



Asian Economic Integration Report 2021

ASIA-PACIFIC REGIONAL COOPERATION AND INTEGRATION INDEX: UPDATES AND UPGRADES

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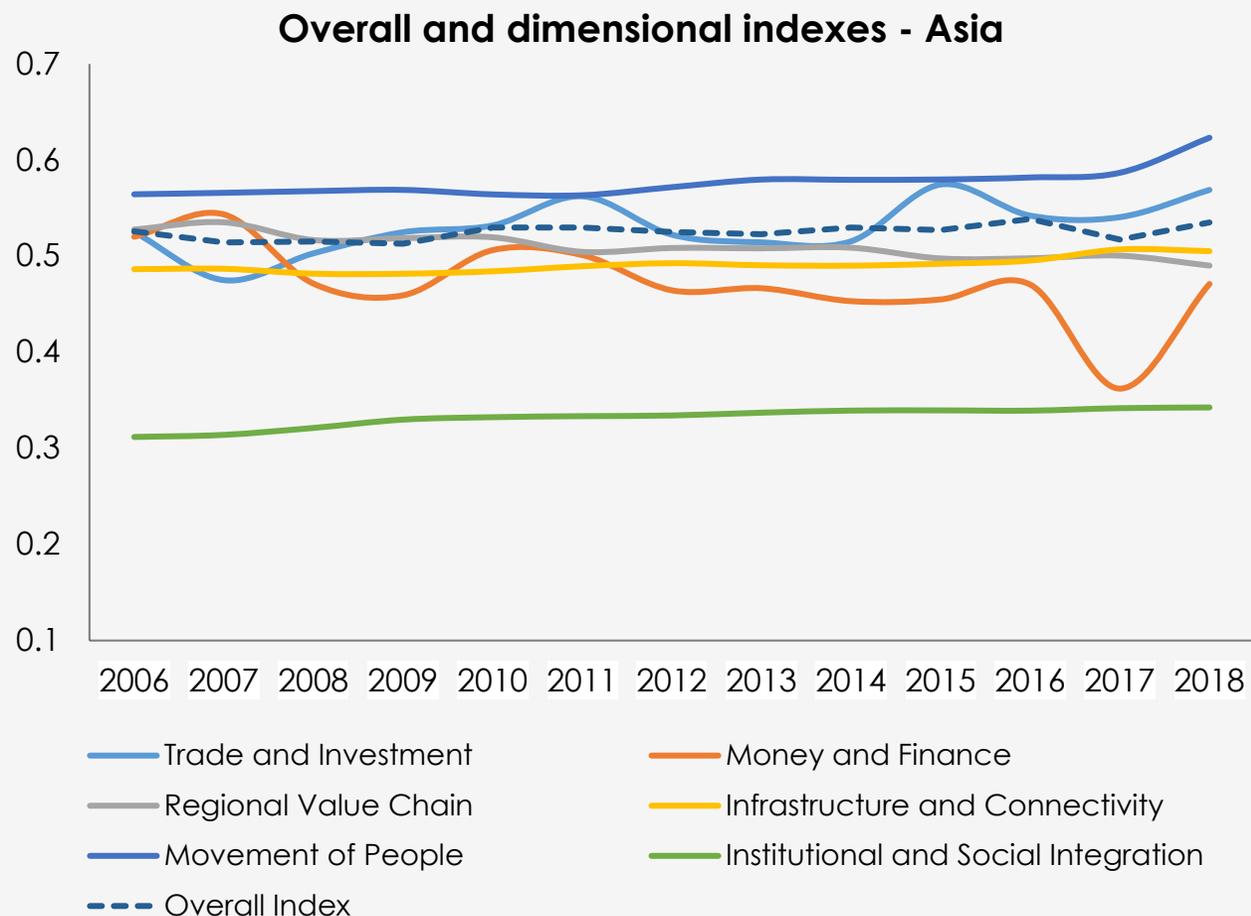
Economic Research and Regional Cooperation
Asian Development Bank

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Key Regional Integration Trends in Asia

Regional integration trends in developing Asia remain stable



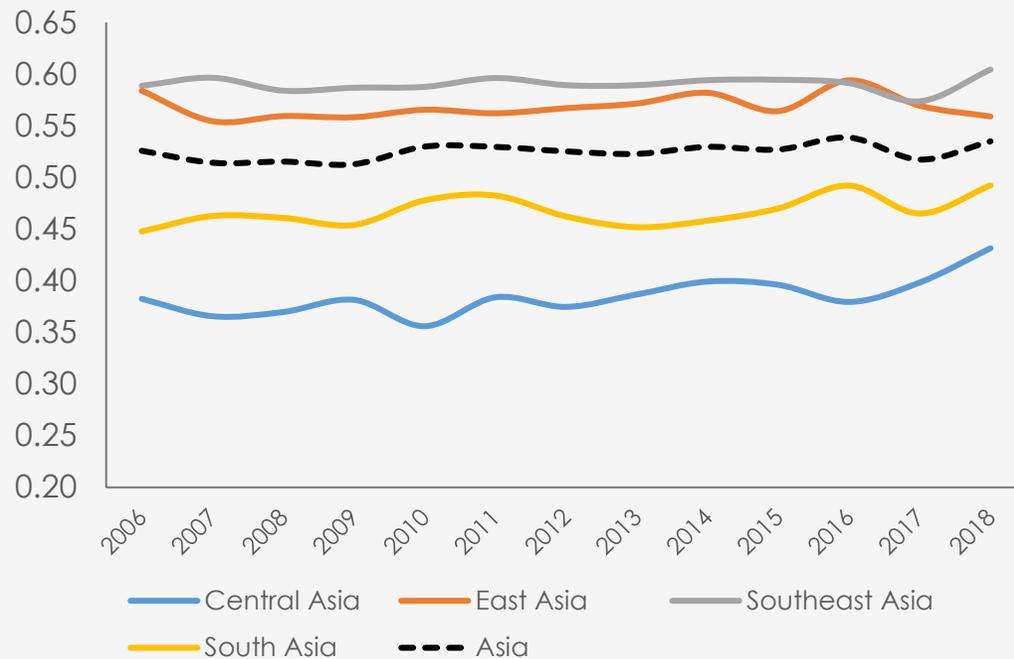
- Regional integration in Asia has remained broadly steady over the 2006 – 2018 period.
- Monetary and financial integration rebounded in 2018, partly explained by changes in deposit rates and cross-border equity liabilities.
- The contribution of indicators for each of the six dimensions remain roughly unchanged.

Source: ADB calculations

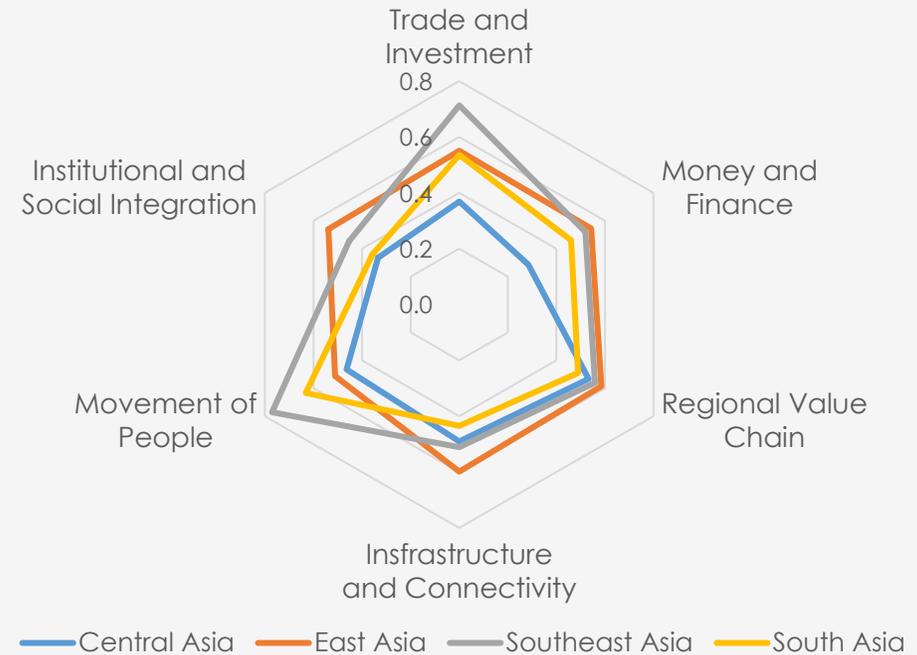
Overall ARCII—Increase in most Asia subregions

- Overall regional integration in Asia increased for almost all subregions, except East Asia. Meanwhile, subregional performance across dimensions remains wide-ranging.
- Slight drop in East Asia's overall regional integration could partly be due to policy challenges encountered in the movement of people and infrastructure and connectivity dimension.

