Infrastructure Needs and Investment Schemes:
Perspectives from a Pan-Asian Natural Gas Trade Model

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Unlocking Private Investments in Sustainable Infrastructure in Asia:
Lessons from Central Asia

ADBI, CAREC and CAREC Institute

Outline

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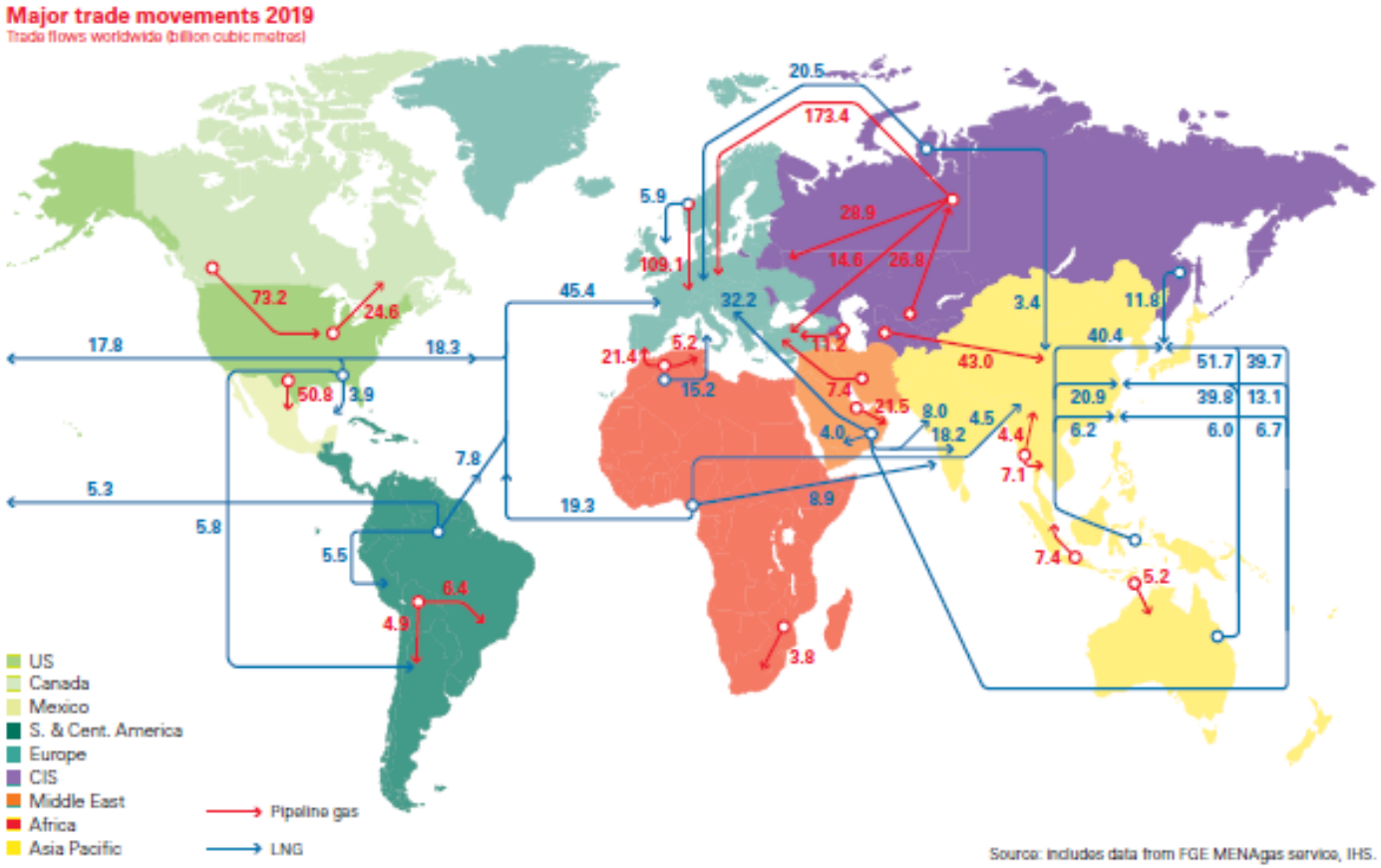


Source: BP Statistical Review of World Energy 2020; Includes data from FGE MENAgas service, IHS.

