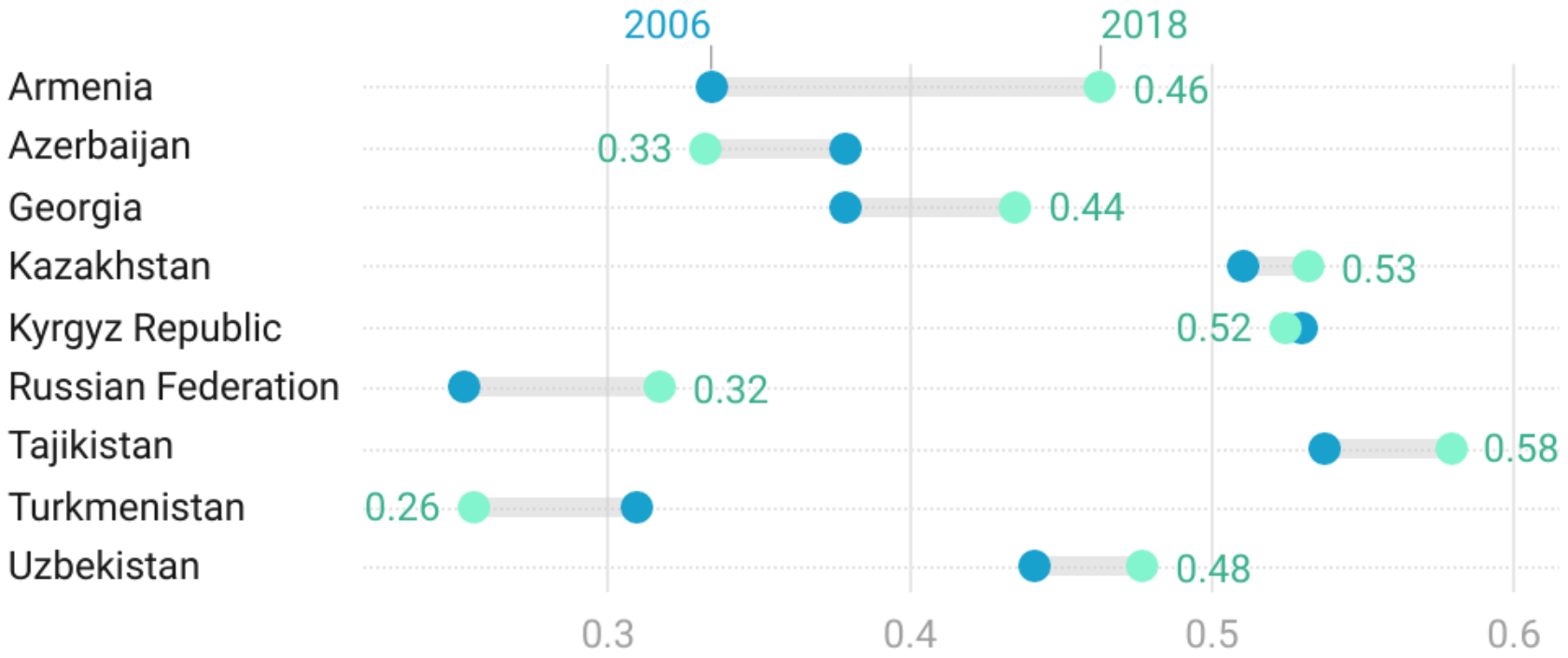
Two new dimensions have been added to reflect linkages in digital connectivity and environmental cooperation.

Coverage has been expanded from 158 to 173 countries and from 26 to 41 indicators.

Source: Asia-Pacific Regional Cooperation and Integration Index: Enhanced Framework, Analysis, and Applications