Overall ARCII - Asia subregions

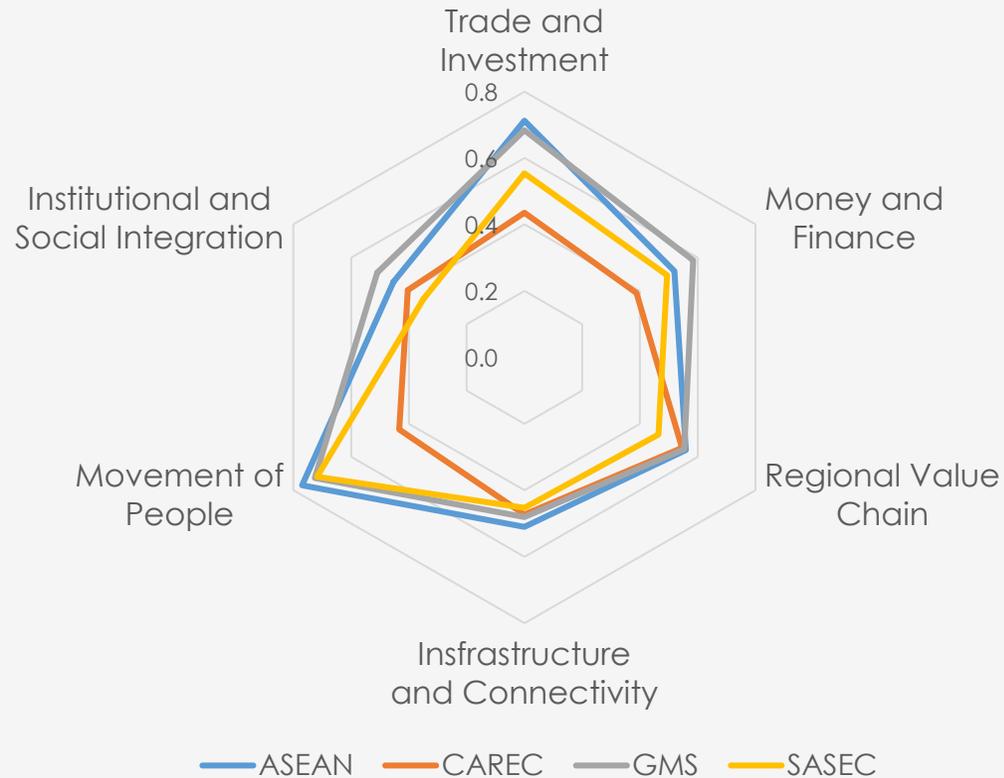


ARCII, 2018 - Asia subregions



Overall ARCII—Subregional initiatives

ARCII, 2018 - Subregional Initiatives

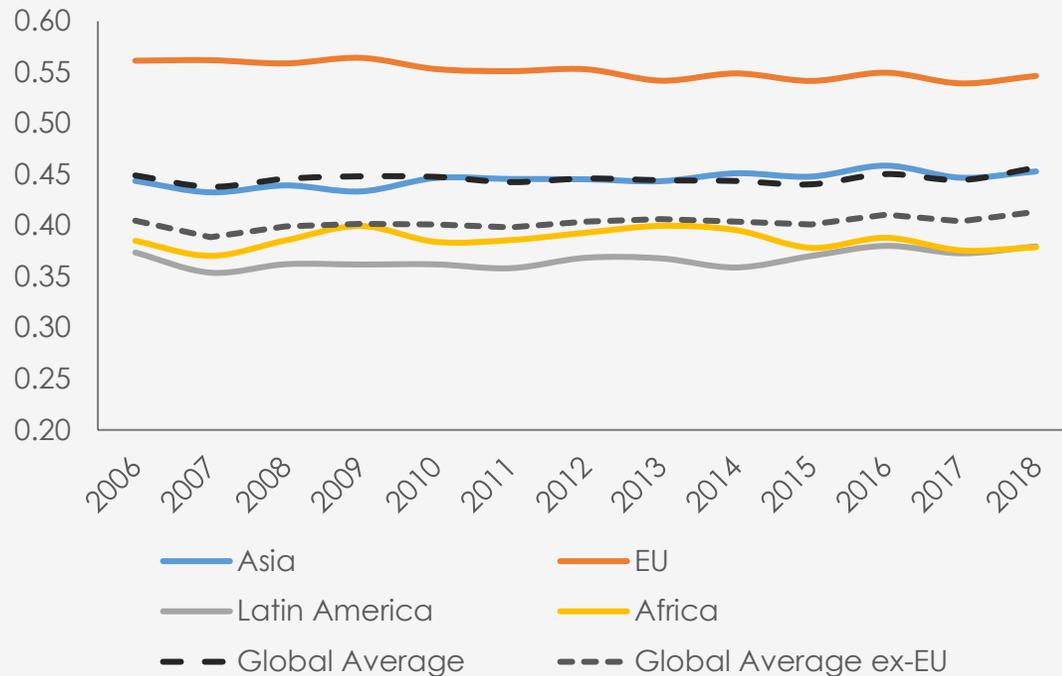


- Association of Southeast Asian Nations (ASEAN) exhibits the highest degree of subregional cooperation, particularly strong in the areas of trade and investment and movement of people.
- Central Asia Regional Economic Cooperation (CAREC) appears to be the least regionally integrated; addressing connectivity gaps, linkages, and boosting tourism (e.g. relaxing visa policies) remains a priority for the subregion.

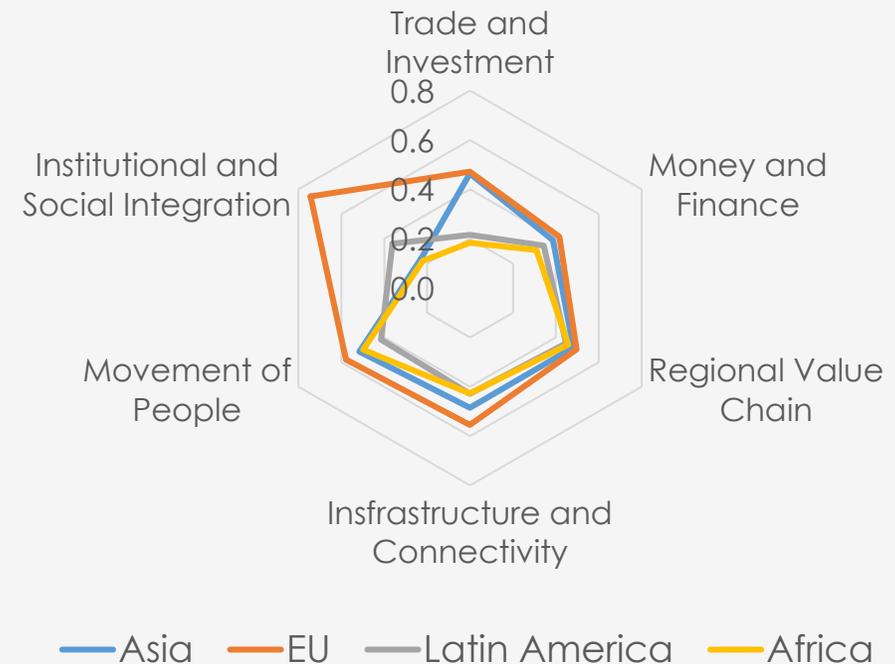
Regional Integration Index, 2018—Asia versus other regions

- EU remains the global leader in terms of regional integration, remaining strongest in institutional and social integration, given its economic and monetary union institutions.
- Asia comes second to the EU and coincides with the global average, with its dimensional scores on trade and investment and regional value chains equal over time that of the EU.

