Asian Economic Integration Report 2018
Theme Chapter Proposal:

Optimal Provision of RPGs in Asia and the Pacific

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Proposal Outline

1. **Introduction: ABCs of RPGs**
   - Definition and scope
   - Data and measurement, literature review

2. **Background and Motivation**
   - Importance in Asia and the Pacific
   - Rationale

3. **Optimal provision of RPGs**
   - Issues and challenges
   - Literature review on empirical studies
   - Lessons from Europe
   - Lessons from Latin America
   - Additional areas to discuss the provision of RPGs
     - Technology and regional labor market

4. **Policy discussion**
   - Regional mechanisms
   - Role of MDBs
Motivation
• Growing demand for RPGs and a lack of empirical studies
• Role of RPGs in achieving SDGs
• RPGs could provide solutions to mitigate risks to growth in the region

Fundamentals of RPGs
• Definition and theoretical foundation
• Scope
• Data and measurement issues

Optimal RPG provision
• Theoretical framework
• Issues and challenges
• Empirical estimates of RPG needs for selective sectors

Case studies
• Case studies for Latin America and Europe
• Lessons and implications for Asia and the Pacific

Policy discussion
• Is a regional mechanism necessary for Asia and the Pacific economies?
• What are the main lessons from other regions that we can adopt?
• How should we form this regional mechanism? What aspects should be considered in forming the mechanism?
• What is the role of MDBs in supporting a regional mechanism, or the provision of RPGs in general?
Introduction:
ABCs of RPGs
Definition and Characteristics

• Regional Public Goods (RPGs) are public goods whose benefits extend beyond a single nation’s territory to some well-defined region.

• National PGs possess benefits confined to the country’s territory, and Global PG to the entire world.

• Suppliers of RPGs include multilateral institutions, public-private partnerships, donor countries, NGOs, development banks, and charitable foundations.
Properties and scope of RPGs

• Pure public goods possess non-rivalry and non-excludability

• Impure public goods – club goods / joint products
  • Club goods: partially rival to members, but excludable to nonmembers; transportation infrastructure
  • Joint products: yields both purely public transnational benefits and country-specific benefits; protecting rainforests

• Regional banks perform RCI by delivering public goods in various areas (Ferroni, 2004)
  • Operations at the regional and subregional level including trade, energy, infrastructure, transportation, health, banking, integration research, ICT, microfinance, and more.
Considerations for what to view as RPG and how to measure

- RPGs can be measured by (i) the **tools/efforts/inputs** to produce RPGs, and (ii) the **outcomes/benefits/outputs** of RPGs.

- Measuring benefits of RPGs may be more challenging than measuring the tools to promote RPGs.

Ex1.
- Regional Financial Agreements
- **Regional financial stability**
- Benefits of stable financial markets

Ex2.
- Regional Infrastructure Funds
- **Cross-border transport network**
- Benefits of increased connectivity
<table>
<thead>
<tr>
<th>National PG</th>
<th>Global PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Deterrence of enemies</td>
<td>• Curbing global warming</td>
</tr>
<tr>
<td>• Financial accounting standards</td>
<td>• Limiting ozone shield depletion</td>
</tr>
<tr>
<td>• Surveillance of borders</td>
<td>• Reducing organized crime</td>
</tr>
<tr>
<td>• Interstate highway network</td>
<td>• Limiting contagions</td>
</tr>
<tr>
<td>• Extension services</td>
<td>• Protection of rain forest</td>
</tr>
<tr>
<td>• Communication network</td>
<td>• Paris Agreement</td>
</tr>
<tr>
<td>• Education</td>
<td>• Foreign aid for poverty reduction</td>
</tr>
<tr>
<td></td>
<td>• Worldwide epidemic containment</td>
</tr>
<tr>
<td></td>
<td>• Countermeasures against transnational terrorism</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Regional PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Watershed management</td>
</tr>
<tr>
<td>• Malaria cure</td>
</tr>
<tr>
<td>• Pest control</td>
</tr>
<tr>
<td>• Immunizing populations</td>
</tr>
<tr>
<td>• Airports</td>
</tr>
<tr>
<td>• Power grids</td>
</tr>
<tr>
<td>• Peacekeeping</td>
</tr>
<tr>
<td>• Reducing acid rain</td>
</tr>
<tr>
<td>• Providing public health infrastructure</td>
</tr>
<tr>
<td>• Labor standards</td>
</tr>
<tr>
<td>• Agricultural research findings</td>
</tr>
<tr>
<td>• Transportation network</td>
</tr>
</tbody>
</table>

Source: Arce M. and Sandler (2002), Sandler (2006), and authors
Literature on Data and Measurement of RPG

- Broad scope of RPGs: no consensus on data and measurement
- Public spending on RPG by national governments are not available; Official ODA Data from OECD are available, but has limitations.
Literature on Data and Measurement of RPG – cont’d

• Liu & Kahn (2017) measures the existence of an *instrument* of RPG creation rather than the *outcome* of RPGs.

