Pacific Economic Cooperation Council

PECC CONNECTIVITY INDEX

Report on the Phase 1 of the Index Development

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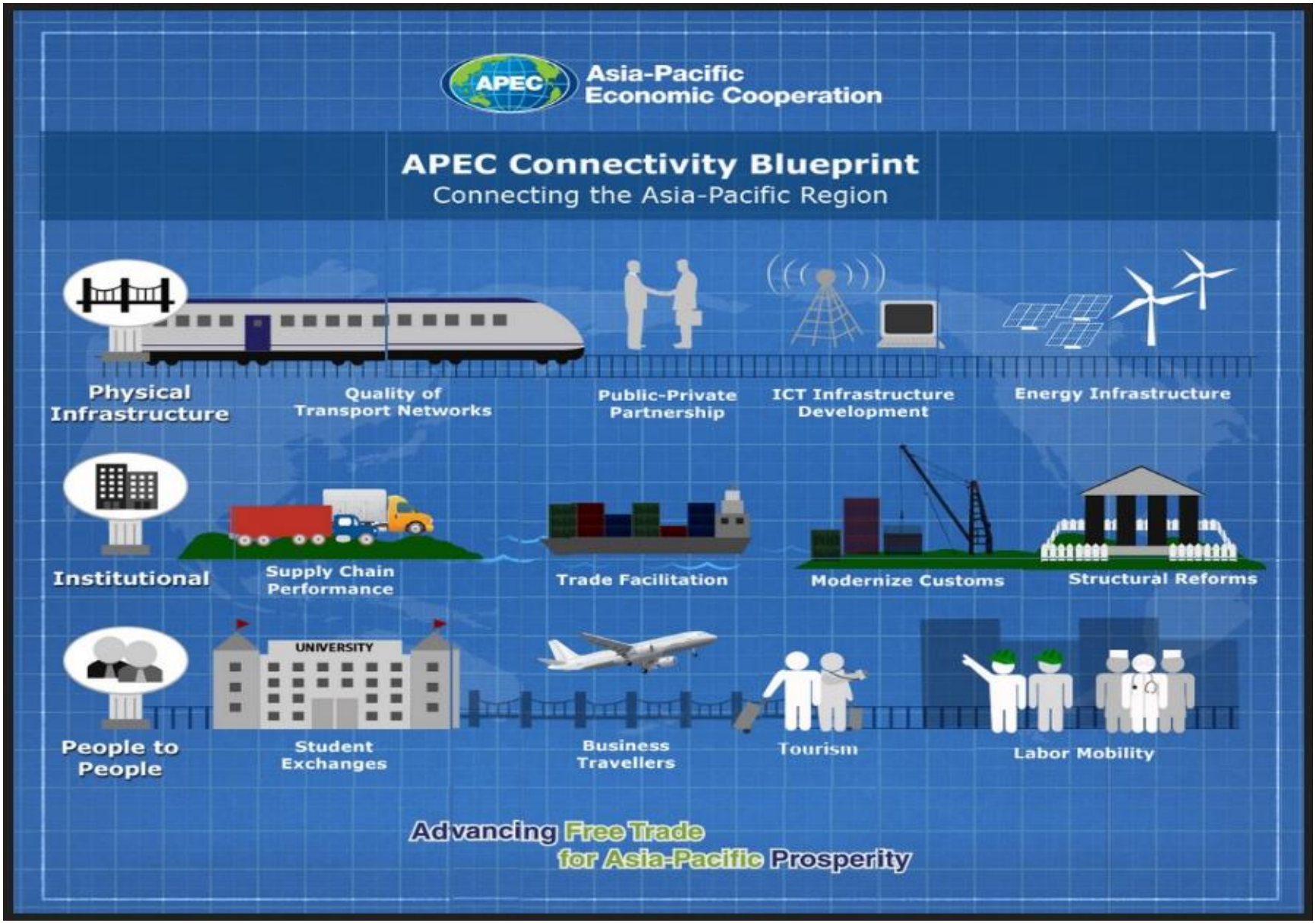
1. Literature Review

