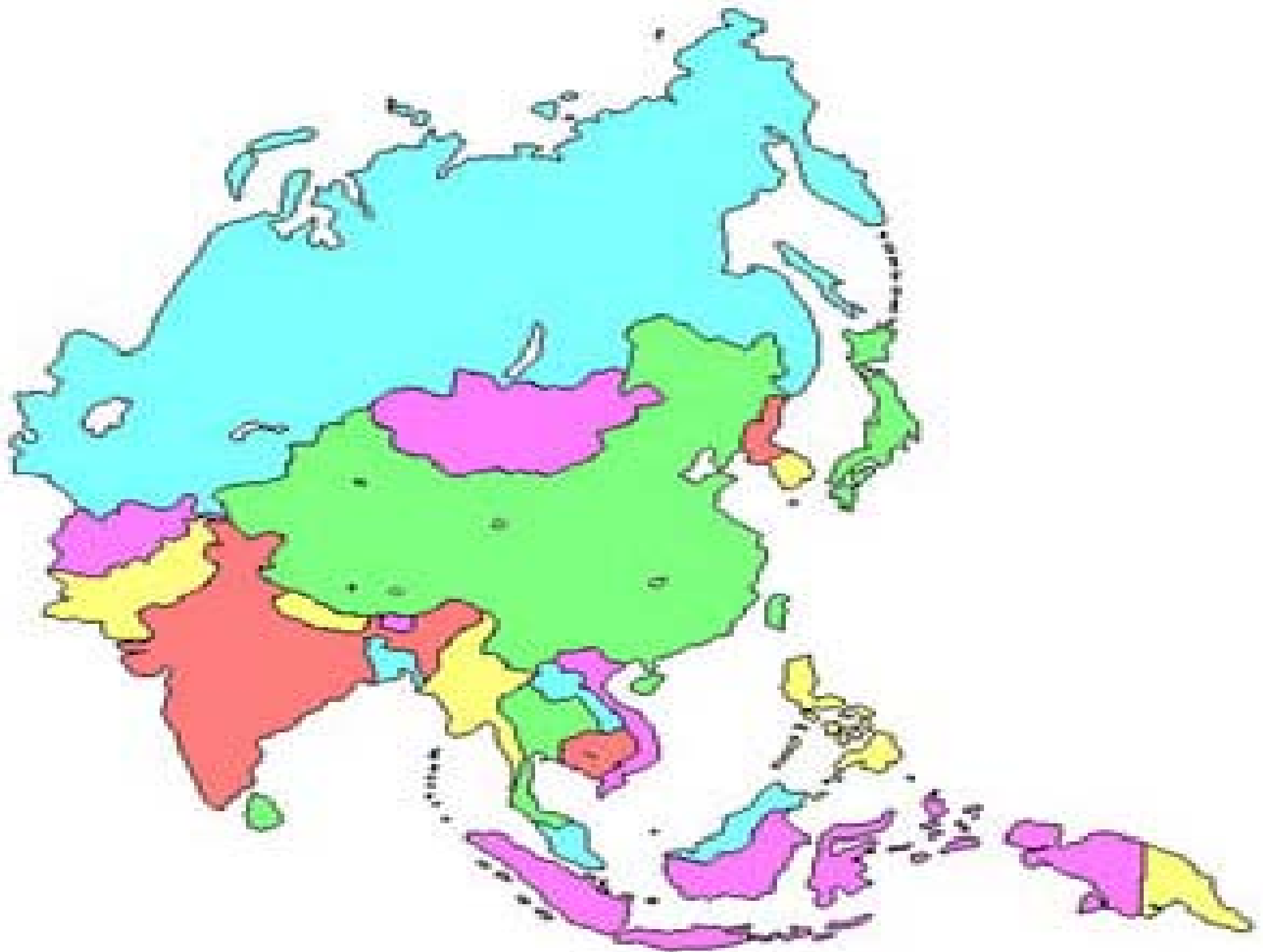


Energy Market Integration in East Asia: A Regional Public Goods Approach

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Outline

- Energy Market Integration in East Asia: why a public goods approach?
- Public goods and regional public goods
- Application to energy
- Lessons from the EU
- Implications for EMI in East Asia

