[Collaborative Research Between ERI/PARI] Policy research on energy development in Myanmar: The Thai's perspective

December 2013@

Energy Research Institute, Chulalongkorn University

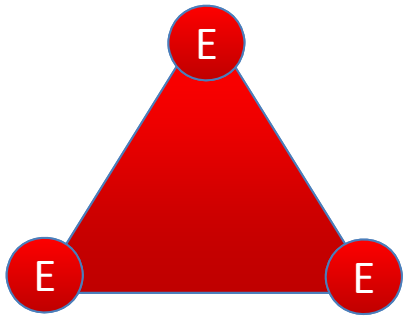
Kensuke Yamaguchi
Suthee Traivivatana
Nobuo Hashimoto
Hisashi Yoshikawa
Ichiro Sakata
※More information: gucci.kensuke@gmail.com

1. Background
2. Collaborative Research
3. Today's Workshop

Introduction to Energy Projects in GMS

Economy

- ASEAN Economic Community in 2015
- Mekong river connects the GMS region
- Uneven economic development in the region, equally promising



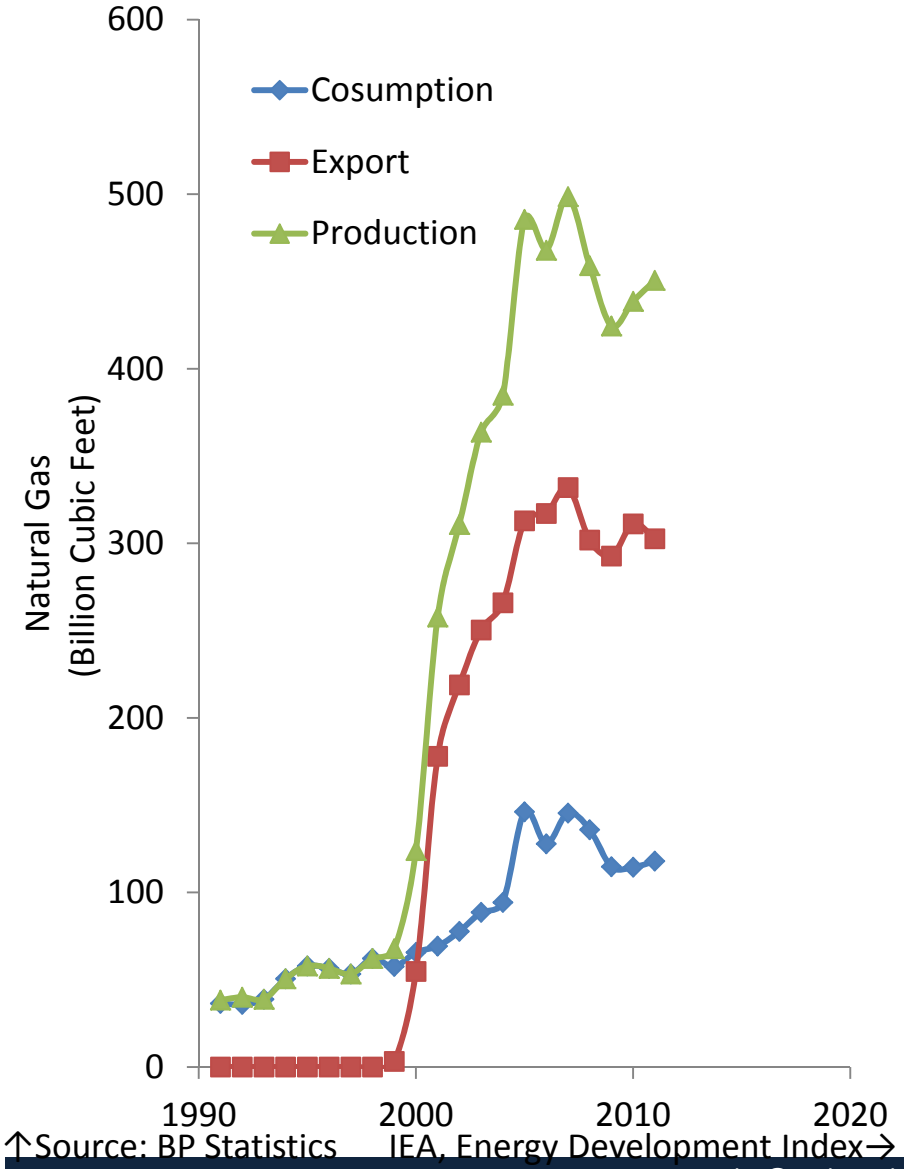
Energy

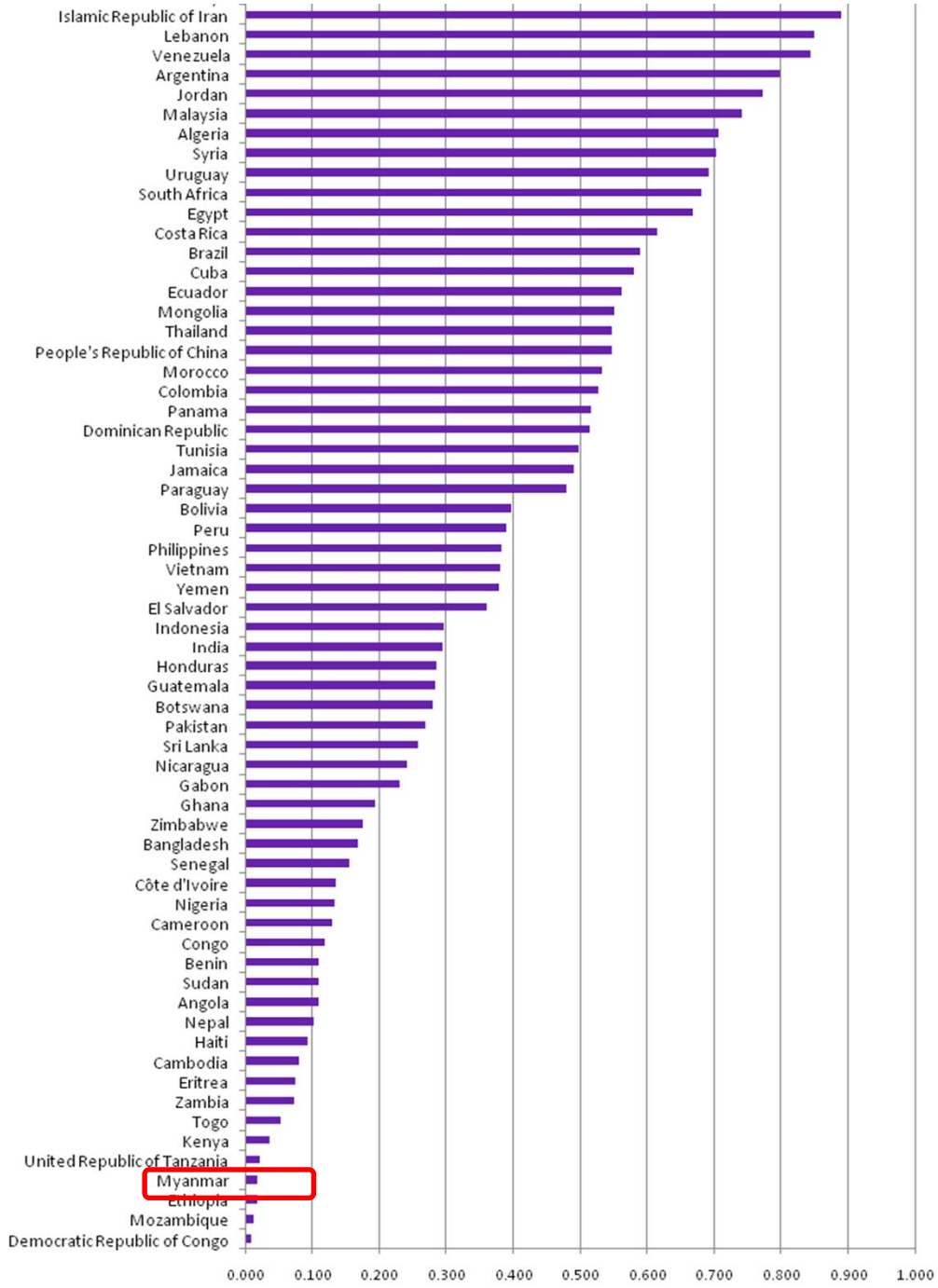
- Deepening energy market integration
- Improving grid connectivity
- Regional energy security
- Need for further energy efficiency