Results: Overall scores by economy

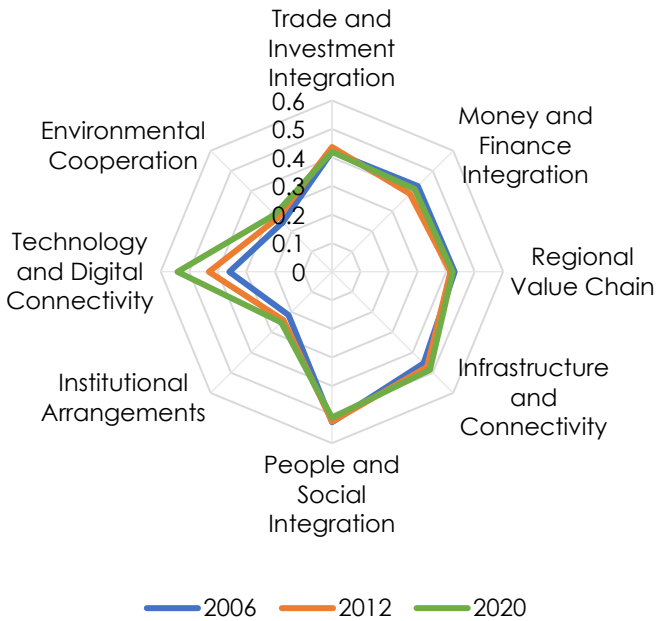
Eurasian Economies—Overall Scores under the Customized ARCII Framework, 2006–2018



Source: Asian Development Bank (ADB) calculations using data from ADB. Asia-Pacific Regional Cooperation and Integration Index (ARCII) Database.

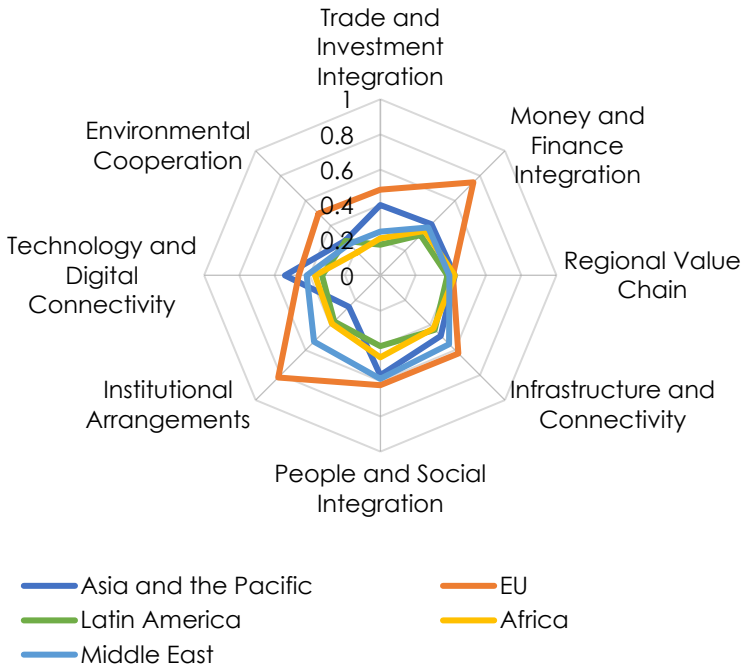
Asia is relatively well integrated and on multiple dimensions compares well to developed regions

Asia and the Pacific 2006, 2012, 2020



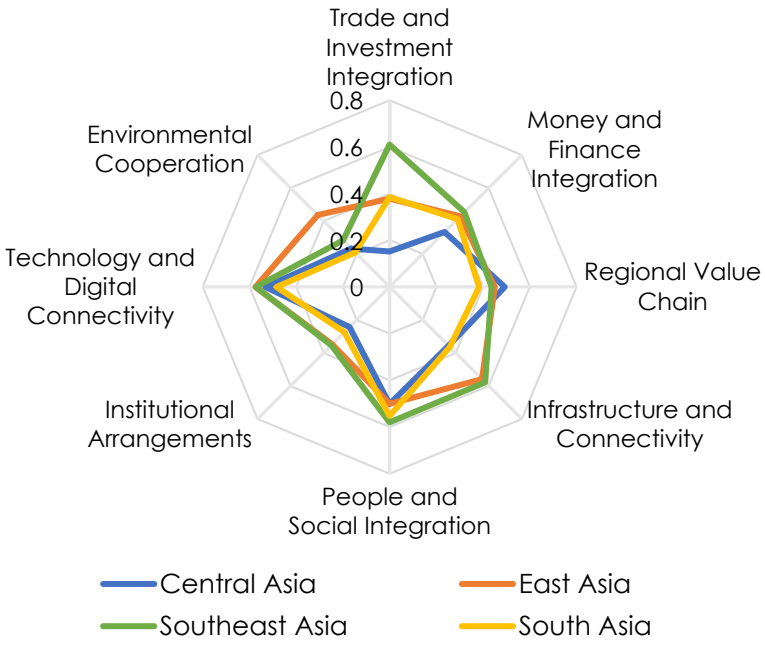
Trade, **investment**, **infrastructure** and **digital connectivity** has improved since 2006.