• RPGs are approximated by numbers of international treaties that nation-states have signed.

• Six functional areas of RPG:

<table>
<thead>
<tr>
<th>Functions</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Natural Resources and Environment</td>
<td>Energy, environmental protection</td>
</tr>
<tr>
<td>2 Economic Cooperation and Integration</td>
<td>Trade, taxation, customs regulation</td>
</tr>
<tr>
<td>3  Human and Social Development</td>
<td>Education, culture, science, health</td>
</tr>
<tr>
<td>4 Governance and Institutions</td>
<td>General cooperation, legal issues</td>
</tr>
<tr>
<td>5  Peace and Security</td>
<td>Military alliance, crime control</td>
</tr>
<tr>
<td>6  Connectivity</td>
<td>Transportation network, visa, infrastructure</td>
</tr>
</tbody>
</table>

Source: Liu & Kahn (2017)
ADB’s RCI Pillars

- ADB, through its projects, supports the four pillars of the Regional Cooperation Integration strategy.

- These projects come in the following types:
  1. Technical Assistance (TA)
  2. Loans
  3. Grants

- In ADB’s RCI Strategy (2006, p15), a RPG is defined as a benefit shared by two or more countries in a region.
RCI projects in ADB
TAs dominate in numbers; loans dominate in amounts

Number of projects per year, according to type.

ADB RCI Project funding (in millions USD)

Source: authors’ own calculations based on ADB’s internal project database
RCI Projects by sector
Cross-border infrastructure dominates

ADB RCI Projects funding per pillar
(2010 - September 2017)
(in millions USD)

Number of RCI projects per pillar,
arranged according to type.

Source: authors’ own calculations based on ADB’s internal project database
Background and Motivation
Background

- Highlighted risks accompanied by accelerated growth in the Asia-Pacific region
  - global imbalances, lagging regions, stressed states, carbon-intensive growth, communicable diseases
- Increased vulnerability to external shocks as RCI deepens; Growing demand for RPGs
- Lack of comprehensive studies of RPGs

### Asia’s Integration: Intraregional shares (% of total)

<table>
<thead>
<tr>
<th>Year</th>
<th>Trade</th>
<th>FDI</th>
<th>Equity</th>
<th>Debt</th>
<th>Migration</th>
<th>Remittances</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>53%</td>
<td>47%</td>
<td>12%</td>
<td>8%</td>
<td>43% (2000)</td>
<td>33% (2010)</td>
</tr>
<tr>
<td>2016</td>
<td>57%</td>
<td>55%</td>
<td>19%</td>
<td>15%</td>
<td>37% (2015)</td>
<td>28%</td>
</tr>
</tbody>
</table>
Why Regional PG?
Virtuous Cycles of RPG provision

- Increased cross-border flows
- Greater needs for collective regional response
- Greater needs for collective global response
- Complementary
- Higher national income and welfare

Source: Authors
Virtuous Cycles of RPG provision
CMIM as an example

Greater needs for global financial stability

Increased cross-border flows

CMIM (ASEAN+3)

complementary

Global Financial Safety Nets (IMF: PCL, FCL)

Greater needs for regional financial stability

NPG: foreign reserves

Higher financial stability in domestic market

Source: Authors
## RPGs and SDGs

<table>
<thead>
<tr>
<th>RPG examples</th>
<th>Affected SDG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional cooperation in health</td>
<td>Health and well-being (Goal #3)</td>
</tr>
<tr>
<td>Risk financing strategies in the GMS</td>
<td>No poverty, climate action (Goals #1, #13)</td>
</tr>
<tr>
<td>Regional research institutions on agriculture, ASEAN+3 Emergency Rice Reserve</td>
<td>Food security and sustainable agriculture (Goal #2)</td>
</tr>
<tr>
<td>Water management in the Ganges Brahmaputra Meghana (GBM) and the Indus basins</td>
<td>Sustainable management of water and sanitation (Goal #6)</td>
</tr>
<tr>
<td>Cross border energy trading in South Asia</td>
<td>Access to sustainable energy (Goal #7)</td>
</tr>
<tr>
<td>Clean Air Asia initiative</td>
<td>Sustainable and inclusive cities (Goal #11)</td>
</tr>
</tbody>
</table>