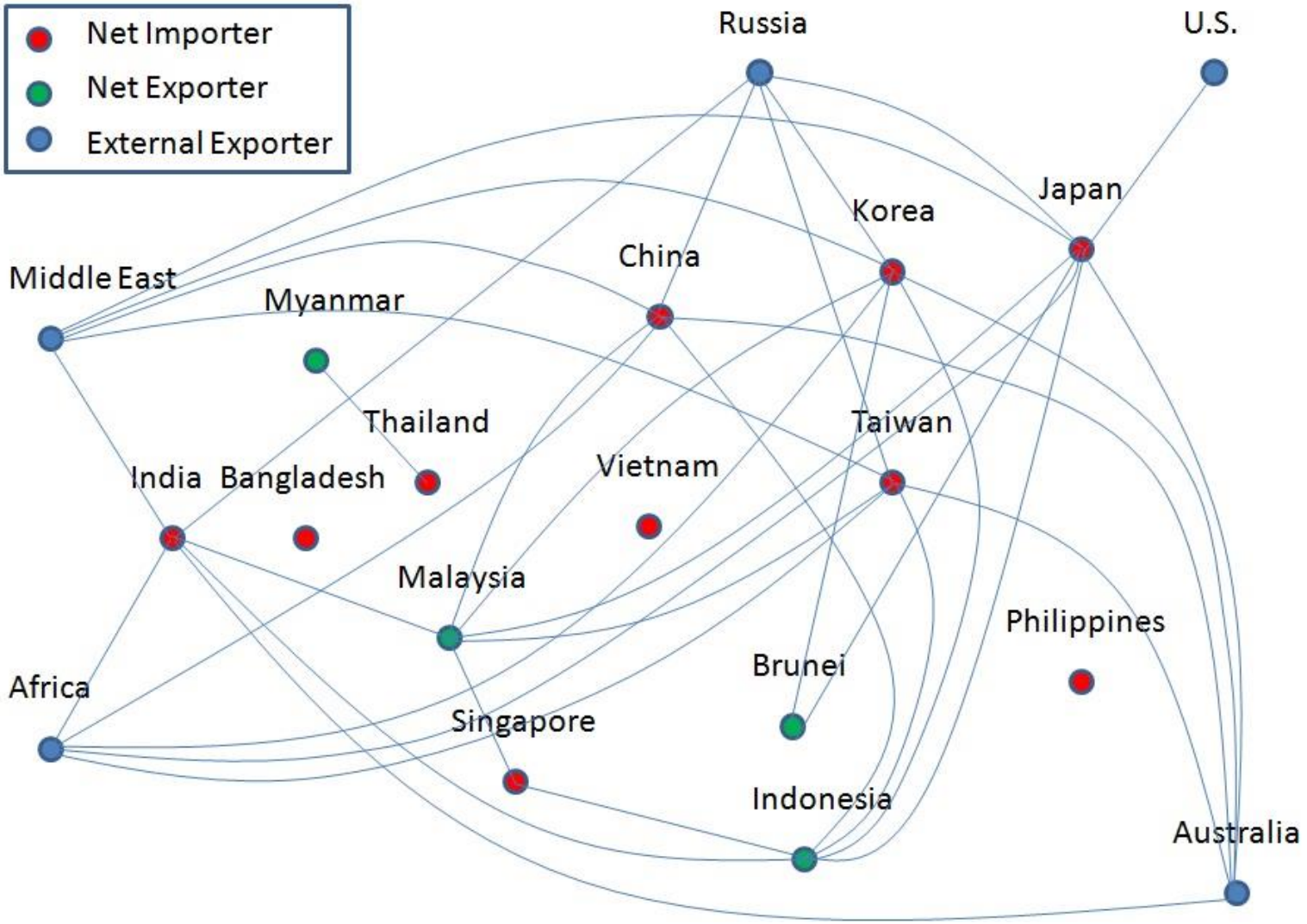
Trade Movements by Pipelines and LNG in Europe and Asia-Pacific, 2018 and 2019