Asia and the Pacific vs. other regions, 2020



Asia performed similarly well with EU in regional **trade**, **investment**, and **value chain participation**

Asia subregions, 2020



Asia subregions display **wide-ranging performance** across dimensions.

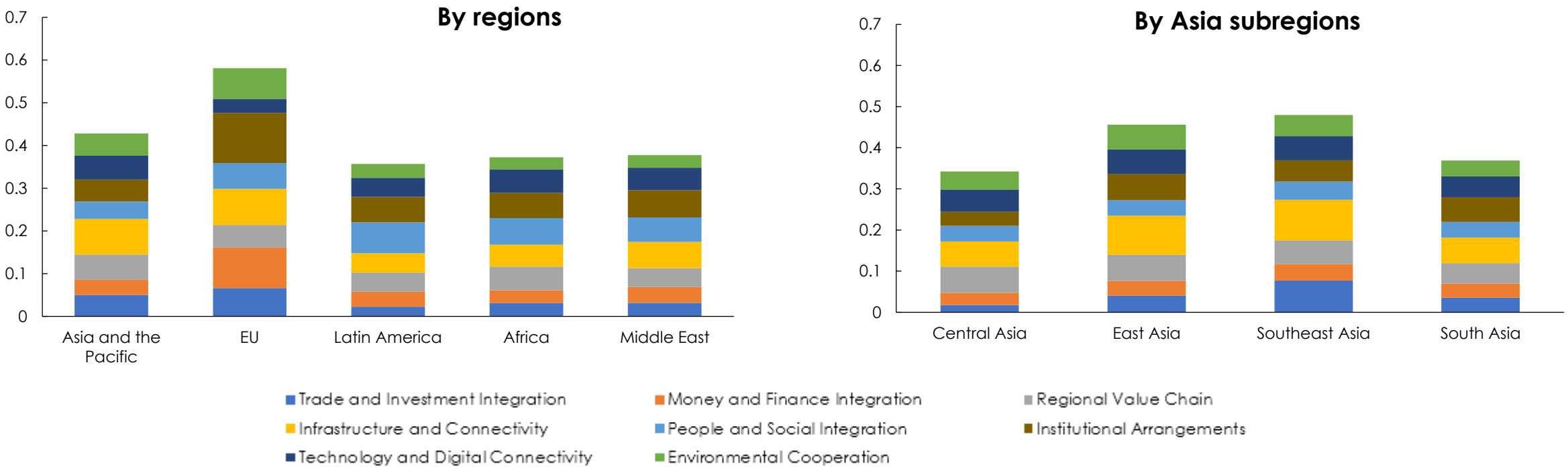
Notes: Worldwide normalization is used for all estimations, where the indicators are normalized using global maximum and minimum values across all regions.
Higher values denote greater regional integration.
Source: ADB. Asia-Pacific Regional Cooperation and Integration Index Database (accessed September 2022).

Drivers of RCI in Asia and subregions underscore several areas for improvement

RVCs, **infrastructure and connectivity** and **technology and digital connectivity** are the largest contributing dimensions to Asia's RCI

Southeast Asia and **East Asia** remains at the forefront of RCI - with similar contributions by dimension

Dimensional Contribution to the overall ARCII Estimate (2020)



Note: Dimensional contributions are computed as the weight of a dimension multiplied by the dimensional index.
Source: Asian Development Bank. Asia-Pacific Regional Cooperation and Integration Database. https://aric.adb.org/database/arcii (accessed September 2022).

Background on Eurasia

Country List

Central Asia

Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan

The South Caucasus

Armenia, Azerbaijan and Georgia

The Russian Federation

Eurasian Economies—Selected Economic Indicators, 2020

Country	Population (millions)	GDP at current prices ($ billion)	GDP per capita at current prices ($)	GDP per capita at PPP valuation ($)
Armenia	3	13	4,268	13,284
Azerbaijan	10	43	4,214	14,452
Georgia	4	16	4,279	14,863
Kazakhstan	19	170	9,056	26,729
Kyrgyz Republic	7	8	1,174	4,965
Russian Federation	144	1,484	10,127	28,213
Tajikistan	10	8	859	3,858
Turkmenistan	6	45	7,612	16,196
Uzbekistan	34	58	1,686	7,378