Overall Index - Asia versus other regions

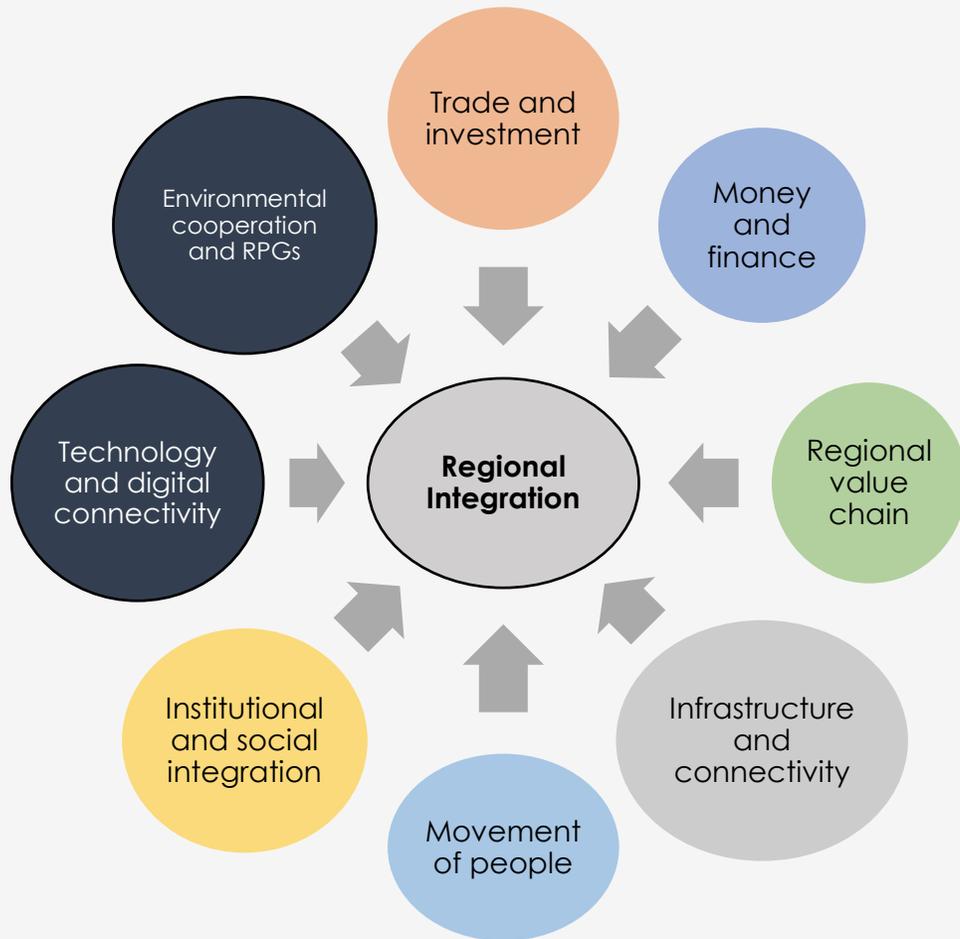


Regional Integration Indexes, 2018



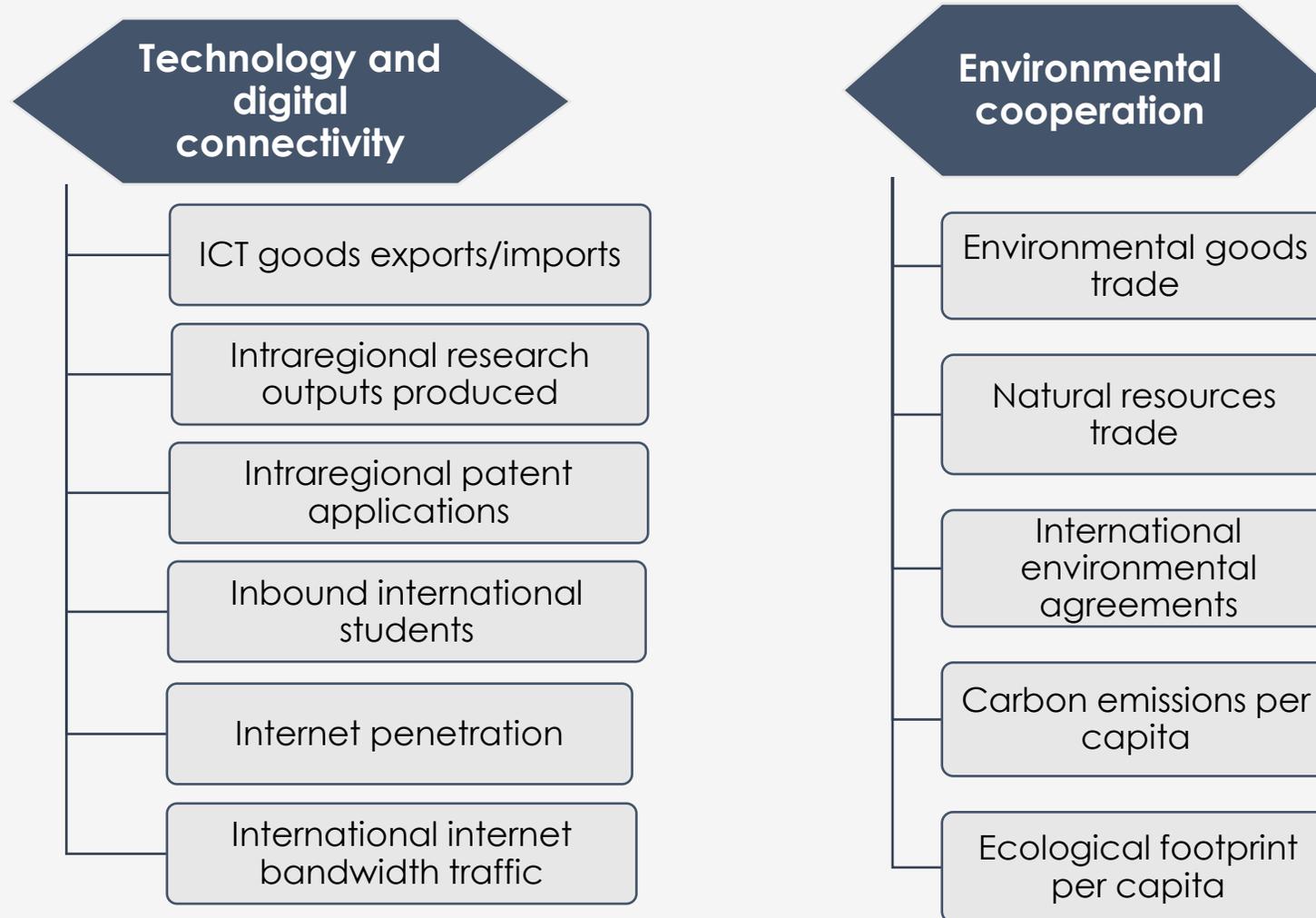
ARCII Enhanced Framework

Proposed ARCII enhanced framework



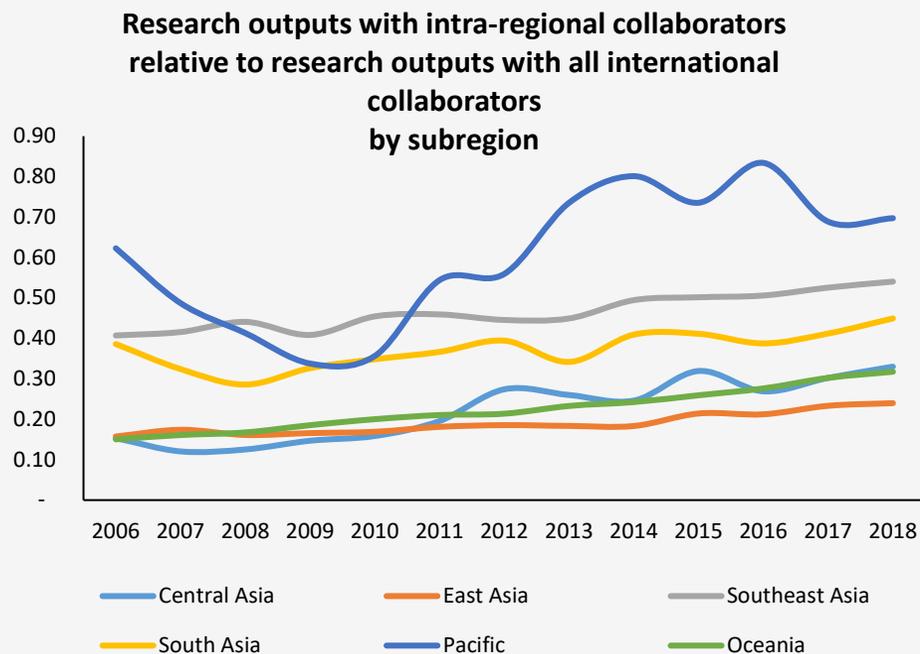
- Integrating new dimensions
 - i. Technology and digital connectivity
 - ii. Environmental cooperation/Regional Public Goods
- Improving indicators in existing dimensions
 - Money and finance
 - Infrastructure and connectivity
 - People and social integration
 - Institutional arrangements
- Customizing the ARCII to specific regions
 - Original 6-dimension ARCII to serve as baseline index
 - Adopt dimensions to reflect specific needs of regional departments or subregional initiatives

New dimensions are considered to reflect new channels of regional cooperation and integration