Potential Benefits of Energy Market Integration

- Security of energy supply and/or demand;
- Economic efficiency of the energy sector;
- Social equity, particularly access to affordable modern energy;
- Reduced emissions of pollutants from energy production and use.
- ***These benefits have features of a public good***
- ***All are relevant to East Asia***

Five actions identified by ERIA

- Reduction of barriers to international trade in energy commodities;
- Reduction of barriers to international investment in the energy sector;
- Support for the construction of transboundary infrastructure to transport energy products;
- Reforms to national systems for energy pricing;
- Reform and liberalisation of domestic energy markets.
- ALL RELATE TO GOVERNANCE: BUT MANY COMPONENT TASKS/SERVICES

Public goods

- 'Non-rival'
 - consumption of the good by additional people does not reduce the quantity of that good available for others
- 'Non-excludable'
 - means that it is not feasible to prevent people from taking advantage of or consuming the good.
- Examples of pure public good:
 - security, law enforcement, information and clean air
- Common goods (non-excludable, partly rivalrous):
 - water supplies, fisheries, grazing land, forests and certain government services
- Key: under-supplied or over-used, or both
 - Therefore require government intervention

Classification of public goods, with examples

	Rival	Partially rival	Non-rival
Excludable	Pure private goods Food Cars Fuel	Club goods Intelsat Canals International space station	Weather stations
Partially excludable	Impure public goods Information dissemination Extension services		
Non-excludable	Common goods Free access pasture Open pathways Hunting grounds Air corridors	Impure public goods Ocean fisheries Pest control	Pure public goods Pollution control Disease eradication Strategic weapons Sound financial practices Basic research

Regional public goods

Collective action by governments

Spill-over of benefits is regional

- Knowledge
 - Information, R&D, education, dialogue
 - Infrastructure
 - Cross-border infrastructure, construction and operation
 - Environment
 - Pollution prevention & clean-up
 - Security (physical security)
 - **Governance (intermediate public good)**
 - Shared standards, best practices, policies, cross-border regimes
- *All are applicable to energy*

'Aggregation technologies' - incentives

- **Summation/ Weighted summation**
 - The sum of total contributions (eg CO2 abatement)
 - Different countries have different weights, eg SO2
 - Usually need formal agreement/treaty
- **Weakest link/weaker link:**
 - Depends on performance of weakest, eg network
 - Need to provide assistance
- **Best shot/better shot:**
 - Can be provided by one (or more) party; eg R & D
 - Need coordination, leadership
- **Threshold**
 - Total resources must reach a threshold, eg emergency response

Supporting & constraining factors

Supporting factors

- Common history/culture
- Common world view
- Perceived common threat
- Leadership by one or more nations
- High degree of political will from all states

Constraining factors

- Long-standing rivalries
- Need to amend laws, structures & systems
- Highly state-centred economies
- Reluctance to cede sovereignty
- The need to help weaker states
- Length of time to achieve benefits

Spill-over and governance institutions

- Geographic scope of regional institution:
 - Should match spill-over of public good
 - But also achieve economies of scale and scope
- Types of organisation:
 - Formal organisations
 - Networks
 - Research institutes
- Challenge is to match the organisations to the tasks in an economically and politically acceptable manner