2. Conceptual Framework

3. PECC Connectivity Index – Preliminary Model

4. Recommendations


APEC
Asia-Pacific
Economic Cooperation
APEC Connectivity Blueprint
Connecting the Asia-Pacific Region
Physical Infrastructure
Quality of Transport Networks
Public-Private Partnership
ICT Infrastructure Development
Energy Infrastructure
Institutional
Supply Chain Performance
Trade Facilitation
Modernize Customs
Structural Reforms
UNIVERSITY
People to People
Student Exchanges
Business Travellers
Tourism
Labor Mobility
Advancing Free Trade for Asia-Pacific Prosperity

How others track progress

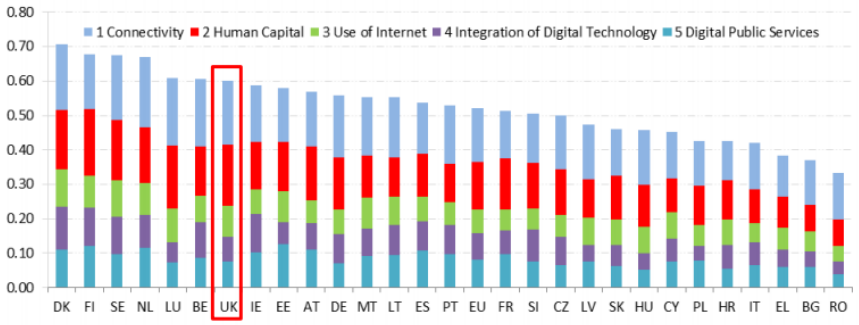
ASEAN - Master Plan on ASEAN Connectivity

PEOPLE MOBILITY

Metric currently available or easily obtained
Metric requiring development

Strategic objectives for 2025	Outcome metrics
1. Support ease of travel throughout ASEAN	Number of people obtaining visa through ASEAN online portal
	Number of people applying for visa through ASEAN online portal
	Number of people visiting ASEAN tourism website
	Number of intra-ASEAN tourists. Data from ASEAN Secretariat.
	Number of tourists from outside ASEAN. Data from ASEAN Secretariat.
2. Reduce the gaps between vocational skills demand and supply across SEAN	Number of people completing new vocational training programmes
3. Increase the number of intra-ASEAN international students	Number of intra-ASEAN international university students. UNESCO UIS databank - data incomplete for different student categories and for different ASEAN Member States.
Initiatives	**Output metrics**
1. Enhance ASEAN travel by making finding information easier	Enhance ASEAN tourism website with detailed travel itineraries
2. Ease ASEAN travel by facilitating visa processes	Establish e-visas across all ASEAN Member States
	Develop one-stop shop for travel visa applications in ASEAN
3. Establish new vocational training programmes and common qualifications across ASEAN Member States, in accordance with national circumstances of each ASEAN Member State	Establish 3 vocational standards and training programmes across ASEAN Member States
4. Support higher education exchange across ASEAN Member States	Availability of visas to support ASEAN university student mobility
	Develop database with flows of ASEAN university students by ASEAN Member State and degree type
	Develop internship programme
	Develop alumni and student ambassador programme

EU - Digital Economy and Society Index



	United Kingdom DESI 2017 value		DESI 2017 rank	DESI 2016 value	DESI 2016 rank	EU DESI 2017 value
1a1 Fixed Broadband Coverage % households	99.97% 2016	↓	5	99.98% 2015	5	98% 2016
1a2 Fixed Broadband Take-up % households	87% 2016	↑	3	85% 2015	3	74% 2016
1b1 Mobile Broadband Take-up Subscriptions per 100 people	91 June 2016	↑	8	88 June 2015	6	84 June 2016
1b2 4G coverage[6] % households (average of operators)	93% 2016		12	NA		84% 2016
1b3 Spectrum[7] % of the target	69% 2016	↓	12	73% 2015	12	68% 2016
1c1 NGA Coverage % households	92% 2016	↑	8	91% 2015	9	76% 2016
1c2 Subscriptions to Fast Broadband % subscriptions >= 30Mbps	43% June 2016	↑	16	36% June 2015	14	37% June 2016
1d1 Fixed Broadband Price[8] % income	1.3% price 2016, income 2015	↓	17	1.2% price 2015, income 2015	16	1.2% price 2016, income 2015