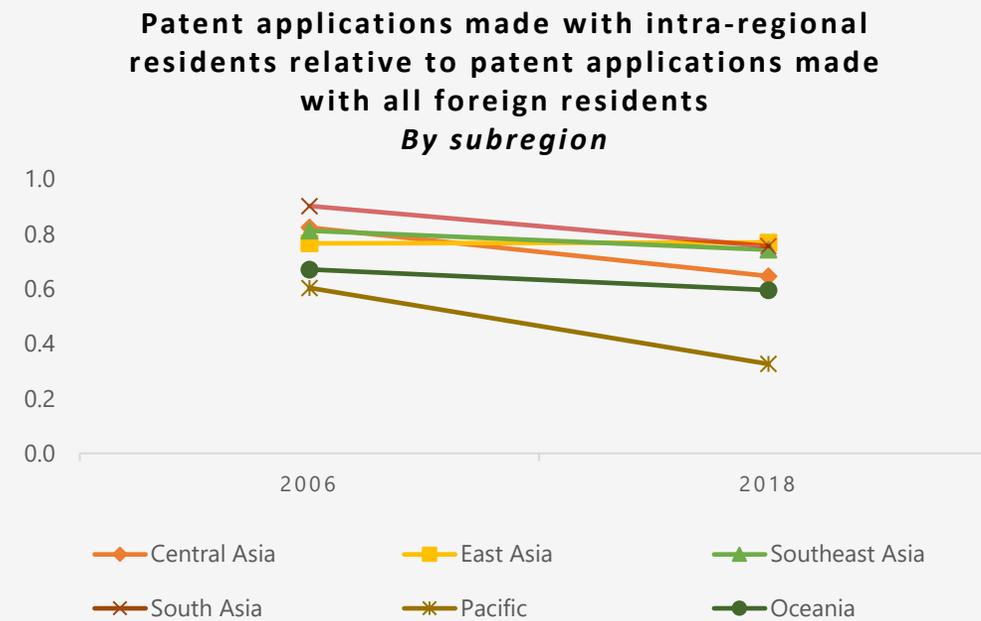


Asia's integration through research collaboration has grown, while intraregional patent applications exhibit clear gaps among subregions

- Captures outputs produced with intraregional collaborators author's affiliation rather than nationality.
- Asian economies have improved on their regional collaboration through research outputs.
- Measures patent applications submitted to the same region where the filing office is located.
- In 2018, East Asia, South Asia and Southeast Asia had high shares of intraregional patent applications. The Pacific experienced a surge in 2007, but lags behind others in the region.



Source: ADB calculations using data from Clarivate

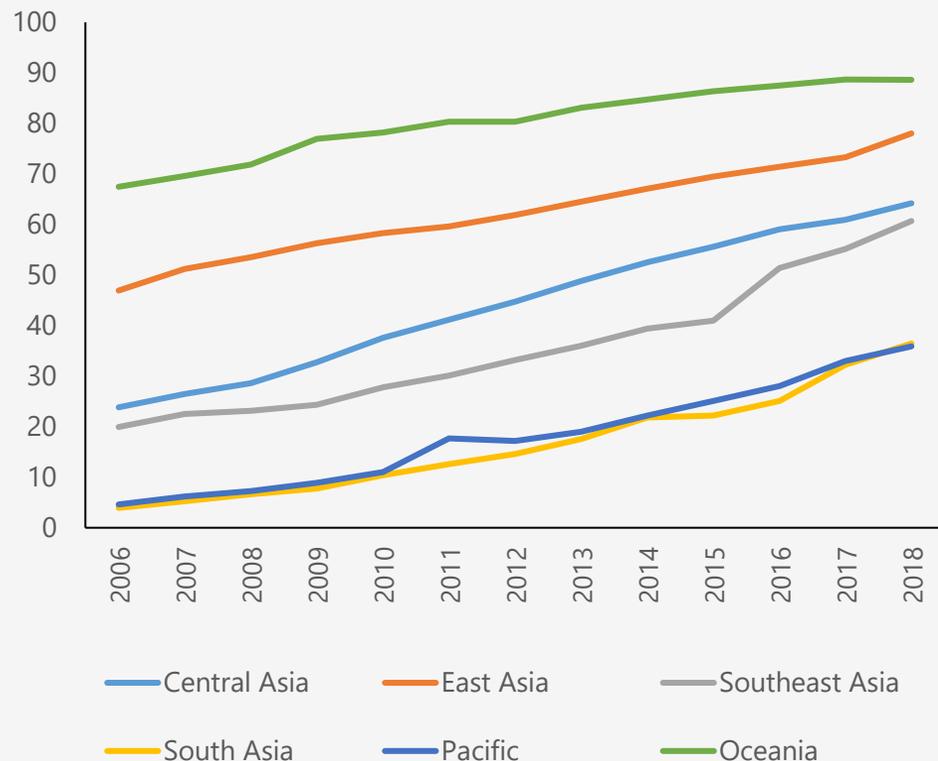


Source: ADB calculations using data from WIPO

Internet penetration in Asia has increased, but subregional gaps persist

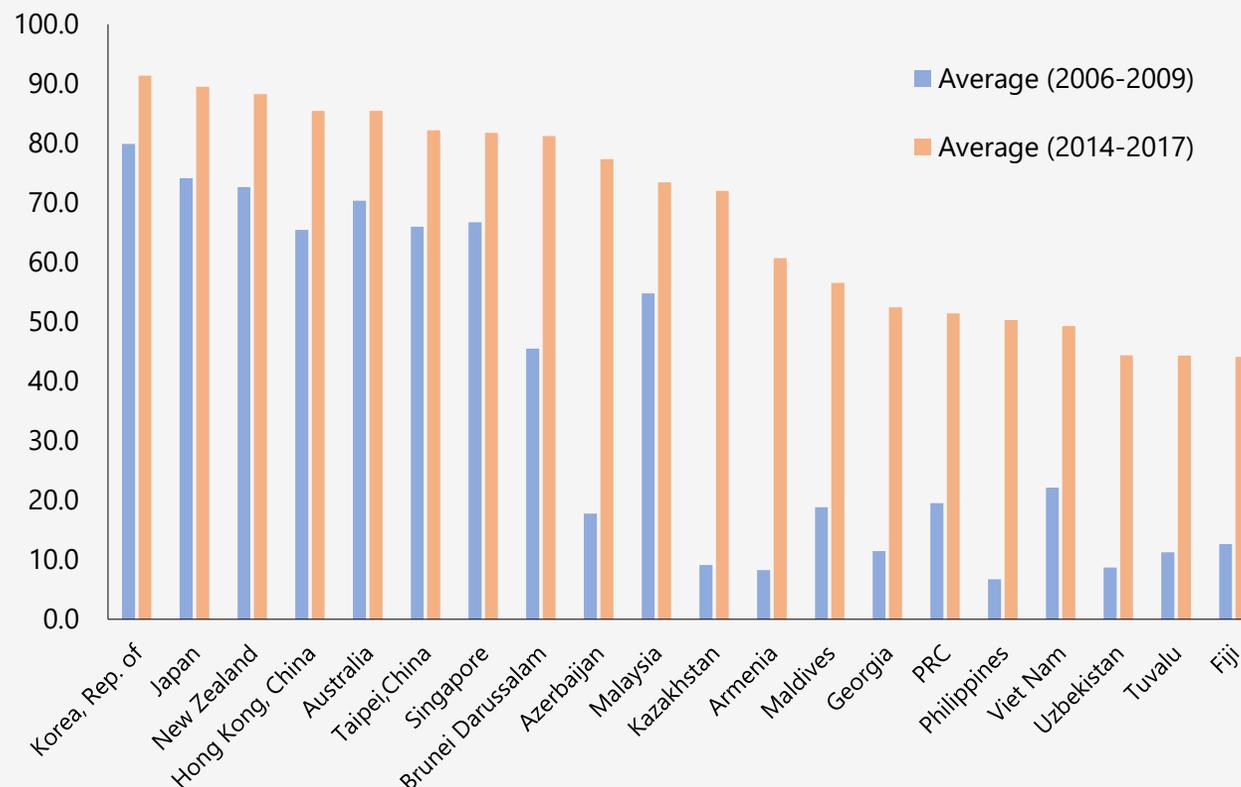
- Indicator defined as the percentage of the population using the Internet.