Source: Authors
Optimal provision of RPGs
Issues in optimal provision of RPG

- Identifying aggregator technology of public supply
  - How individual provision levels are aggregated to determine the amount of the public good that is available for consumption by benefit recipients (Hirshleifer, 1983; Cornes and Sandler, 1984)
  - Includes summation (e.g. alleviating desertification), best-shot (e.g. developing vaccines for diseases), weighted sum (e.g. acid rain reduction), weakest link (e.g. monitoring disease outbreaks)
  - Implies which form of public assistance is more effective (e.g. aid flows directed towards weakest-link providers of RPG vs. best-shot provider of RPG)

- Market failure and need for soft infrastructure
  - Transnational public goods need the requisite infrastructure that facilitates market exchange, such as rules and standards (Sandler, 2002)

- Asymmetric Incidence of Benefits and Costs of RPGs
Challenges in RPG provision

• Providers are better able to control and monitor the beneficiaries of national goods
• Difficulty in identifying beneficiaries
• Spillovers in developing areas do not directly benefit provider countries
• Absence of a dominant nation may result in a lack of leadership
• Nongeographical barriers: language, geology or trade bloc membership may hamper RPG provision

Source: Sandler (2014)
Empirical studies on optimal provision by methodology

- Abundant cost-benefit / impact studies of RPG projects with lack of discussion of optimal RPG levels
- Cost-benefit analysis (lacking welfare concept)
- Regression model (gravity-type models or partial equilibrium model)
  - Impact of public infrastructure in US metropolitan areas (Eberts, 1986)
  - the effects of market integration (Donalson, 2015)
  - Impact of provision of agricultural public goods (Brunstad et al., 2008)
- Computable General Equilibrium (CGE) models
  - Impact of infrastructure investment in the state of Ohio (Seung and Kraybill, 2001)
  - Economic impact of a national carbon tax in Chile (Benavente, 2016)
  - Impact of GHG emissions policy in Poland (Böhringer and Rutherford, 2013).
  - Optimal global warming regulation in the global cooperation (Seo, 2012)
Lessons from other regions: Europe
Banking, Energy, and ICT (by Bruegel)

• Banking
  • Financial stability as RPG in the EU; need for an appropriate institutional setting

• Energy
  • EU’s energy policy and its coordination between national policies focusing on environmental protection and climate mitigation

• ICT
  • Existence of a number of parties in the ICT sector; need for distinct policy instruments – rules, regulations, and standardization
Lessons from other regions: Latin America (by IDB)

- Case studies: school building standards, social protection, health, pharmaceutical, and interoperability of national single window for trade

- RPG provision can have significant sustainable development impacts and generate externalities that expand development cooperation
  - Educational infrastructure standards, pharmaceutical purchasing capacity, civics teaching guidelines, migrant workers’ social security rights

- RTAs can help create a more solid and stable global trading system
RPG Provision in additional focus areas:
Technology and Regional labor market

- Development impact can be maximized by supporting spread of high technology.

(Session 3) Role of RPGs for inclusive growth through technology
(by Bo Zhao and Peter Rosenkranz, ERCD, ADB)
Digitalization can be a channel to promote inclusive growth.
RPGs can help strengthen the linkage.

- Aging Asia will change labor markets and human capital formation among others; Need to identify major challenges and policies gaps

(Session 3) Human capital development and labor mobility in the era of aging and demographic change in Asia (by Aiko Kikkawa Takenaka, ERCD, ADB)
Aging and Declining workforce in advanced economy with youth workforce in middle-low income countries needing employment and training opportunities
The region needs to introduce more active policies including RPG mechanisms/policies to develop and facilitate the movement of wide array of skills.
Policy discussion
Policy Questions

- **Is a regional mechanism necessary for Asia and the Pacific economies?**

- **What are the main lessons from other regions that we can adopt?**

- **How should we form this regional mechanism? What aspects should be considered in forming the mechanism?**

- **What is the role of MDBs in supporting a regional mechanism, or the provision of RPGs in general?**
## Cases of Regional Mechanisms for RPGs