Source: EU, ASEAN Secretariat

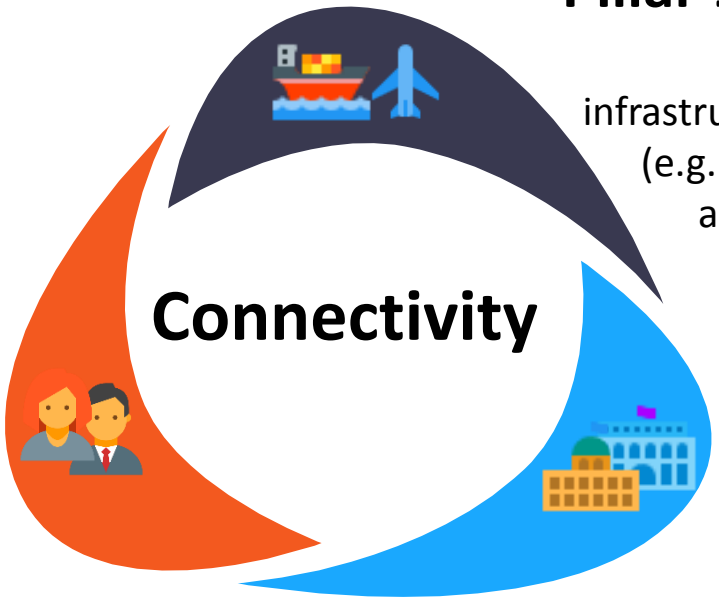
Connectivity = the economy's level of integration with the rest of the world, as manifested by its participation in flow of products and services, capital, information and people via in physical, institutional and people-to-people linkages

Pillar 1. Physical Connectivity:

extent and quality of linkages at the infrastructure level, including transportation (e.g. land, air and maritime), information and communication technologies and energy

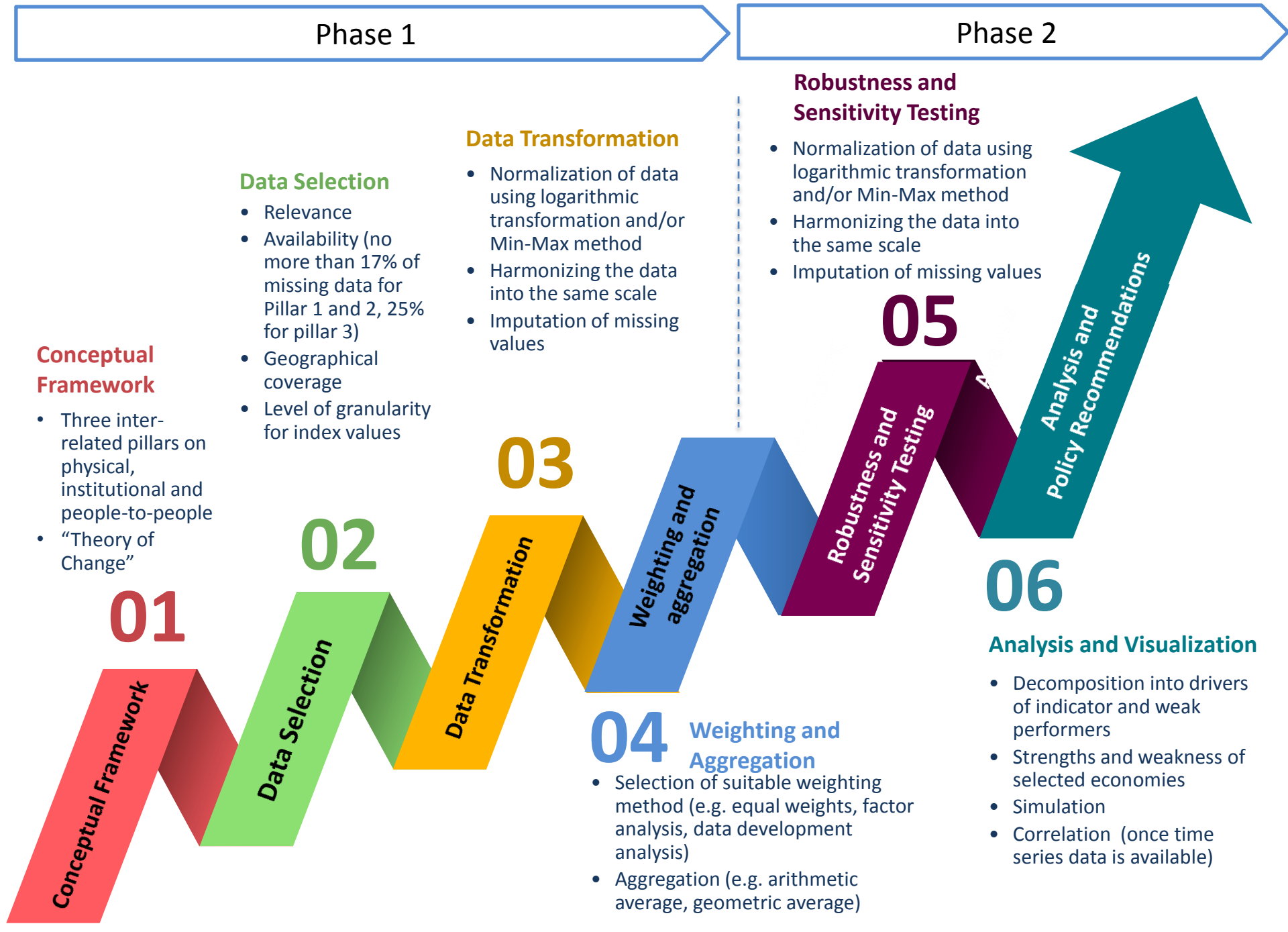
People-to-people Connectivity:

Movement of people (e.g. students, travelers and immigrants) across borders, and exchange of information and knowledge



Pillar 2: Institutional Connectivity:

Progress made in trade facilitation, structural and regulatory reforms and trade and logistics facilitation


Phase 1
Phase 2
Conceptual Framework
Three inter-related pillars on physical, institutional and people-to-people
"Theory of Change"
Data Selection
Relevance
Availability (no more than 17% of missing data for Pillar 1 and 2, 25% for pillar 3)
Geographical coverage
Level of granularity for index values
Data Transformation
Normalization of data using logarithmic transformation and/or Min-Max method
Harmonizing the data into the same scale
Imputation of missing values
Robustness and Sensitivity Testing
Normalization of data using logarithmic transformation and/or Min-Max method
Harmonizing the data into the same scale
Imputation of missing values
01
02
03
04
05
06
Conceptual Framework
Data Selection
Data Transformation
Weighting and aggregation
Robustness and Sensitivity Testing
Analysis and Policy Recommendations
Weighting and Aggregation
Selection of suitable weighting method (e.g. equal weights, factor analysis, data development analysis)
Aggregation (e.g. arithmetic average, geometric average)
Analysis and Visualization
Decomposition into drivers of indicator and weak performers
Strengths and weakness of selected economies
Simulation
Correlation (once time series data is available)

Pillar 1. Physical Connectivity

	Subindex	Proposed Indicators	Data Sources
1	Infrastructure	• Quality of Air Transport Infrastructure • Quality of railroad infrastructure • Quality of roads measures • Quality of trade and transport related infrastructure	• World Economic Forum: Enabling Trade Index (ETI) • The World Bank, Logistics Performance Index (LPI)
2	Transport	• International shipments • Linear Shipping Connectivity Index • Air transport, registered departure worldwide • Container port traffic	• The World Bank, The Logistics Performance Index (LPI) • United Nations Conference on Trade and Development (UNCTAD) • World Development Indicators (WDIs)
3	ICT	• Internet penetration (individual and household) • Mobile network coverage • Percentage of households with Internet • Mobile penetration • Fixed broadband penetration • Mobile broadband penetration	• International Telecommunications Union (ITU): Core ICT Indicators
4	Energy	• Total primary energy supply • Energy Imports • Access to electricity	• International Energy Agency • OECD • World Development Indicators (WDIs)

Pillar 2. Institutional Connectivity

Subindex		Proposed Indicators	Data Sources
1	Trade facilitation	• Trade (as a % of GDP) • Trade in services • FDI net inflows (% of GDP) • FDI net outflows (% of GDP)	• World Development Indicators (WDIs) • The World Bank Doing Business Index: Trading Across Borders database
2	Border administration	• Quality of customs services • Transparency of procedures and regulations related to customs clearance • Time predictability of import process • Level of corruption at the borders • Efficiency of the clearance process by border control agencies, including customs	• World Economic Forum: Enabling Trade Index (ETI) • The World Bank: Logistics Performance Index
3	Supply-chain performance	• Competence and quality of logistics services (e.g., transport operators, customs brokers); • Ability to track and trace consignments; • Timeliness of shipments in reaching destination within the scheduled or expected delivery time.	• The World Bank: Logistics Performance Index
4	Intellectual Property	• Intellectual property receipts	• World Development Indicators • WIPO/INSEAD/Cornell, Global Innovation Index (GII)