Subregional initiatives play a key role in ADB's support to regional cooperation

ADB's Work in Regional Cooperation and Integration

Highlights from RCI operations in 2021

$227 million in **cargo & energy** transmitted across borders

11 measures on cross-border **environmental cooperation**

$1.08 billion in **investments in trade** facilitated

6 measures to develop **economic corridors** supported

Source: ADB. 2021 Development Effectiveness Review

Subregional cooperation initiatives: Key progress in 2020/2021

CAREC INSTITUTE

- 213 projects worth $39.3 billion as of end 2021. with Transport (75%) and energy (22%)
- CAREC 2030 implementation for post-pandemic recovery

SASEC

- Over 73 projects worth $17.43 billion.
- Multimodal transport corridor development strengthened
- Clean energy and subregional power transmission

Greater Mekong Subregion

- 109 projects worth $27.7 billion.
- 12,000 kilometers of new or upgraded roads; about 700 km of railway lines installed
- 3000 megawatts of electricity generated and 2600 km transmission lines installed

PACIFIC

- Systems Strengthening for Effective Coverage of New Vaccines expanded to include COVID-19 vaccines
- Investments in transport connectivity, renewable energy and ICT.

Multiple, simultaneous crises highlight the need for **stronger regional cooperation and integration**. The World trade Organization referred to these as the **3Cs Polycrisis**:

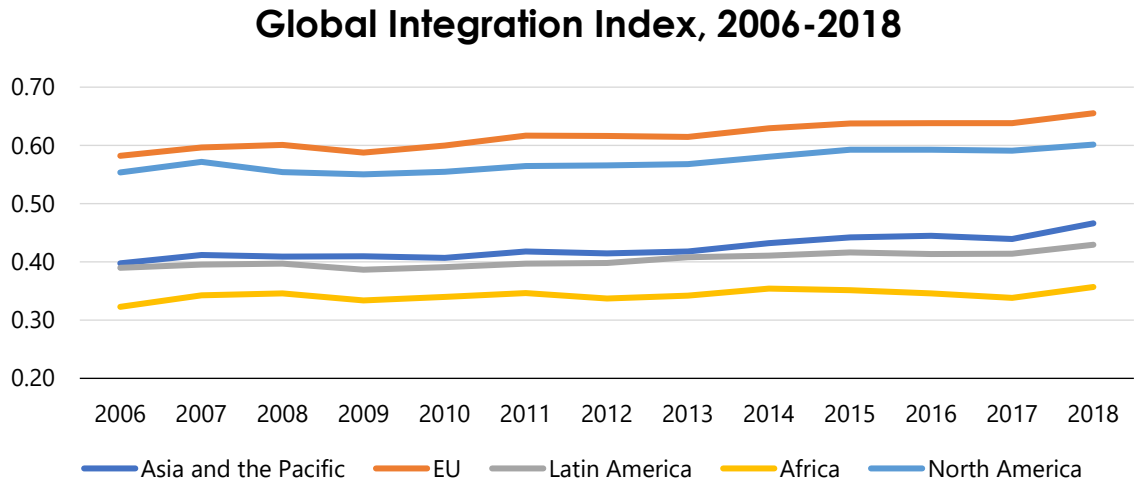
- COVID-19 pandemic
- Climate change
- Geopolitical crises (such as the Russian invasion of Ukraine)

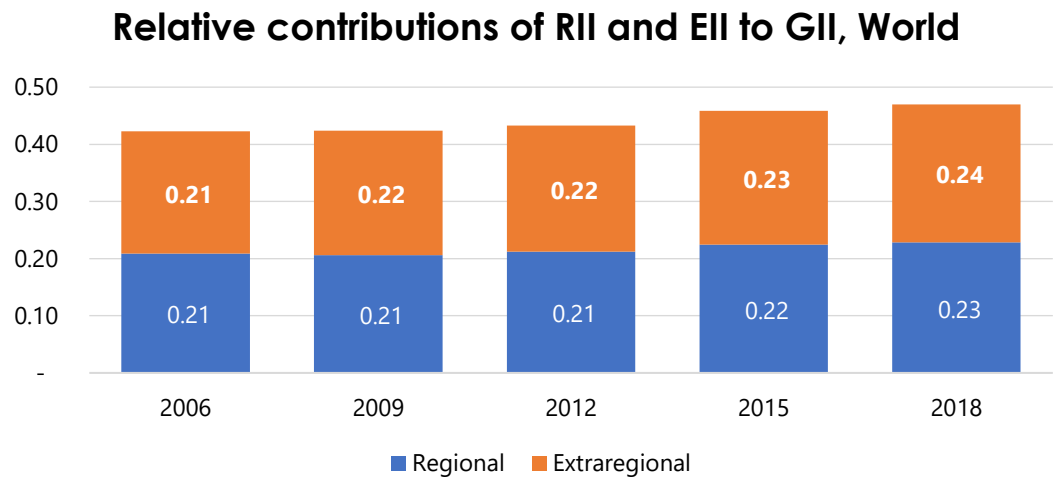
Source: Um, Woochong (2022, August 23-25). "Strengthening Regional Cooperation and Integration for a New Era of Collective Action" [Keynote Address]. Regional Cooperation and Integration Conference 2022, Bangkok, Thailand.