Environment

- Growing environmental concerns
- Sustainable resource use
- Need to share best practices

Myanmar: Rich resources, poor energy





↑Source: BP Statistics IEA, Energy Development Index→

Location	Household (,000)	Electrification Rate (%)
Yangon	1270	63
Naypytaw	116	52
Kayar	47	37
Mandalay	1060	29
Mon	340	27
Shan (south)	382	25
Bago (east)	556	22
Kachin	217	22
Bago (West)	448	18
Sagaing	862	18
Shan (north)	326	16
Shan (east)	131	15
Chin	81	15
Magway	770	15
Kayin	221	12
Tanintharyi	207	9
Ayeyanwaddy	1335	9
Rakhine	527	6

Source: Ministry of Electric Power (2011)

ERIA-UT Project

Grid Extension

To improve energy/power access through the national grid expansion

Regional Integration

To improve energy access through cross-border power trade / FDI with neighboring countries

Off-grid

To diminish energy poverty through decentralized local resource use

Further Research (2013-)

Fieldwork

Energy demand in urban regions

Grid Simulation

Decentralized power network systems

Myanmar's interests in FDI from neighbors

Neighboring Perspectives

Neighbor's interests in energy/power in Myanmar

Possible options for off-grid energy systems
Energy demand in rural regions
Cost analysis of off-grid power systems

Integrated Energy Strategy

HRD/Capacity Building

"National Energy Management Committee" has already been formed under the Vice President. Following up the success of Lao PDR, we will conduct "scenario-making" and prepare policy recommendations that will lead to an "integrated longer-term energy strategy" of Myanmar.