Pillar 3. People-to-People Connectivity

Subindex		Proposed data sources	Data Sources
1	Business travel mobility	• Passport strengths: Number of economies accessible without visa	• APEC Connectivity Blueprint
2	Cross-border education exchange	• Inbound mobility rate • International student mobility in tertiary education	• UNESCO Institute for Statistics*
3	Tourism	• International tourism, number of arrivals • International tourism, number of departures • International tourism, expenditures (% of total imports) • International Tourism, receipts (% of total exports)	• World Tourism Organization (UNWTO) • World Development Indicators (WDIs)
4	Labor mobility	• Personal remittances, received • Personal remittances, paid	• The World Bank, Migration and Remittance Data
5	Migration	• Foreign born population, net migration rate	• United Nations DESA
6	Others	• Social Media Penetration	• WeAreSocial/Hootsuite

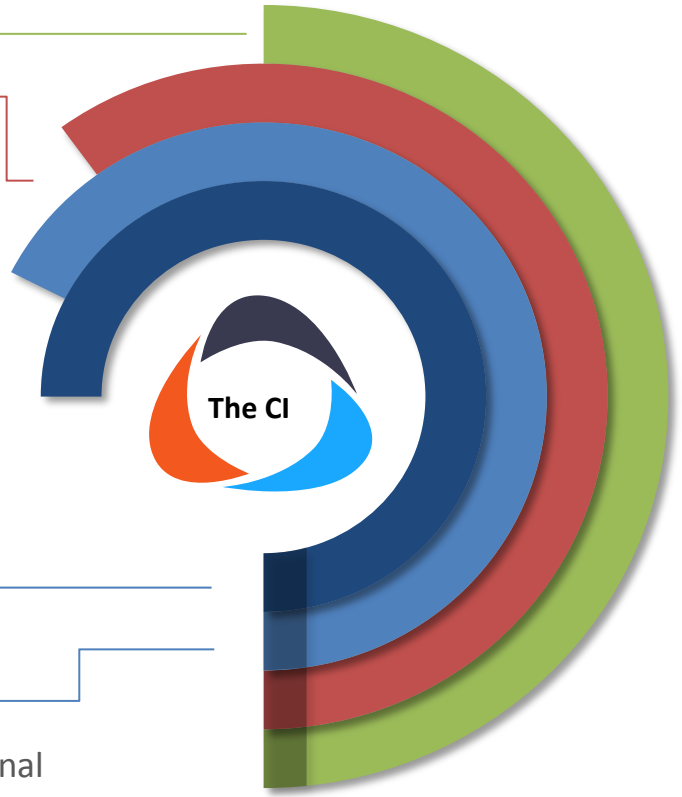
Caveats and Topics for Further Discussion

Issues with Data Treatment

- Data transformation is necessary but introduces additional bias
- Imputation of missing data will lead to underestimation or overestimation for economies with a lot of missing values.

Issues with Data Selection

- Having to mix data sets and indicators that differ greatly (e.g. hard vs soft, input vs output)



Pitfall of a Composite Index

- Not feasible to capture the entirety of multidimensional concept
- Tradeoff between simplicity and robustness
- Other assumptions built in composite index

Conceptual Framework

- No distinction between local vs regional vs international connectivity
- What is the directionality of a desired connectivity in mobility and energy?
- Are there any other areas that we missed out?

Propose Basic Principles of the CI

Snapshots and Trends

The CI is meant to capture a birdeye view of the state of the play at a given time. Once timeseries is available, identifying the trends of the index values will be the main focus.

Living Index

Given the fast changing nature of underlying drivers of connectivity, the data sources of the CI need to be reviewed and improved

Transparency and Accessibility

The raw data, methodology of the CI should be open to the public for transparency. The results of the index should be easily understood by non-specialists.

Tool for policymaking

This project is not meant to produce scorecards but rather to provide a tool that enables critical assessment, dialogue and informed policy actions.