Proportion of persons using the internet
by subregion



Source: ADB calculations using data from ITU

Internet penetration



Source: ADB calculations using data from ITU

Intra-Asia internet bandwidth traffic has increased over time

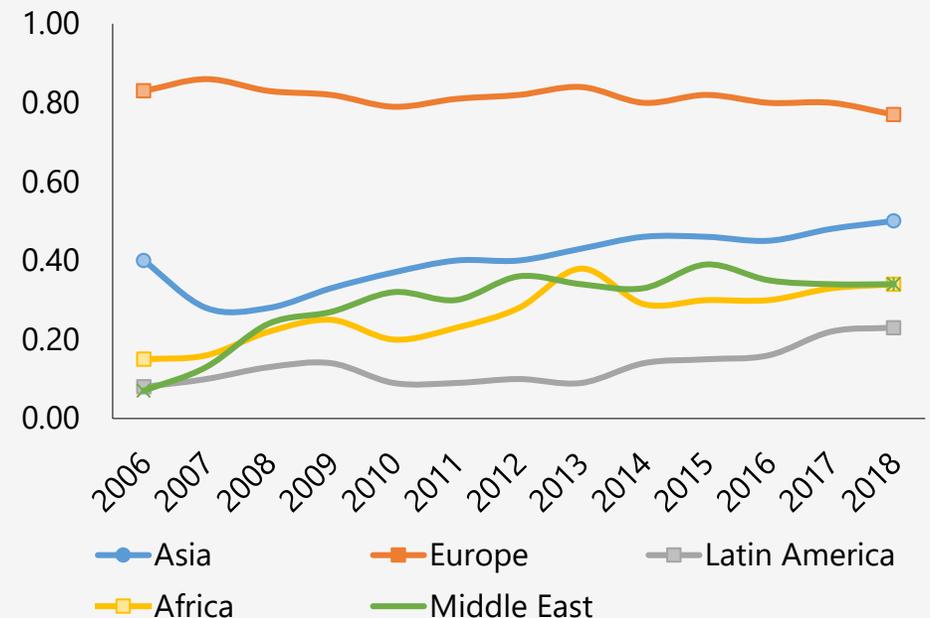
- Indicator measures the amount of data transmitted in the public internet, including general traffic through different modes (e.g. email, webpages, video streaming).
- International internet bandwidth capacity within Asia reflects high internet traffic among Asian countries, showing well-established digital connectivity within the region.

International internet bandwidth by regional routes (Gbps)

Origin	Destination	2010	2019	Share to total (%)	
				2010	2019
Asia	Asia	1,737	56,580	36.9	52.6
Asia	U.S. & Canada	2,314	26,729	49.2	24.9
Asia	Europe	499	20,150	10.6	18.7
Asia	Middle East	81	2,480	1.7	2.3
Asia	Oceania	39	1,439	0.8	1.3
Asia	Africa	32	112	0.7	0.1
Asia	Latin America	0	0	0.0	0.0

Source: TeleGeography

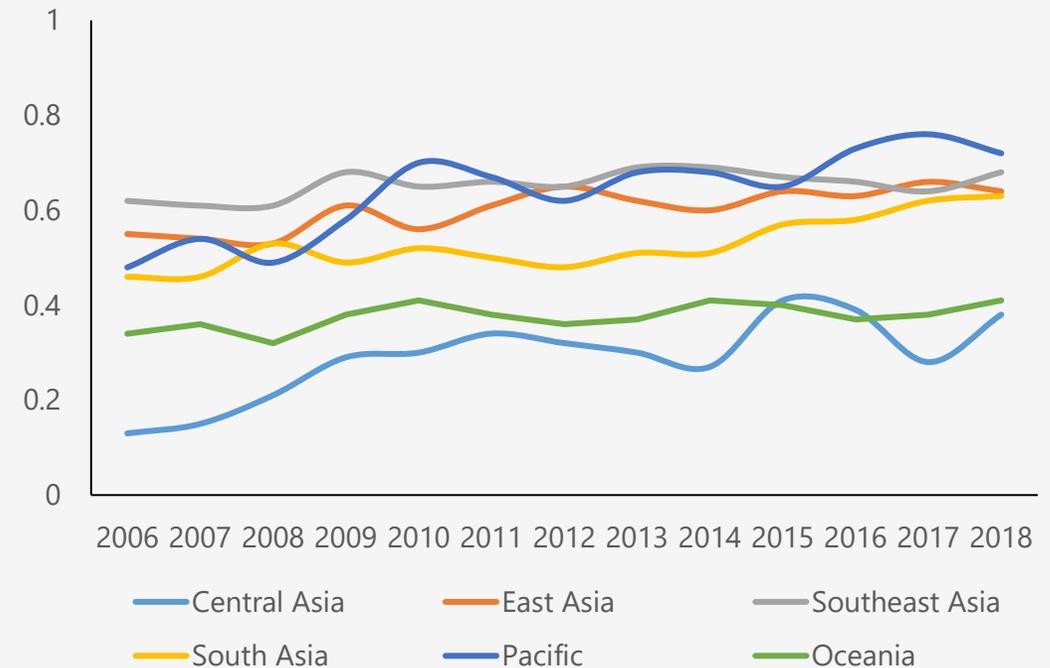
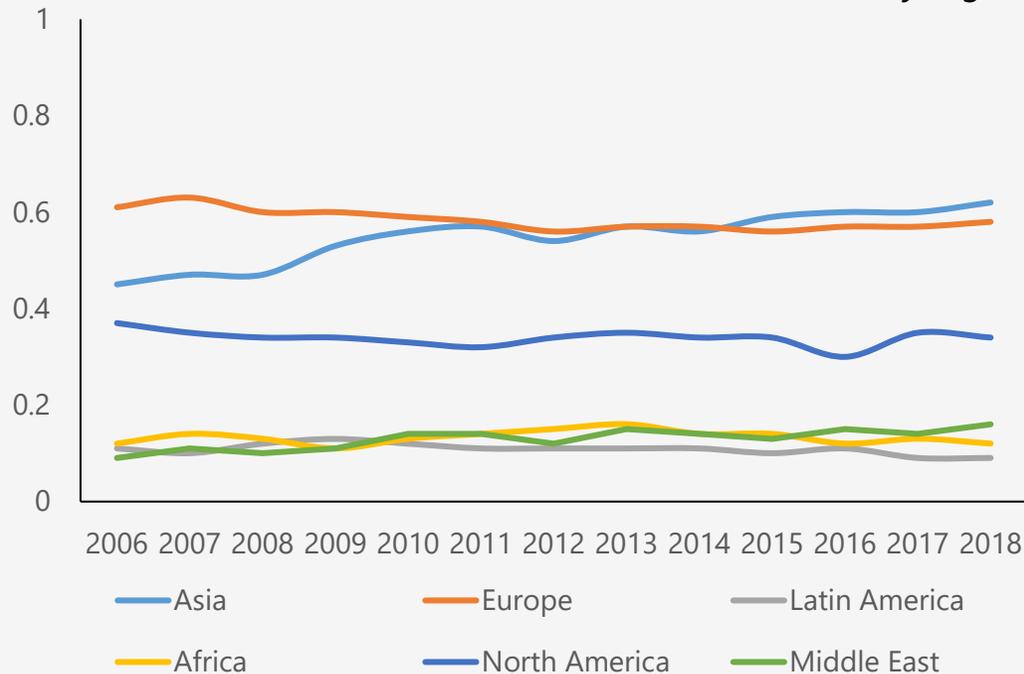
Ratio between internet bandwidth with intra-regional countries and internet bandwidth with all countries (average)



Source: ADB calculations using data from TeleGeography

Intraregional trade of environmental goods is highest in Asia and Europe

Proportion of intra-regional environmental goods trade (exports plus imports) to total intra-regional goods trade
By region and subregion



Note: Environmental goods includes 54 items listed in APEC's List of Environmental Goods. Some of the core products include renewable and clean energy technologies, wastewater treatment technologies, and air pollution control technologies.