Category	Good	Type of good	Supply type	Aggregator
Knowledge	Dissemination of research results	Pure PG	Discrete	Weighted sum
	Joint public pronouncements	Pure PG	Discrete	Weaker link
	Best practice laws, procedures and rules	Pure PG	Discrete	Better shot
	Early warning systems	Pure PG	Binary	Best shot
	Market and reserves data	Impure PG	Discrete	Weaker link
	Analysis of data	Impure PG	Discrete	Better shot
	Technological research and development	Impure PG	Discrete	Better shot
	Benchmarking data	Impure PG	Discrete	Threshold
	Capacity building and training	Club G	Continuous	Better shot
	Events and meetings	Club G	Discrete	Weighted sum
Infrastructure	Network construction	Club good	Discrete	Weighted sum
	Maintaining network integrity	Pure PG	Binary	Weakest link
Environment, natural resources, and health	Providing clean energy to cities and households	Pure PG	Continuous	Weighted sum
	Effective husbanding of natural resources	Pure PG	Continuous	Weaker link
	Reducing acid rain	Impure PG	Continuous	Weighted sum
	Cleaning up after polluting event	Impure PG	Continuous	Better shot
Peace and security	Construction of emergency stocks	Pure PG	Discrete	Better shot
	Emergency stock sharing system	Club G	Binary	Weighted sum
	Sea-lane security	Pure PG	Continuous	Better shot
	Network security	Pure PG	Binary	Weakest link
	Emergency response team	Club G	Binary	Threshold

Aggregation technology	Pure public good	Impure public good	Club good
Weighted sum	Dissemination of research results. Providing clean energy to cities.	Reducing acid rain	Network construction. Events and meetings. Emergency stock sharing system.
Weakest link	Maintaining network integrity. Network security		
Weaker link	Joint public pronouncements. Husbanding of natural resources.	Market and reserves data.	
Threshold		Benchmarking data.	Emergency response team
Best shot	Early warning systems		
Better shot	Technology R & D . Best practice laws, procedures and rules. Emergency stock construction. Sea-lane security.	Cleaning up after pollution event. Analysis of data	Capacity building & training.

Governance

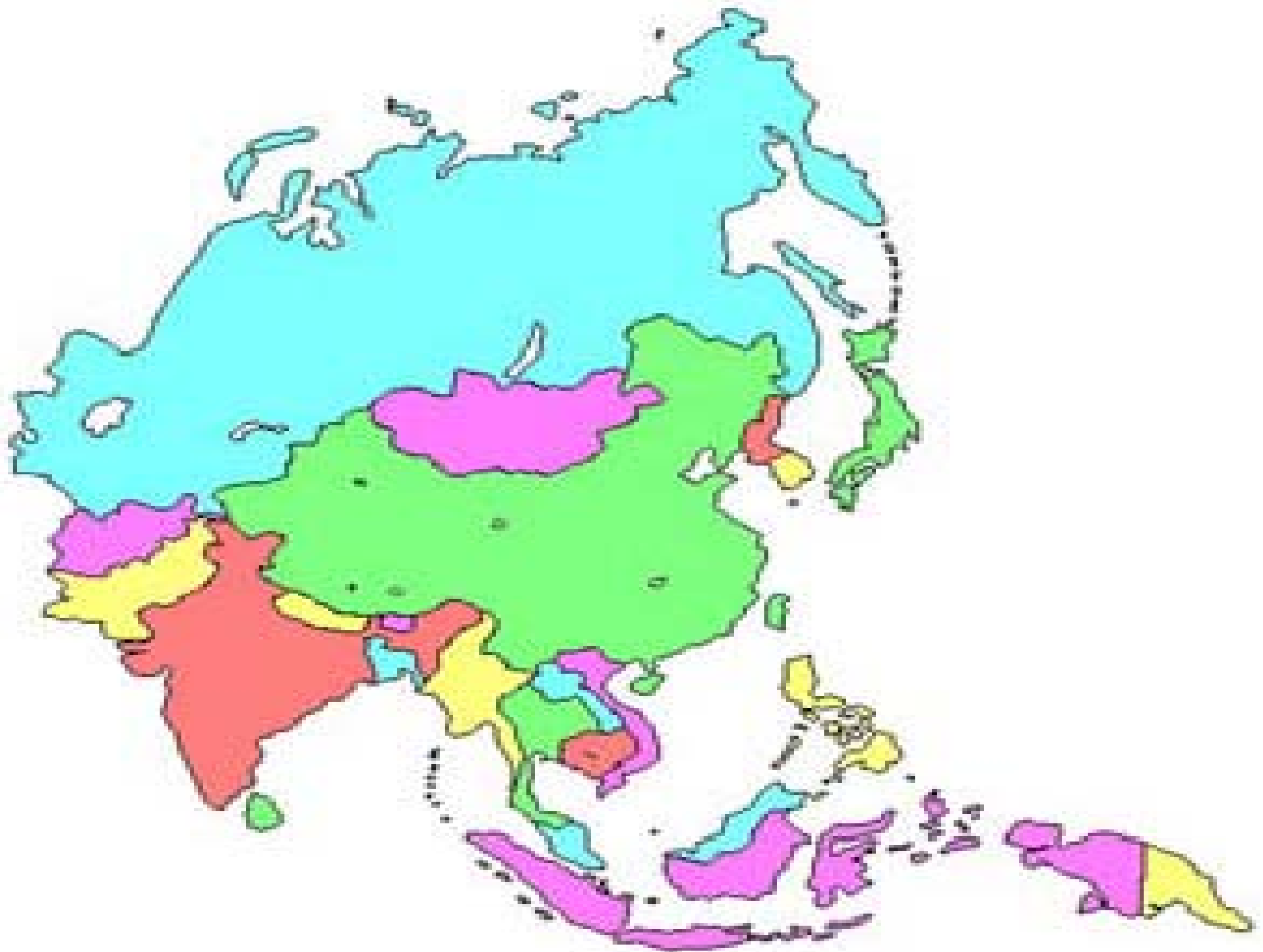
- Governance is the key intermediate regional public good
 - Because of special nature of energy
 - Sovereignty and national security issues
 - State-involvement in national energy sectors
- Types of governance
 - Hierarchical and horizontal
 - Implementing and coordinating
 - May need treaties, agreements & contracts
 - Necessary to cede some sovereignty