Regional Integration: Thai-Myanmar Power Integration

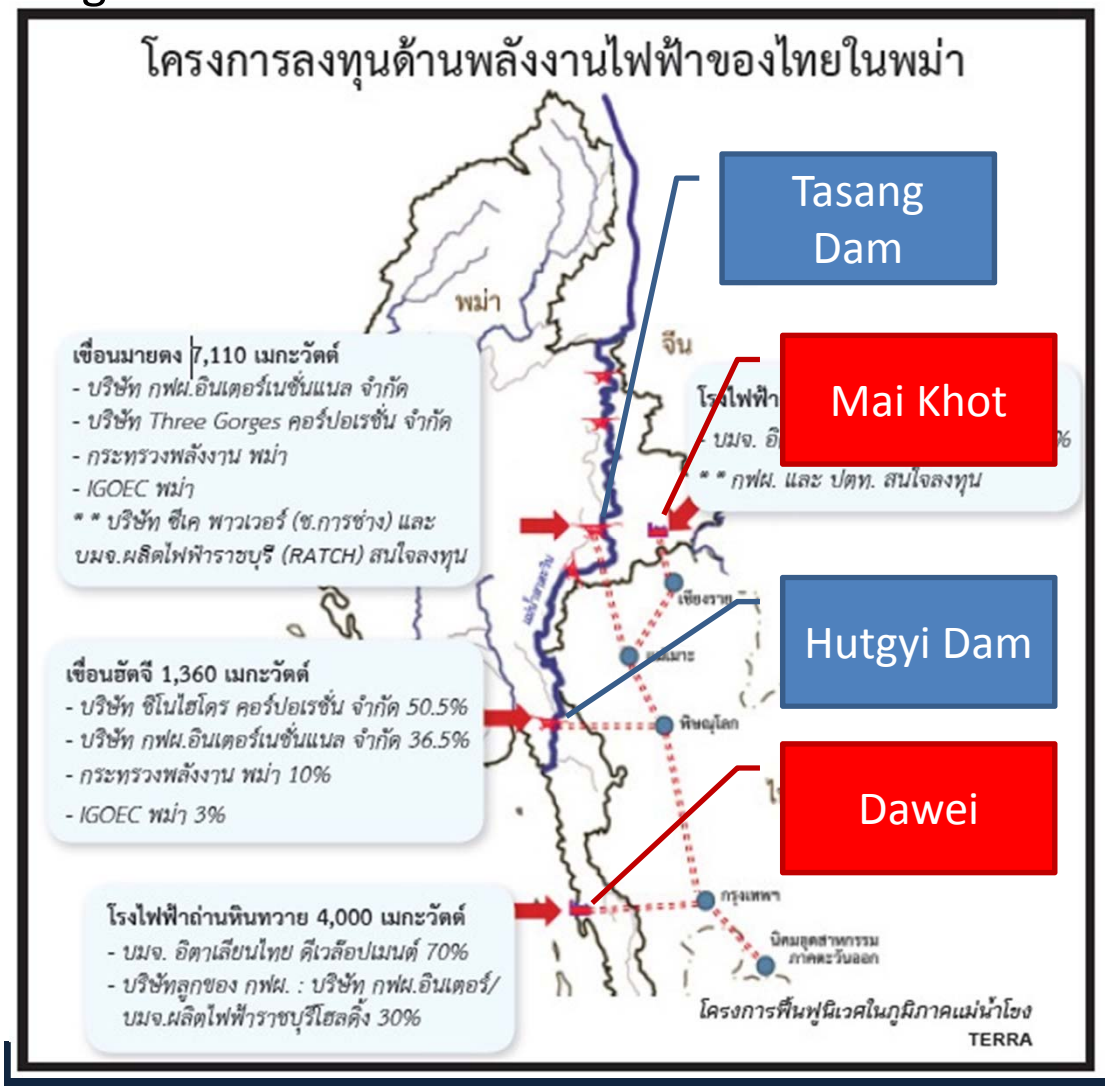
① Power Purchase from Myanmar
- Hydropower
  - Hutgyi Dam: JV with Sinohydro in 2005 (Thailand 50%, China 40%, Myanmar 10%)
  - Tasang (EGATi) 7,110 MW
- Coal
  - Mai Khot(Italian Thai, Marubeni) 369 MW

② Power Sale to Myanmar
- Joint Thai/Myanmar committee established to develop and implement a plan to sell 100-150MW of power to Myanmar to alleviate their current power shortage.
- A transmission line is constructed between Mae Sot in Tak Province and Bago, Myanmar to link the Thai and Myanmar grids.

③ Power Generation for Industry in Myanmar
- Toyo-Thai Corporation (TEC 26%, Chiyoda 7%, Italian Thai 7%, etc)
  - 100-megawatt power plant in Yangon: JV with Thai Summit Group
  - 1000 Megawatt UCS in Thilawa (2015-)
- Dawei project by EGAT
  - the Dawei deep-sea port and industrial zone
  - In late June 2013, the people organization of Myanmar has issued a joint statement calling on the government to stop coal plants.

Power Investment in Myanmar

The EGAT PDP 2013 plans to increase the purchasing power of coal 10,000 MW and hydro power from neighboring countries for another 10,000 MW and *to increase the power purchase from Myanmar up to 10,000 MW* instead of 1,500 MW from the original MOU.