<table>
<thead>
<tr>
<th>Region</th>
<th>Sector</th>
<th>RPG mechanisms</th>
<th>Background</th>
<th>Objective</th>
<th>Established structure</th>
<th>Expected impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central America</td>
<td>Health</td>
<td>Central American pharmaceutical procurement mechanism</td>
<td>Need for low-cost, high-quality medicines for public hospitals</td>
<td>Set up a coordinated regulatory framework for medicine procurement</td>
<td>Regional mechanism via collective bids at prices and quality standards set by region</td>
<td>Substantial savings</td>
</tr>
<tr>
<td>Europe</td>
<td>Infrastructure</td>
<td>Connecting Europe Facility (CEF)</td>
<td>need for public funding due to lack of commercial viability of some infrastructure projects</td>
<td>Support investments in transport, energy, and ICT</td>
<td>Grants, Programme Support Actions, and EU contributions</td>
<td>Increased connectivity</td>
</tr>
<tr>
<td>Europe</td>
<td>Finance</td>
<td>NPL resolution mechanisms</td>
<td>Financial stability risks rise as cross-border markets grow</td>
<td>Financial stability in the region</td>
<td>Single Supervisory Mechanism (SSM) and Single Resolution Mechanism (SRM)</td>
<td>Should help ease NPL contagion, promote fin’l stability</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Infrastructure</td>
<td>ASEAN Infrastructure Fund (AIF)</td>
<td>Huge infrastructure needs and high savings in the region</td>
<td>Mobilize regional savings for infrastructure investments</td>
<td>Dedicated fund established by ASEAN and ADB</td>
<td>Enhanced connectivity in ASEAN</td>
</tr>
<tr>
<td>ASEAN +3</td>
<td>Finance</td>
<td>Chiang Mai Initiative Multilateralization (CMIM)</td>
<td>Volatile exchange rates during Asian crisis</td>
<td>Address BOP and liquidity difficulties</td>
<td>Currency swap arrangement between ASEAN+3 members</td>
<td>Increased financial resilience</td>
</tr>
</tbody>
</table>

Incentive Mechanisms (CEF and CMIM)

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Connecting Europe Facility (CEF)</th>
<th>Chiang Mai Initiative Multilateralization (CMIM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Under the CEF, €5.85 billion is available for trans-European energy infrastructure projects such as gas pipelines, transmission grids, LNG terminals, gas storage, and smart grids.</td>
<td>• The funds are largely pooled by contributions from the central banks of ASEAN+3 members that can be lent to any ASEAN+3 member. • Each country has a fixed borrowing multiplier while contribution amounts are agreed upon during summits. • Established in 2010 (CMI was initially established in 2000)</td>
<td></td>
</tr>
<tr>
<td>• CEF financial support primarily takes the forms of grants, programme support actions, and EU contributions to the innovative financial instruments</td>
<td>• Established in 2013</td>
<td></td>
</tr>
<tr>
<td>• Established in 2013</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Total committed (funded) amount</th>
<th>EUR 33 billion for 2014-2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Transport sector: EUR 26.2 billion</td>
<td>US$240 billion (increased from USD$120 in 2014)</td>
</tr>
<tr>
<td>b. Telecom sector: EUR 1.4 billion</td>
<td></td>
</tr>
<tr>
<td>c. Energy sector: EUR 5.85 billion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributions</th>
<th>European Commission budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany (19%), France (17%), UK (13%), Italy (12%), Spain (9%), etc. (Share of contributions to EU budget 2016)</td>
<td>Plus 3 countries (80%): US$192B - PRC (US$38.4B), Japan (US$38.4B), Korea (US$19.2B); and ASEAN countries (20%): US$48B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
<th>EU Member States and where eligible, connections to neighboring countries e.g. ICT projects for Eastern European countries (e.g. Bulgaria, Latvia, Lithuania, Romania, Poland, and Romania)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5x borrowing multiples: Vietnam, Cambodia, Myanmar, Brunei Darussalam, Lao PDR 2.5x : Indonesia, Thailand, Malaysia, Singapore, Philippines 1x: Korea 0.5x: PRC, Japan</td>
<td></td>
</tr>
</tbody>
</table>

Policy Considerations

- Regional mechanisms have potentials to address under provision of RPGs.
- It is important to incentivize individual parties to contribute to RPGs and resolve the issue of free-riding.

- Need for a regional mechanism that incorporate lessons learned from existing successful cases
- The role of MDBs in creating the regional mechanism and providing adequate level of RPGs
Thank you