2018	Pipeline Imports	LNG Imports	Pipeline Exports	LNG Exports
Europe	478.9 (59.5%)	71.5 (16.6%)	229.9 (28.5%)	11.6 (2.7%)
Asia-Pacific	74.0 (9.2%)	322.8 (74.9%)	28.9 (3.6%)	164.3 (38.1%)
World	805.4	431.0	805.4	431.0

2019	Pipeline Imports	LNG Imports	Pipeline Exports	LNG Exports
Europe	471.3 (58.8%)	119.8 (24.7%)	236.8 (29.5%)	8.6 (1.8%)
Asia-Pacific	68.7 (8.6%)	334.1 (68.9%)	25.4 (3.2%)	177.2 (36.5%)
World	801.5	485.1	801.5	485.1

Source: BP Statistical Review of World Energy 2019 and 2020

The Current Trade Patterns in East Asia

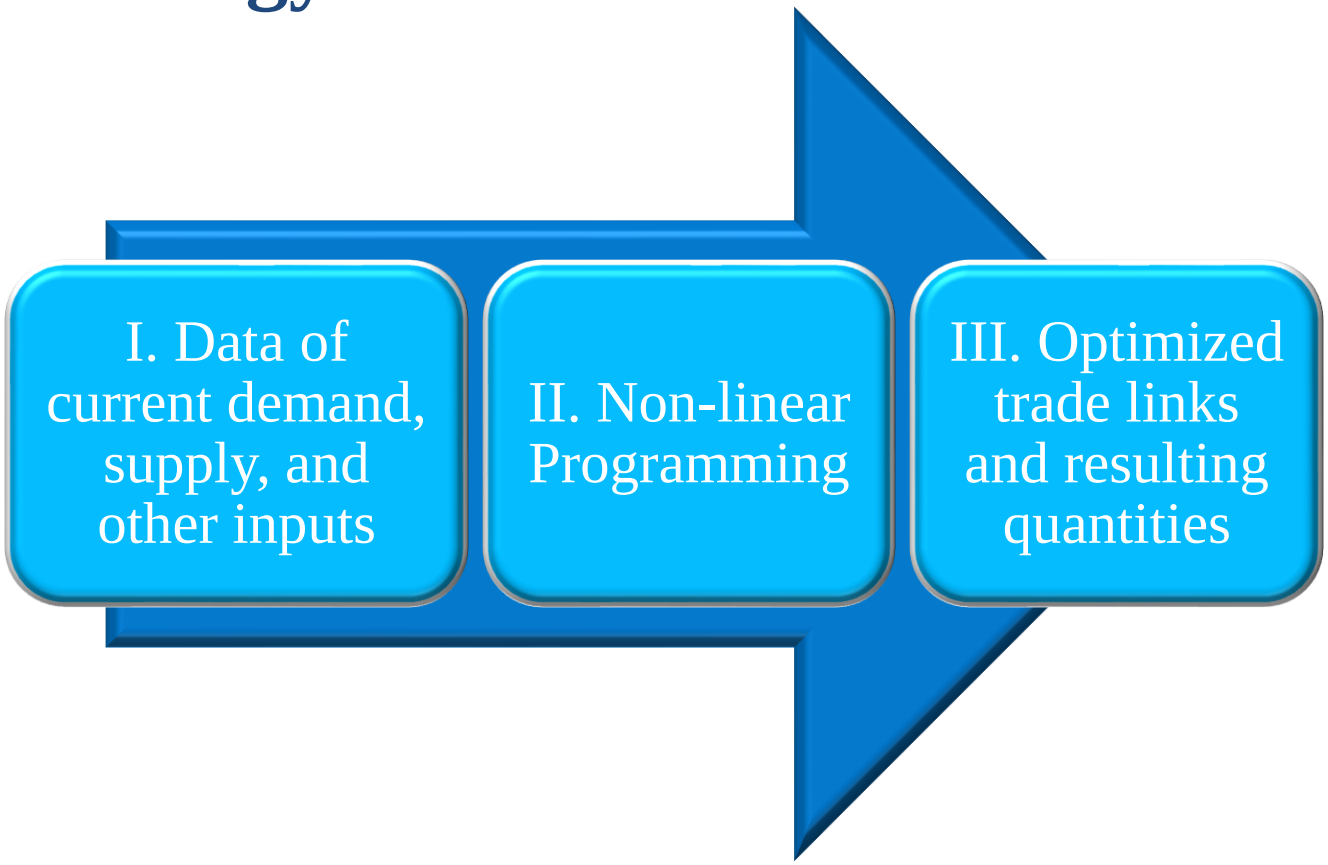


Motivation of Study

- What would be the trade pattern of natural gas in the region when we have an integrated and competitive market of natural gas?

- What would be the impacts of additional infrastructure including pipelines and LNG terminals in the region?