- The Salween river Projects
  - ✓Hutgyi dam (1360 MW - Karen): total investment of 80,000 million baht, EGATi holds 36.5%.
  - ✓Maine Tong dam or Ta Sang dam (7,110 MW - Shan State): 3.6 billion baht investment by EGATi.
- The coal power projects
  - ✓Mai Khot: (405 MW - Shan State). Italian-Thai
  - ✓The Marubeni/PTT Joint coal project

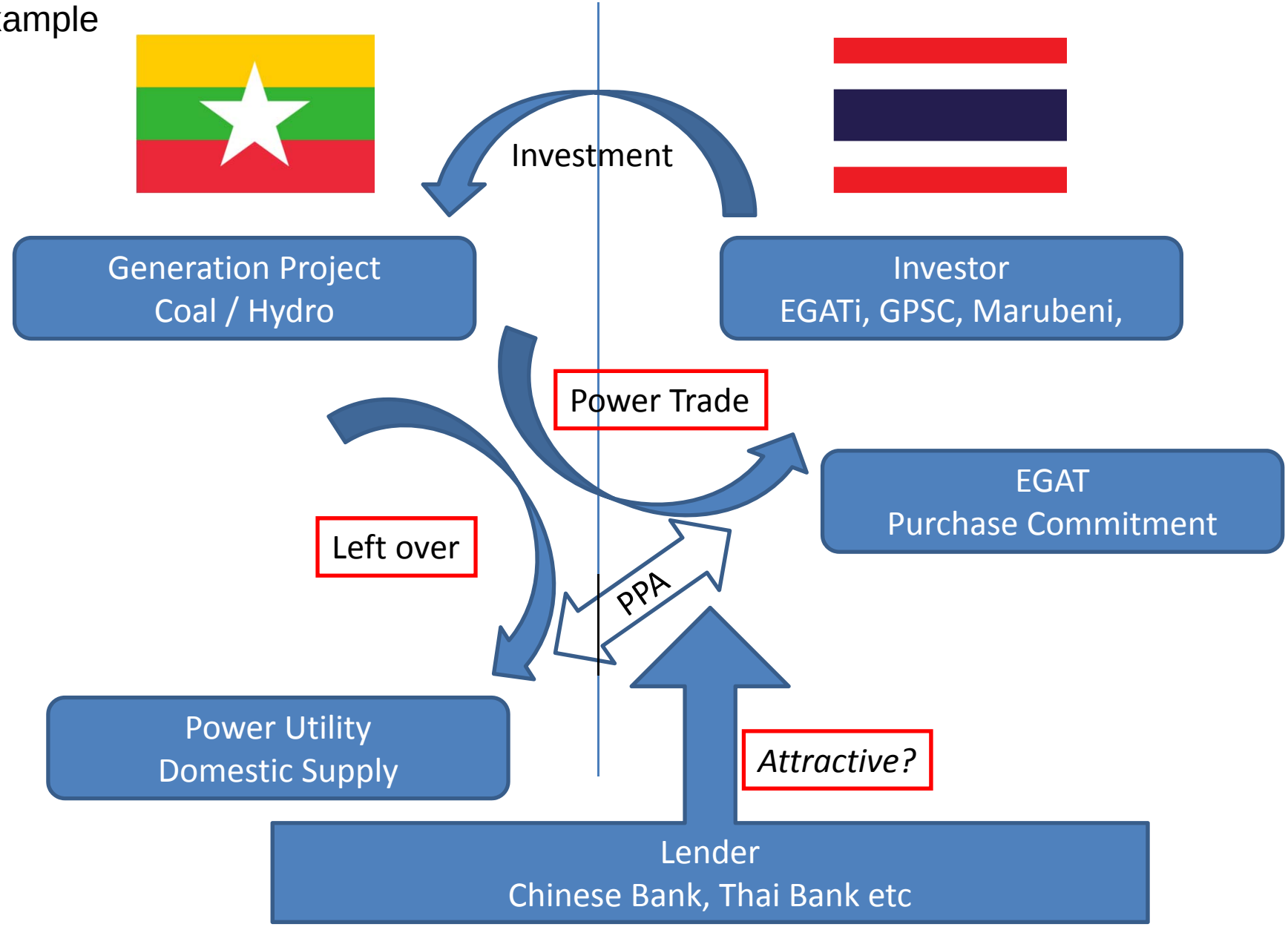
1. Background
2. Collaborative Research
3. Today's Workshop

Questions

- How can power-trade craft the win-win relationship between Myanmar and Thailand?
  ① What is the expected win-win relationship?
  ② What is the barrier to achieve that relationship?
  ③ What is the role of each stakeholder to overcome the barrier?