Lessons from the EU energy market

- Long history and many lessons; some successes
- Some notable failures
 - Especially the single energy market (gas and power)
 - Network construction & access; Anti-competitive practices
 - Also
 - Network management
 - Managing relations with major supplier (Russia)
- Key obstacles:
 - Resistance to national industry reform
 - Lack of leadership by key states
 - BUT: progress in sub-regional markets

East Asia EMI: supporting factors

- Geographic contiguity
- Certain commonalities of world view, & willingness to explore cooperation
- Complementarity in energy supply and demand, and energy mix
- Potential best shot/better shot nations
- Potential political lead states



East Asia EMI: constraining factors

- Large geographic size & significant physical barriers
- High degree of divergence in history, culture, economics and politics
- Long-standing rivalries & unresolved security challenges
- A number of weak/poor countries in a key location
- High degree of variability between energy sectors
- Importance of sovereignty>> reluctance to enter legally-binding arrangements

Easily delivered : best/better shot

- Early warning systems;
- Technological research and development;
- Best practice laws, regulations procedures and rules;
- Emergency stock construction
- Sea-lane security;
- Cleaning up after a pollution event;
- Analysis of data;
- Capacity building and training.

More difficult

Weighted sum (need formal agreement)

- Reducing acid rain;
- Network construction, including the provision of cross-border clean energy to cities ;
- Emergency stock sharing.

Weaker/weakest link

- The availability of market and reserves data;
- The maintenance of network integrity and security;
- The effective husbanding of natural resources.

Many states will be unwilling or unable to supply

EMI Organisations

- High level organisation to provide *coordination* across the East Asian region:
 - coordination of certain goods which are being delivered across the whole region;
 - coordination between sub-regional initiatives of different types.
- Sub-regional organisations to deliver specific sets of goods
 - Economies of scale and scope

Implications for East Asia EMI

- Pursue energy market integration at sub-regional scale first
- Focus first on delivering specific energy public goods at regional or sub-regional level:
 - Especially those which are easily delivered
 - These can most assist EMI (infrastructure)
- Institutions:
 - High level coordination across region
 - Sub-regional delivery
- Key challenge is national governance