Methodology

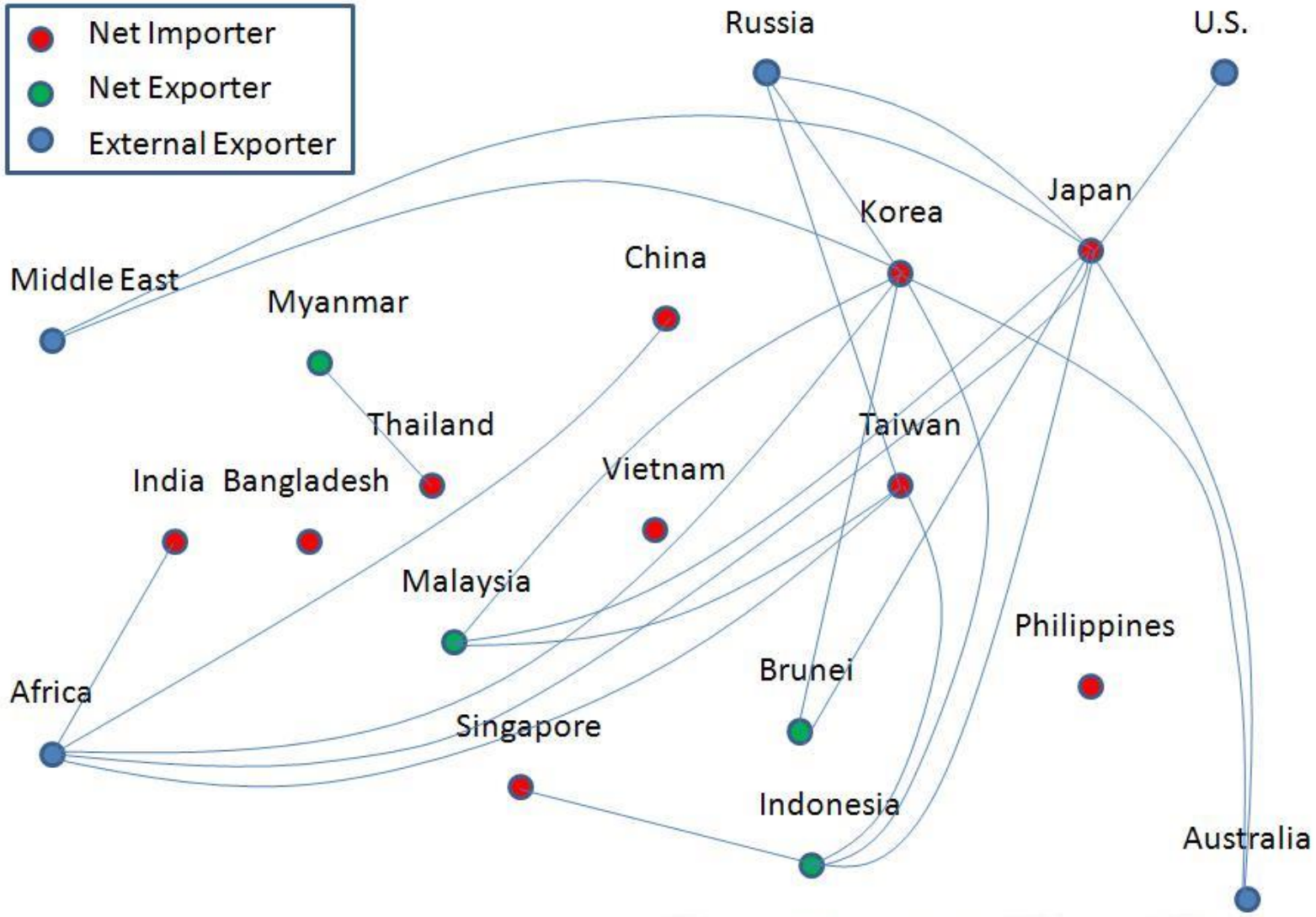


Research Questions

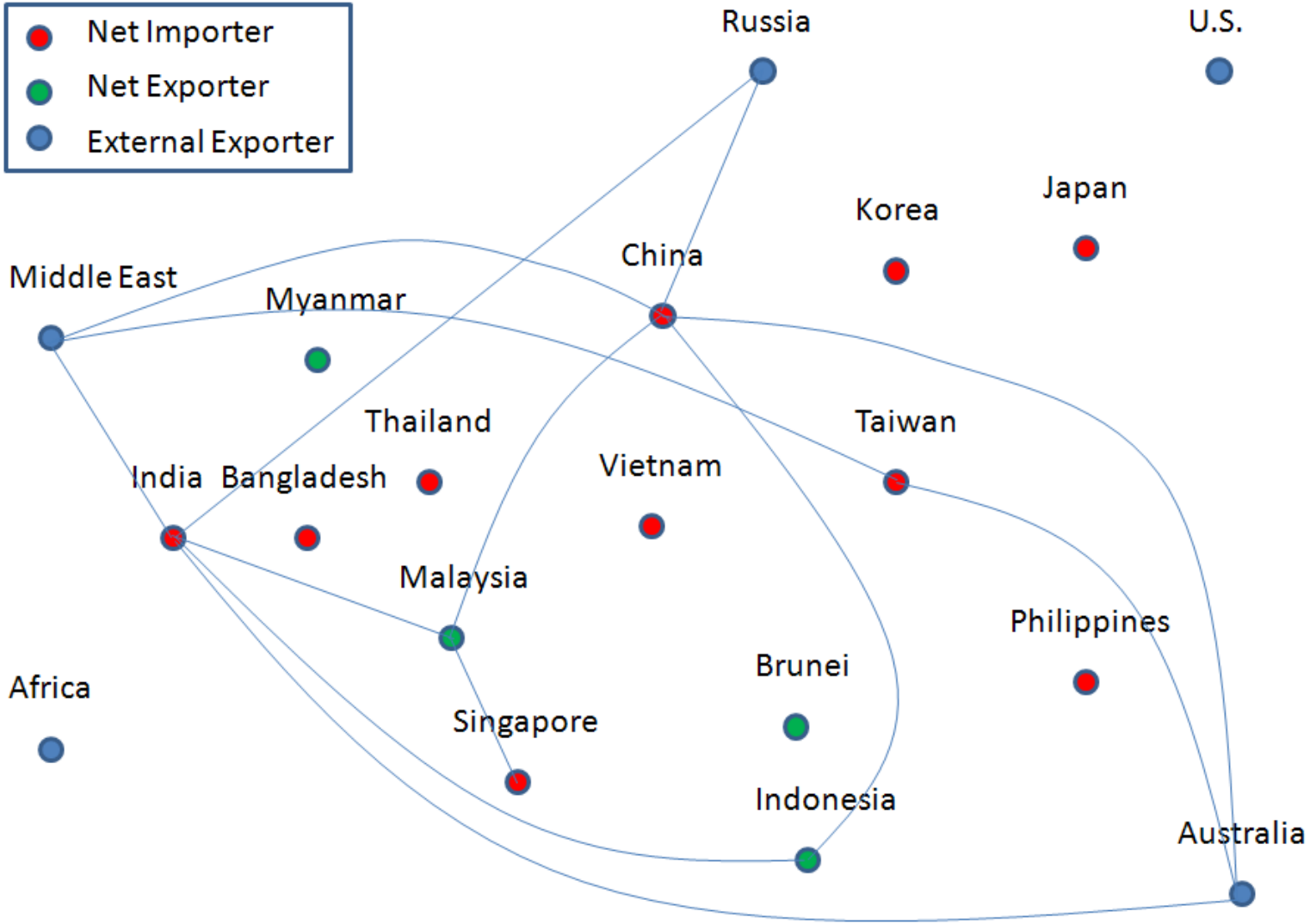
- To what extent are we better off by adopting a competitive market of natural gas trade?
- To what extent are we better off by adding new infrastructure into the region?
- Which new trade routes supported by a new infrastructure investment are desirable?