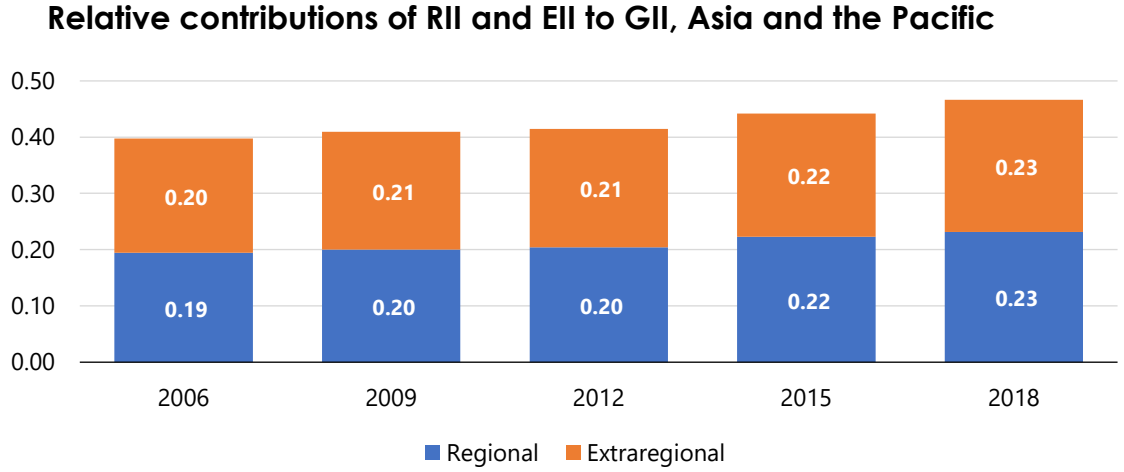
ADB, in its **2021 Development Effectiveness Review**, found that the pandemic has set back climate change efforts and past regional progress on development areas such as poverty reduction, food security, education, and women's empowerment.

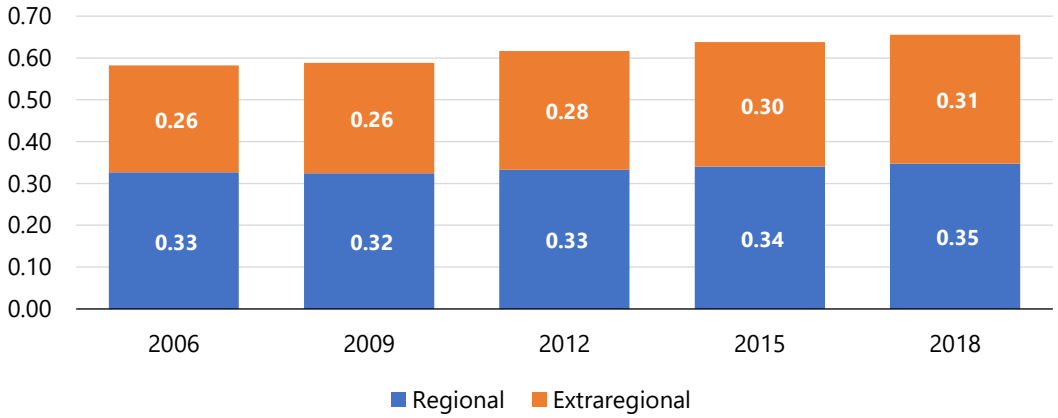
Improving RCI metrics **to Asia** and **intra-subregional** and offering **customized** solutions can help subregional programs meet their needs