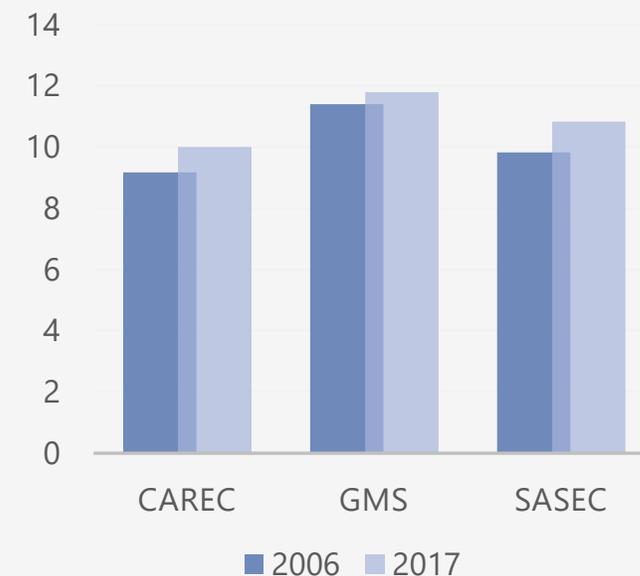
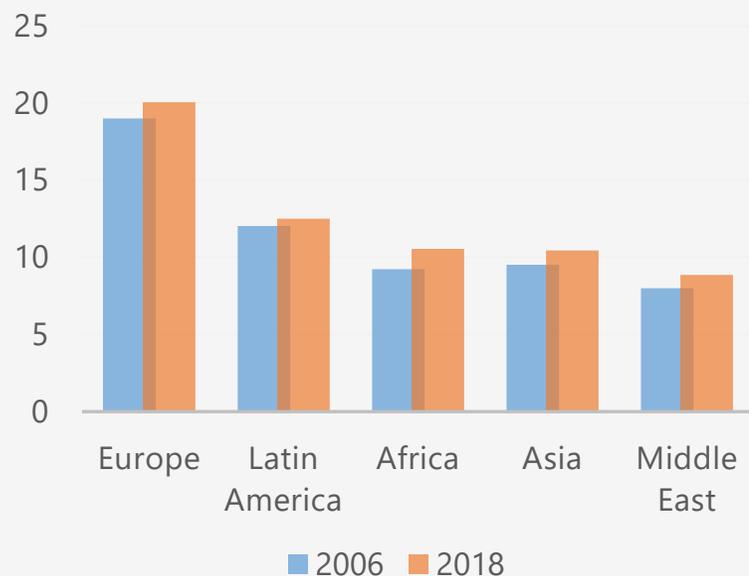
Source: ADB calculations.

Europe has the highest number of ratified environmental agreements

- Indicator pertains to intergovernmental agreements considered as legally binding, with the objective of preventing or managing human impacts on natural resources.
- Only marginal increase in number of ratified environmental agreements was observed in Asia between 2006 and 2018.
-
- Among the sub-regions in Asia, Oceania has the highest number of environmental agreements.

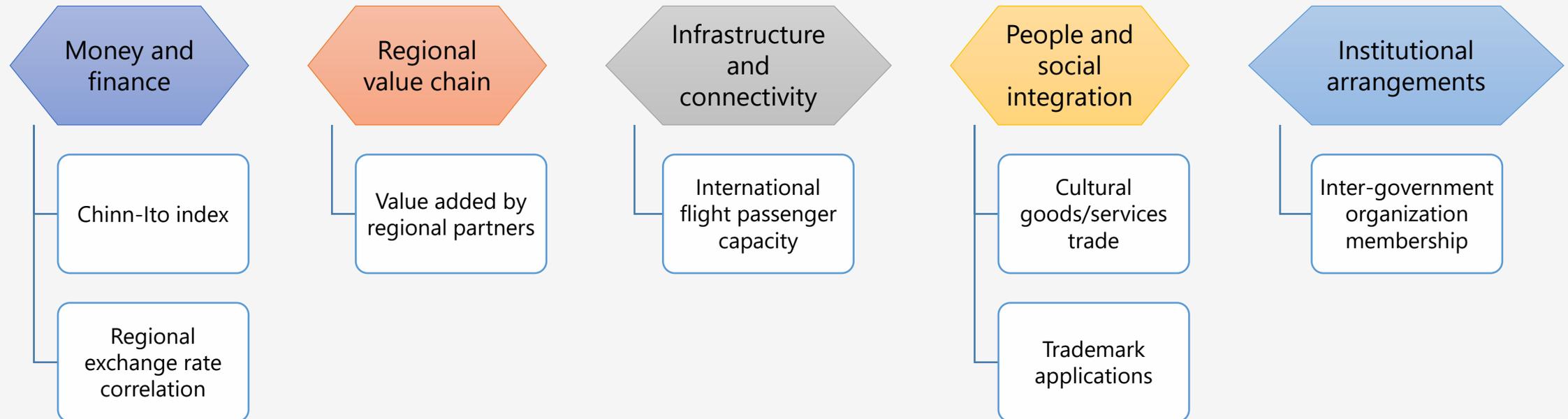
Number of international environmental agreements ratified

By region, subregion, and subregional programmes



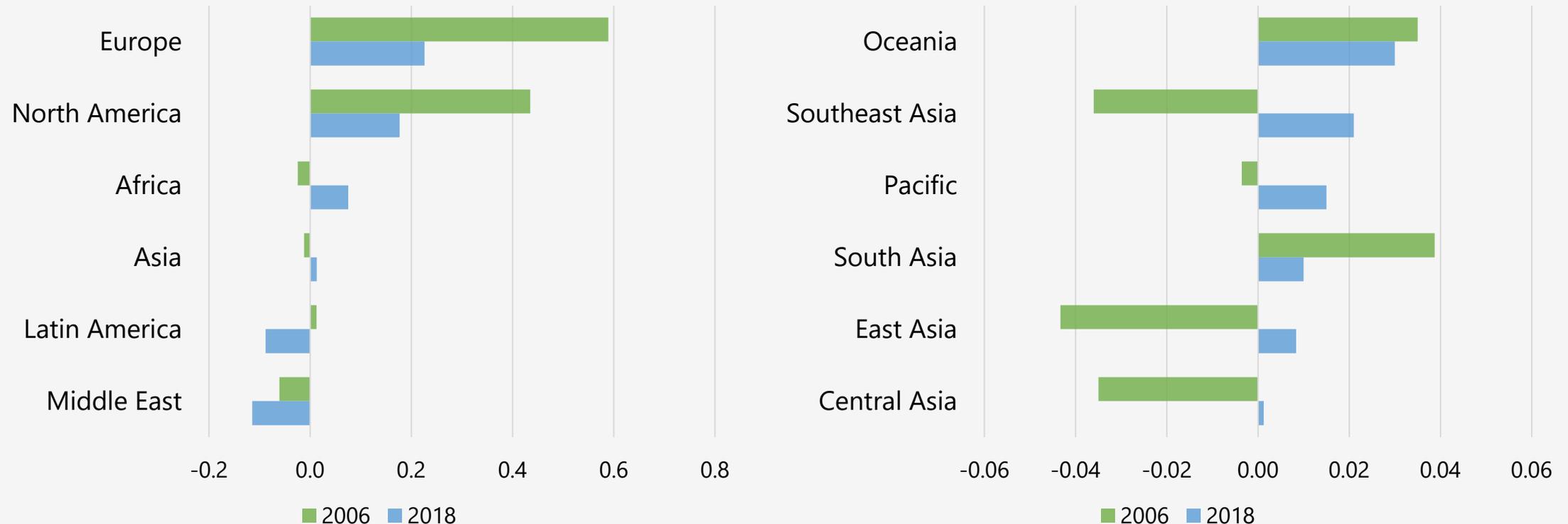
Improving indicators in existing dimensions

- Several indicators are added to existing ARCI dimensions to ensure that it adequately captures underlying RCI dynamics.



Pairwise correlation of exchange rates serves as a proxy measure of intraregional exchange rate stability

- The indicator is measured as the difference between the average of intraregional and worldwide pairwise correlations in monthly US dollar exchange rates.
- Europe and North America posed the highest levels of intraregional exchange rate stability, therefore reflecting greater financial integration.
- There are improvements in exchange rate stability in 2018 for most Asian subregions in comparison to 2006.



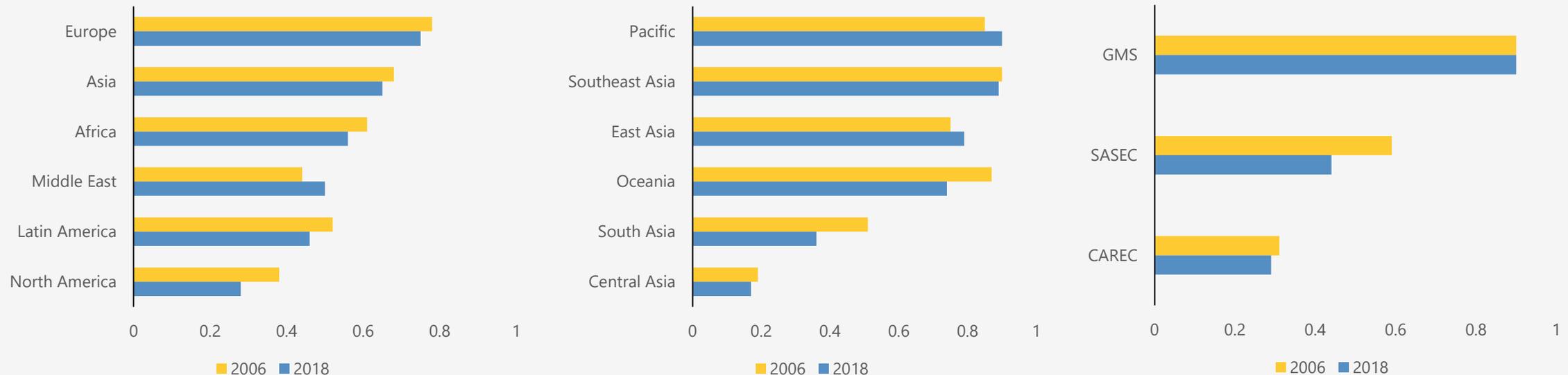
Source: ADB calculations using data from Haver and IMF.