Results and Discussions

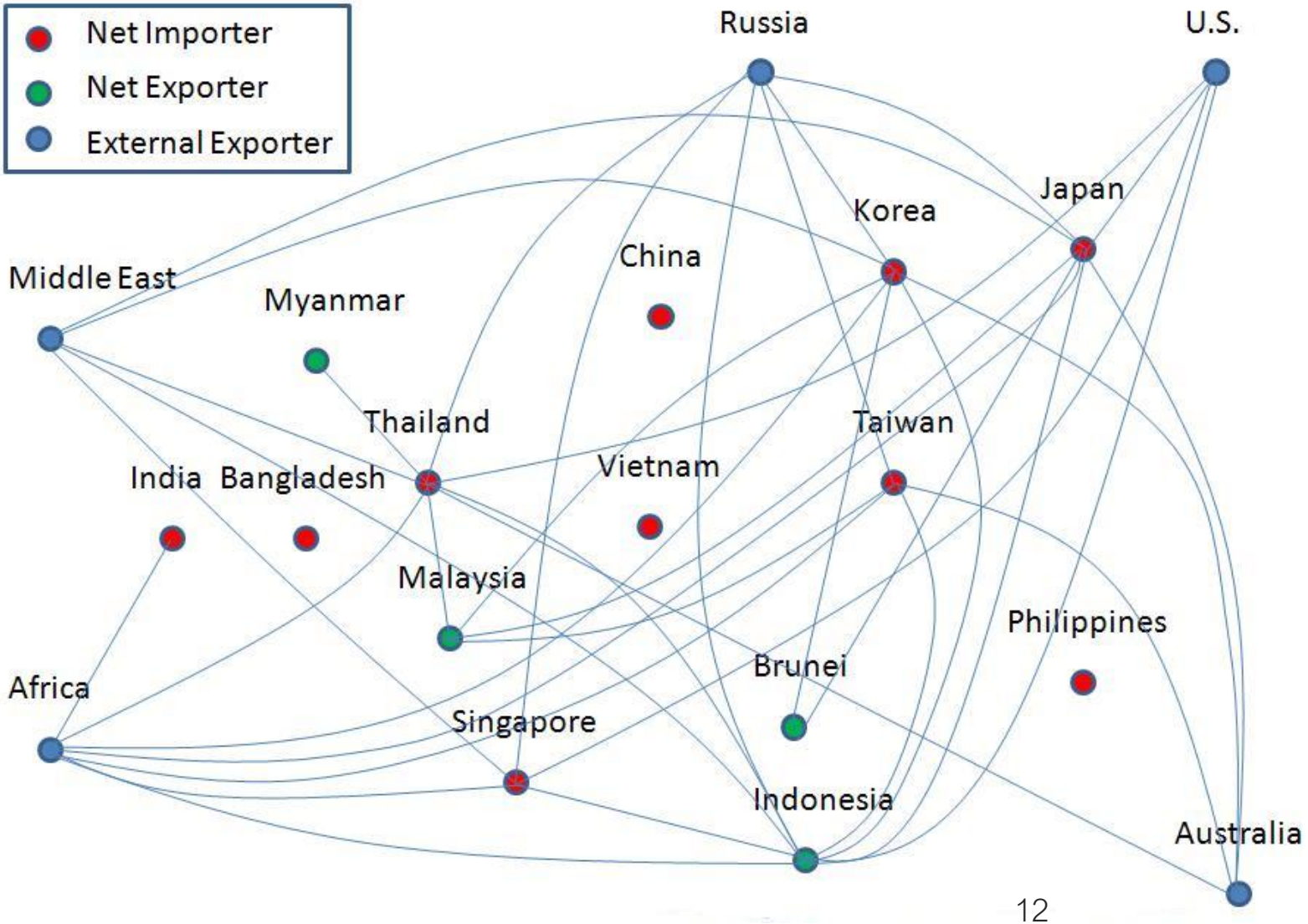
Trade Flows in An Integrated and Competitive Natural Gas Market