① What is the expected win-win relationship?

※ example



② What is the barrier to achieve that relationship? : Technological Aspect

Technological Barrier	
Previous Study(Teusch and others, 2012)	Regional Context
- antiquated grids and infrastructure - complexity in interconnection and congestion - AC/DC conversion - geographical difficulties - lack of infrastructural capacity for long distance transportation	-undeveloped transmission line for domestic supply -lack of power-system-control capability (no national dispatch center) -Lack of adequate human resources for power management -lack of basic data/material for study (river-flow, map, etc.) -connecting grids between local and national

② What is the barrier to achieve that relationship? : Economic and financial Aspect

Economic barrier	
Previous Study	Regional Context
-unclear pricing mechanism (Teusch and others, 2012) -unintegrated energy market including lack of common carrier and wholesale carriage to market (Xiao, 2011) -lack of investment	- No introduction of the competitiveness for IPP- company selection (to find a reliable company) - low power-tariff for domestic supply (for leftover portion) - Insufficient finance to prepare equity for IPP project (to be involved in project as a stake-holder) - Insufficient finance to extend transmission line for domestic power supply

② What is the barrier to achieve that relationship? : Regulatory and Political Aspect

Institutional Barrier	
Previous Study	Regional Context
-environmental regulatory , weak judicial system, property rights, or unorganized export regulation (Bissinger, 2012) -lack of capacity to commit long-term / high level partnerships (Woolley , 2013, Risse, 2012) -lack of transparency, rent-seeking activities (Rustad et al , 2012) -lack of integrated master plan for energy (Africa-EU Energy Partnership Road Map, 2010)	-lack of institutional capacity to develop national strategy -Too many governmental entities in energy sector -inappropriate IPP business scheme with foreign investors -To deal with civil society - insufficient technical standard/EIA examination - lack of comprehensive river-management

③ What is the role of each stakeholder to overcome the barrier?

※ example

Type of Barrier	Government	Power Utility	Private Sector	Render	Civil Society
Technological barrier	Capacity Building	Technical Support	New technology Implementation	Finance	
Economic barrier	Government Guarantee	Purchase Commitment	Project Consortium	Finance	
Institutional barrier (regulatory/political)	Integrated energy governance	Unbundling/ Privatization			
Other barrier	Social / Environmental Assessment		Accountability	Conditional Finance	Formal / Informal objection

1. Background
2. Collaborative Research
3. Today's Workshop

Research Schedule

2013			2014					
OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
⇒⇒⇒ Literature Surveys		● WS1 BKK	⇒⇒⇒ (Un)Structured Hearing		● WS2 BKK	⇒⇒⇒ Structured Hearing		● WS3 NPT
Step1			Step2			Step3		
•Purpose: To identify various barriers •(Output: JCC)			•Purpose: To draw hypothetical solutions •Output: Discussion Paper			•Purpose: To verify the hypothesis •Output: Academic Paper		

Today's Workshop
Questions to be discussed…

① What is the expected win-win relationship?
② What is the barrier to achieve that relationship?
③ What is the role of each stakeholder to overcome the barrier?

Monday, December 16, 2013	
1:00-1:30 pm	**Registration**
1:30-1:40 pm	**Welcome Remarks** Prof. Dawan Wiwattanadate (Chulalongkorn University)
1:40-2:10 pm	**Opening Remarks & Scope of the workshop** Ichiro Sakata, Kensuke Yamaguchi (U. Tokyo),
2:10-2:30 pm	**Keynote Speech 1** Yanfei Li (ERIA)
2:30-2:50 pm	**Keynote Speech 2** Dr. Jiraporn Sirikum (EGAT)
2:50-3:10 pm	**Keynote Speech 3** Nobuo Hashimoto (U.Tokyo / J-Power)
3:10-3:30 pm	***Coffee Break***
3:30-4:00 pm	**Fieldwork Plan** Keith W. Rabin (KWR International, Inc.)
4:00-4:15 pm	**Comment** Prof. Sunait Chutintaranond (Chulalongkorn University)
4:15-4:30 pm	**Discussion (* Identification of Barriers)** Moderator: Prof. Hisashi Yoshikawa (U. Tokyo)
4:30-4:40 pm	**Wrap up** Prof. Hisashi Yoshikawa (U. Tokyo)
4:40-4:45 pm	**Closing Remarks** **TBA**
5:30-8:00 pm	***Dinner***