International flight passenger capacity takes into account the role of air transport in promoting greater connectivity

- Indicator measures number of passenger seats sold on regional flights as a share of total number of passenger seats sold on all international flights. Excludes connecting flights.
- In Europe and Asia, regional flights comprise a large, steady share of international flights which reflect better connectivity and mobility within these regions.
- Asia exhibits high levels of intraregional flight connectivity, with Pacific and South East Asia leading

Proportion of passenger seats sold on regional flights to those sold on all international flights

By region, subregion, and subregional programmes

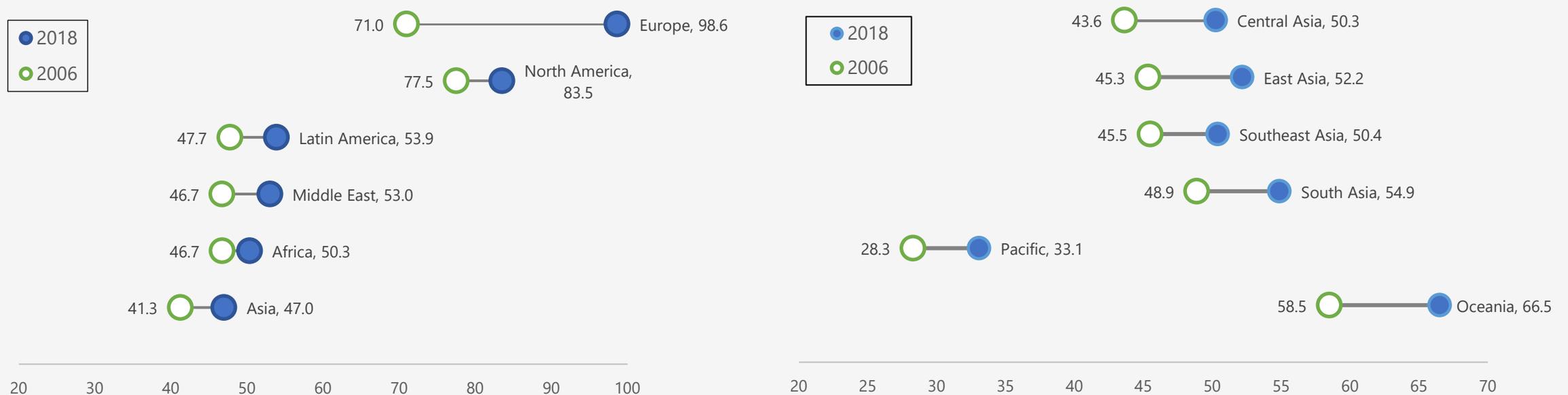


Source: ADB calculations using data from ICAO

Membership in international inter-government organizations can signal a country's level of cooperation in the international community

- Europe (post-2010) has the highest number of IGO memberships, followed by North America.
- Among the sub-regions in Asia, Oceania consistently had the highest number of IGO memberships.

Average number of international inter-government organizations in which a country is a member
By region and subregion



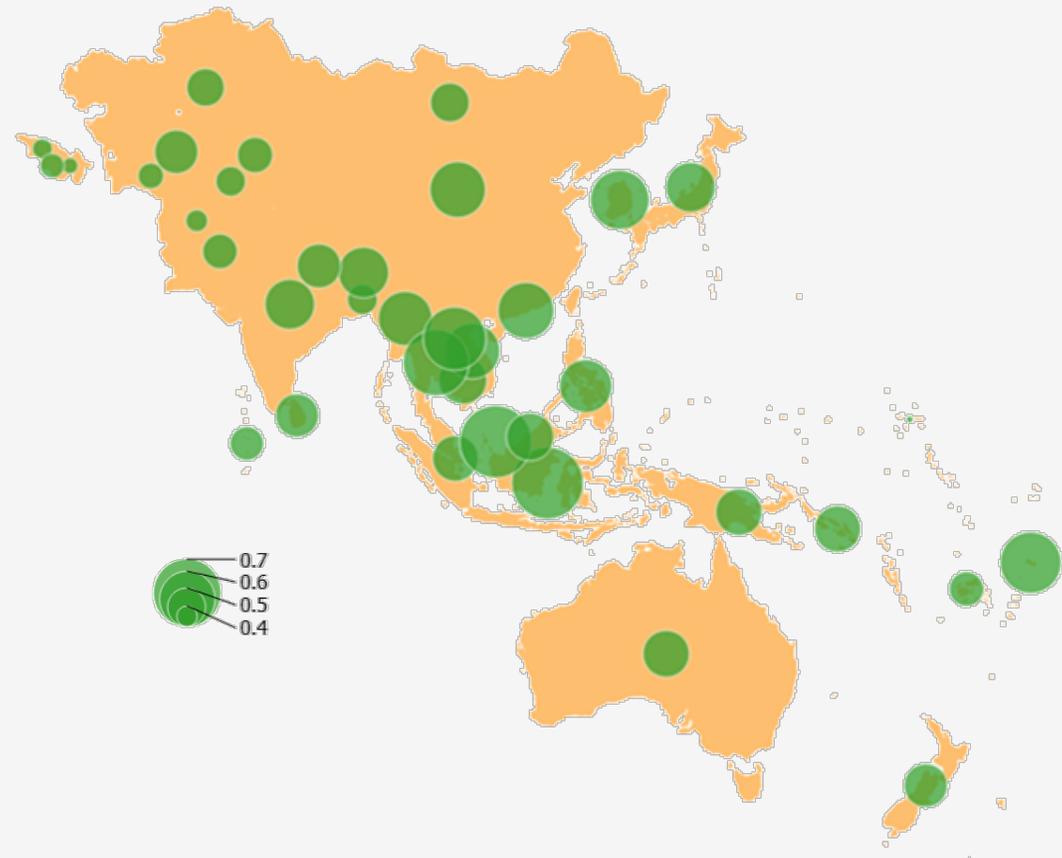
Source: ADB calculations using data from CIA World Factbook

Spatial Analysis: RCI Determinants

Positive spatial autocorrelation of regional integration is observed in Asia

- Economies with low ARCII scores seem to be near one another, and those with high ARCII scores are clustered in the same manner.