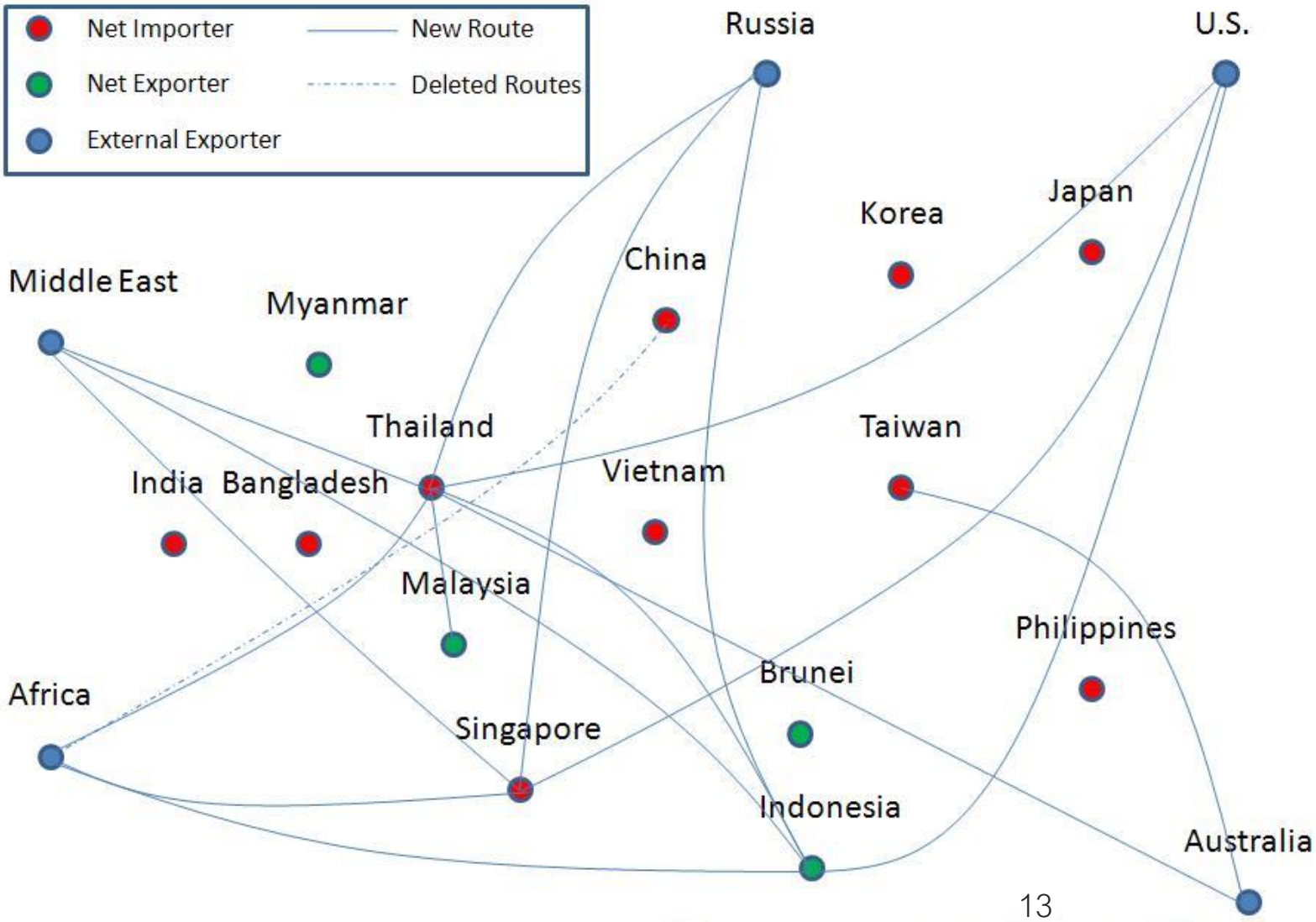
Comparing with the Current Trade Pattern: The Inefficient Trade Routes