The relative contributions of regional and extra-regional integration to global integration vary by region







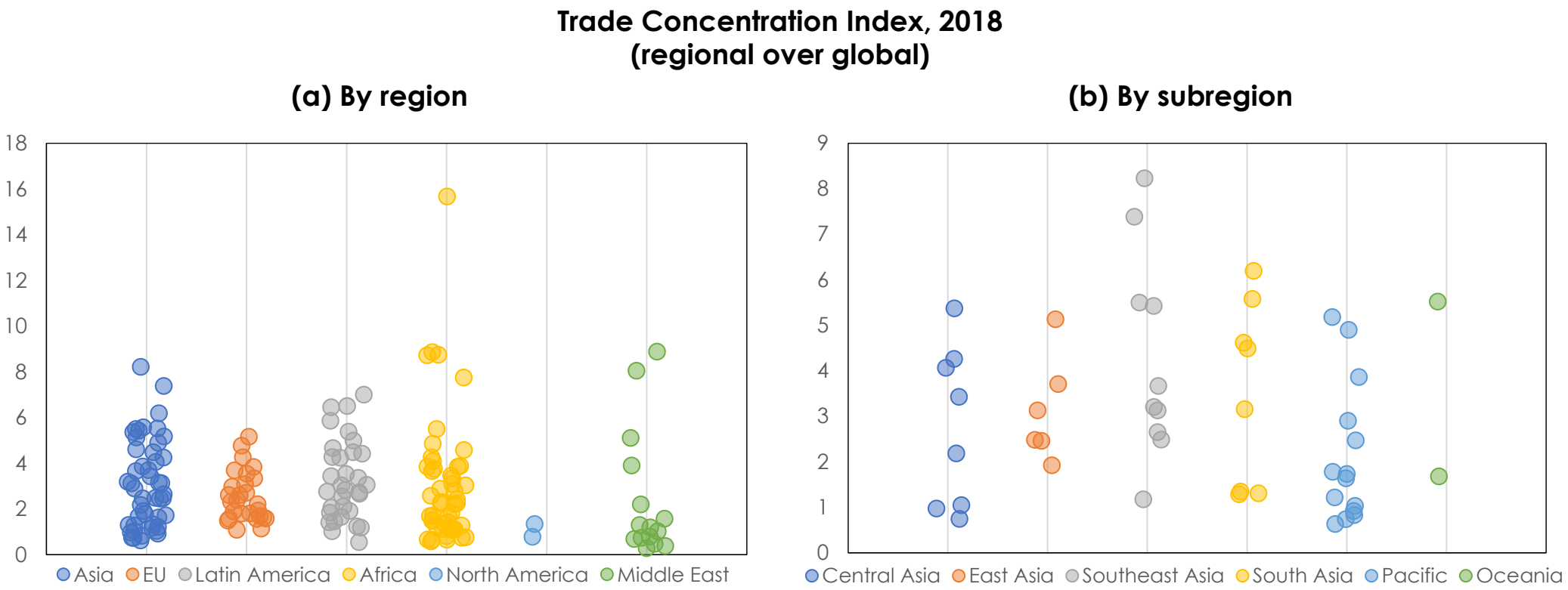


Notes:
1: For an event to be considered a disaster, it must satisfy at least one of the following criteria: (i) 10 or more deaths, (ii) 100 or more people affected/injured/homeless, or (iii) official declaration of the country of a state of emergency and/or appeal for international assistance.
2: FSM = Federated States of Micronesia, Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China. Data is as of 17 May 2022.
Source: Asian Development Bank calculations using the International Disaster Database. http://www.emdat.be (accessed June 2021); ADB, Asian Development Outlook 2022; Our World in Data (accessed 20 September 2022); and CEIC Data Company.

Example: Trade Concentration

- Trade concentration gauges the degree to which a country's trade (exports or imports) is concentrated in a limited number of products or trading partners. In other words, this measures product or market diversification. ARCII uses the **Herfindahl-Hirschman Index (HHI)** to estimate trade concentration.
- Trends show huge variation in regional trade concentration across all regions. With the Asian subregions, Southeast Asia followed by Oceania had the highest level of regional trade concentration.

Trade Concentration Index, 2018
(regional over global)



EU = European Union
Source: Asian Development Bank calculations using data from United Nations Commodity Trade Statistics Database. https://comtrade.un.org (accessed August 2020).