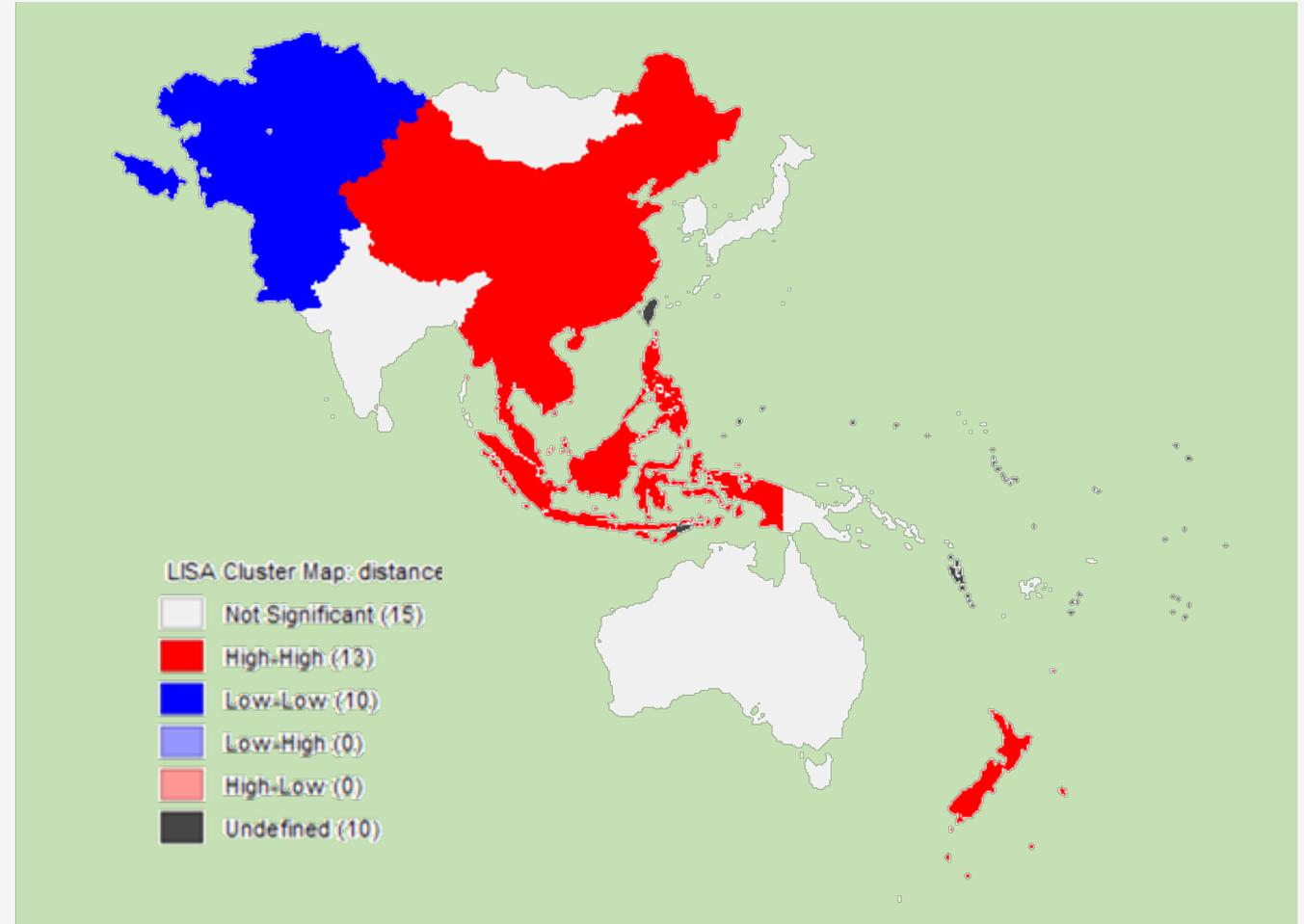
Spatial distribution of ARCII, 2018



Clusters of regional integration in Asia subregions

Overall ARCII cluster map, 2018

- Local Moran's I tests confirm the presence of clusters of high and low levels of regional integration.
- High levels of regional integration are clustered in Southeast Asia, and low levels of regional integration are concentrated in Central Asia.



Determinants of regional integration

- Initial regression results warrant the estimation of a spatial model in lieu of a non-spatial model (e.g. OLS) for overall integration and for the dimensions of trade and investment, movement of people and institutional and social integration.

Regression and Lagrange Multiplier (LM) Tests Results						
	Dependent variable					
	Overall Integration	Trade and Investment	Regional Value Chain	Infrastructure and Connectivity	Movement of People	Institutional and Social Integration
Constant	0.159	0.761	-0.023	-0.397**	1.816***	-1.178***
Log(real GDP)	0.014	-0.019	0.009	0.070***	-0.051*	0.058***
Log(population)	-0.006	-0.028	0.010	-0.046***	0.024	0.017
Log(land area)	0.052	0.323	0.053	-0.037	-0.095	-0.074
Landlocked	-0.052	-0.157	0.060	0.022	-0.219**	0.039
Sea-locked	-0.015	-0.004	0.016	0.071	-0.193	0.057
Estimation method	OLS	OLS	OLS	OLS	OLS	OLS
R-squared	0.32	0.13	0.38	0.69	0.25	0.83
No. of economies	38	38	38	38	38	43
Tests						
Moran's I	4.412***	2.483**	1.035	-1.568	2.145**	2.251**
LM-Lag	4.545**	2.063	0.359	4.257**	2.838*	0.516
Robust LM-Lag	1.808	1.867	0.446	2.703	3.514*	0.119
LM-Error	3.520*	0.719	0.006	1.720	0.446	0.625
Robust LM-Error	0.783	0.522	0.093	0.166	1.122	0.229

Note: *, ** and *** indicate significance at 10, 5 and 1 % levels, respectively.

Determinants of regional integration

- LM test results suggest employing SAR for overall ARCI and movement of people dimension, and SEM for trade and investment and institutional and social integration dimensions.
- Spatial regression results point to neighboring countries' level of regional integration and real income as significant determinants of overall regional integration.

Regression Results: OLS, SAR and SEM						
	Dependent variable					
	Overall Integration	Trade and Investment	Regional Value Chain	Infrastructure and Connectivity	Movement of People	Institutional and Social Integration
Constant	0.015	0.491	-0.023	-0.397**	1.400***	-1.200***
Log(real GDP per capita)	0.017*	-0.006	0.009	0.070***	-0.037	0.058***
Log(population)	-0.013	-0.032	0.010	-0.046***	0.003	0.016
Log(land area)	0.076	0.288	0.053	-0.037	-0.016	-0.056
Landlocked	-0.048	0.021	0.060	0.022	-0.181**	0.037
Sea-locked	-0.021	0.068	0.016	0.071	-0.200*	0.060
Wy	0.233**				0.363**	
Lambda		0.583***				0.308
Estimation method	SAR	SEM	OLS	OLS	SAR	SEM
R-squared	-	-	0.38	0.69	-	-
Log likelihood	51.77	9.45	-	-	17.68	47.59
No. of economies	38	38	38	38	38	43

Notes: W = inverse squared distance matrix; OLS = Ordinary least squares; SAR = Spatial autoregressive model; SEM = Spatial error model

Key messages

ARCII baseline

- Regional integration in Asia remained broadly steady over the 2006 – 2018 period, with an upsurge in Money and Finance
- Overall regional integration in Asia strengthened for almost all subregions. Subregional performance remains wide-ranging

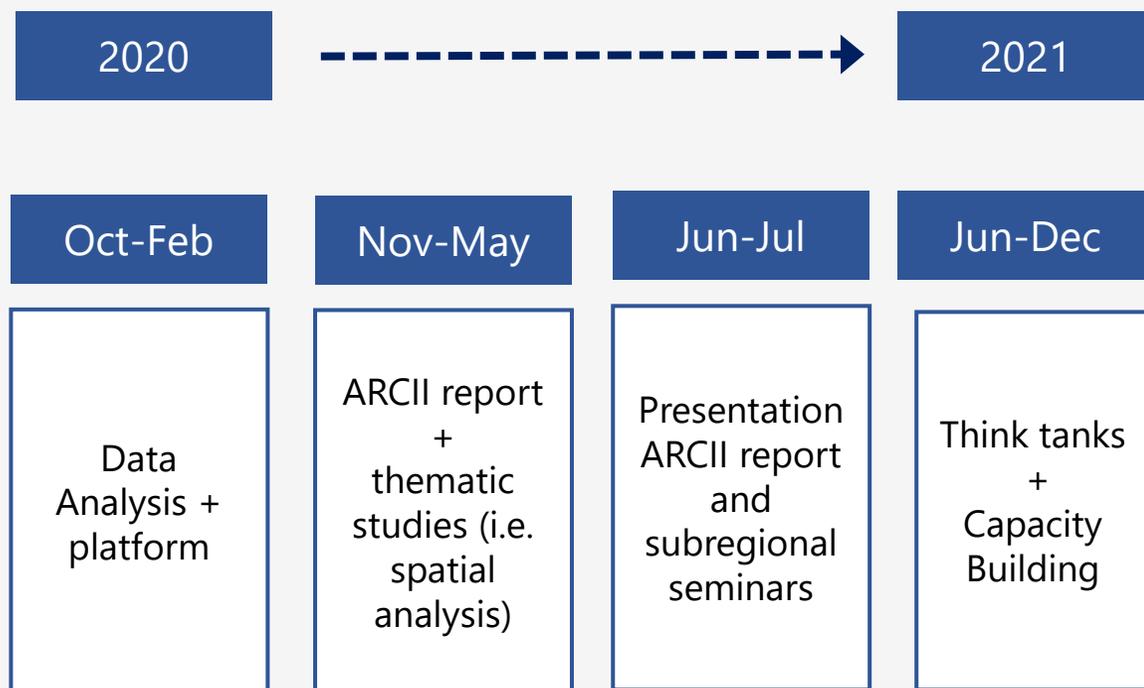
Enhanced framework

- ARCII framework will be enhanced to include new RCI dimensions, including technology and digital connectivity, and environmental cooperation/RPGs.

Spatial analysis

- Regional integration in Asia can be explained by spatial dimension. Economies with low (high) levels of RCI tend to be surrounded by economies with low (high) levels of RCI.

Next steps and publications



**View and download:
Updated ARCIi database
(2006-2018)**



[https://aric.adb.org
/database/arcii](https://aric.adb.org/database/arcii)

**Forthcoming:
ARCII inception
workshop highlights**



Thank you!
aric.adb.org/database/arci