Trade Flows with New Infrastructure for Natural Gas in the Region



Comparing Integrated Markets with and without New Infrastructure: Changes of Trade Routes



Natural Gas in CAREC Countries in 2019

Unit: Billion Cubic Meters

Country	Reserves	Production	Consumption	Export	Import	Remark
Azerbaijan	2,800	24.3	11.8	11.5	-	
Kazakhstan	2,700	23.4	17.9	27.5	6.9	
Turkmenistan	19,500	63.2	31.5	31.6	-	
Uzbekistan	1,200	56.3	43.4	13.2	-	
China	8,400	177.6	307.3	-	132.5	84.8*
Pakistan	400	33.9	45.7	-	11.8	11.8*
Total	35,000	378.7	457.6	83.8	151.2	

Source: BP Statistical Review of World Energy 2020
Notes: * indicates import via LNG; Otherwise, export and import via pipelines

Extension of the Model to CAREC Countries

- Trade flows based on the current infrastructure in the CAREC region
- Changes between the current trade flows and those under an integrated and competitive natural gas market in the CAREC region
- New infrastructure to be built
- Possible schemes of building new infrastructure

Policy Implications

- Relative abundance of natural gas in the Central Asia Regional Economic Cooperation hints that integrating natural gas markets through building new natural gas infrastructure in the region will bring benefits to the region
- Both exporting and importing countries can benefit from intra-region natural gas trade under coordinated cooperation among the governments in the CAREC and assured connectivity

Conclusion

- An integrated and competitive market of natural gas is efficient and naturally brings the security of supply.
- In this market, supply should come more from within the region which has cheaper costs of transportation, and then from external suppliers with relatively cheap costs of production and transportation.
- General welfare of the region would be promoted first by integrating the market in the region, and then by adding new infrastructure.
  - For individual countries, some of them would benefit either as an importer or as an exporter.

Thank you for your attention!!

If you have any comments or suggestions,

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