1. Africa-EU Energy Partnership Road Map (2010)
2. Akihisa Mori, China-Japan CDM: Realizing regional environmental benefit in CDM and Sustainable Development in China: Japanese Perspective, eds Kazuhiro Ueta. http://books.google.co.th/books?hl=en&lr=&id=O57F9YMavUQC&oi=fnd&pg=PA63&dq=transboundary+grid+benefit+&ots=jnu7ZLO_na&sig=-77H_QOekjVcl-NRIslkov9O1pI&redir_esc=y
3. Arjen A. van der Meer and others (2010) Offshore Transnational Grids in Europe: The Northe Sea Transnational Grid Research Project in Relation to Other research initiatives. Available from http://www.nstg-project.nl/uploads/media/NSTG_-_Offshore_Transnational_Grids_in_Europe_Oct2010.pdf
4. CA Scott and others (2011) Policy and institutional dimensions of the water-energy nexus, Energy Policy
5. David Pick and Htwe Htwe Thein (2010) Development failure and the resource curse: the case of Myanmar, Internatinal Journal of Sociology and Social Policy, Vol. 30, No. 5/6, p. 267
6. David I. Steinberg (2013) Myanmar – China- US: the potential for triangular cooperation, Asia Pacific Bulletin, November 241
7. G. Goetzl, and others (2011) Transenegry – transboundary geothermal energy resources of Sloveia, Austria, Hungary, and Slovakia, paper presented at 1st Sustainable Earth Science Conference and Exhibition
8. James Reily (2013) China and Japan in Myanmar: Aid, natural resources and influence, Asian Studies Review, Vol. 37, No. 2, p. 141-157
9. Jared Bissinger (2012) Foreign investment in Myanmar: a resource boom but a development bust? Contemporary Southeast Asia: A Journal of International and Strategic Affairs
10. Jonas Teusch and others (2012) The benefits of investing in electricity transmission: lessons from Northern Europe, CEPS Special Reports. Available from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2028866
11. Jorgen Wettestad and others (2012) EU climate and energy policy: A hesitant supranational turn? Global Environmental Politics, Vol. 12, No. 2, p. 67
12. Kacper Szulecki, and others (2011) Explaining variation in the effectiveness of transnational energy partnerships, Governance, Vol. 24, No. 4, p. 713
13. J. Krupa (2012) An Indeterminate future: assessing the need for greater US-Canada transmission integration, Utilities Policy
14. Kirk Talbott, John Waugh, and Douglas Batson (2012) Sharing the wealth: burma's post-militar rule and natural resource governance
15. Koji Kubo (2011) Natural Gas Export Revenue, Fiscal balance and inflation in Myanmar, Asian and Pacific Studies, Vol. 28, p. 374
16. Liye Ciao and others (2011) the future of renewables linked by a transnational Asian grid, Energies, Vol. 4, No. 7, p. 1025. Available from http://www.mdpi.com/1996-1073/4/7/1025
17. Mikiyasu Nakayama and Miko Maekawa (2012) Economic benefits and security implications of tradin hydropower through transboundary power grids in Asia
18. Mattijs Smits (2011) A tale of two transitions: a multi-level perspective on energy transitions in the Lao PDR and its challenges, paper presented at "Experiments, system innovation and sustainability transitions in Asia, Kuala Lumpur, January. Available from http://umconference.um.edu.my/upload/163-1/Paper%2043.pdf
19. Olivia Woolley (2013) Governing a North Sea grid development: The need for a regional framework treaty. Available from www.crninet.com/pdf_file/ITS/CRNI_14_01_0073.pdf
20. Rafael M. Plaza (2013) Transnational power transmission and international law, international review of law sample case study from EU 2020 Energy Policy and the European Transmission System. Available from http://www.qscience.com/doi/abs/10.5339/irl.2013.8
21. Steven Haggblade and others (2013) A Strategic Agricultural Sector and Food Security Diagnostic for Myanmar. Available from http://fsg.afre.msu.edu/Myanmar/myanmar_agricultural_sector_and_food_security_diagnostic_report.pdf http://fsg.afre.msu.edu/Myanmar/myanmar_agricultural_sector_and_food_security_diagnostic_report.pdf
22. Xunpeng Shi and Fukunari Kimura (2010) Review of initiatives towards and estimated benefits from integrating energy market in the East Asia Summit Region. Available from http://www.eria.org/publications/research_project_reports/images/pdf/y2009/no13/Overview_Report.pdf

ขอบคุณ

Kensuke Yamaugchi
gucci.kensuke@gmail.com

Thank you

Today’s Workshop

Regional Integration: Case of Thai-Myanmar Power Trade

- [Thai] Neighboring Perspective
  - Power Import from Myanmar: Thai's Energy Security Perspective
  - The investment environment
  - Future Trend of the power import
- [Myanmar] Fieldwork
  - Institutional/legal setting around FDI
  - Myanmar's take in PPA
  - Keith's presentation
- "How much electricity could be domestically supplied in Myanmar as a "result" of the Thai's import?"

② What is the barrier to achieve that relationship?

1. Technological barrier
2. Economic barrier
3. Institutional barrier (regulatory/political)
4. Socio-cultural barrier

How to make it attractive?

- High profitability with low risk
  - Export to Thailand through the EGAT commitment
- Myanmar's claim of the government take
  - Some bargaining power in Myanmar as exporter

↓

- How to make it attractive while it still leftovers some portion in Myanmar
  1. The increase of the unit price purchased by EGAT
  2. The increase of the market profitability in Myanmar

[FOCUS] Chula/UTokyo: Energy Partnership between Myanmar and Thailand

② What is the barrier to achieve that relationship? (cont')

※ example

Institutional barriers (regulatory, political)	- environmental regulatory - poor investment climate such as weak judicial system, property rights, unorganized export regulation (Bissinger, 2012) - lack of capacity to commit long-term/high level partnerships (Woolley, 2013, Risse, 2012) - lack of transparency - risk of rent-seeking activities (Rustad and others, 2012) - lack of integrated master plan for energy (Africa-EU Energy Partnership Road Map, 2010)
Others（including socio-cultural）barriers	- lack of social acceptance - lack of environmental concern

② What is the barrier to achieve that relationship?

※ example

Technological barriers (Teusch and others, 2012)	- antiquated grids and infrastructure - complexity in interconnection and congestion to international/national grids - AC/DC conversion - geographical difficulties such as earthquake or disaster prone areas - lack of infrastructural capacity for long distance transportation
Economic barriers	- unclear price mechanism - unitegrated energy market including lack of common carrier and wholesale carriage to market (Xiao, 2011) - lack of investment

Technological barriers

- - lack of regulatory function (insufficient technical standard/EIA examination)
- - lack of comprehensive river-management (to avoid exclusive power-use of river flow)
- - lack of basic data/material for study (river-flow, map, etc.)
- - lack of power-system-control capability (no national dispatch center)
- - undeveloped transmission line for domestic supply

Institutional Barriers

- - lack of comprehensive river-management (insufficient inter-ministerial adjustment for it)

- - irrational selection of IPP company (to improve governance function/transparency)

Economic Barriers

- - No introduction of the competitiveness for IPP-company selection (to find a reliable company)
- - low power-tariff for domestic supply (for leftover portion)
- - Insufficient finance to prepare equity for IPP project (to be involved in project as a stake-holder)
- - Insufficient finance to extend transmission line for domestic power supply