

# ***GOVERNING CROSS-BORDER ELECTRICITY TRADE IN THE ASIA-PACIFIC***

Chell Lyons, Australian National University, 0425 275 007, michelle.lyons@anu.edu.au  
Dr Emma Aisbett, Australian National University, 0420 405 980, emma.aisbett@anu.edu.au  
Dr Thang Do, Australian National University, 0468 393 007, thang.do@anu.edu.au  
Dr Christian Downie, Australian National University, 0419 014 575, Christian.downie@anu.edu.au

## **Overview**

Cross-border electricity trade has been shown to have many benefits including, lower prices (Chang and Leifei 2013), reduced energy poverty and (depending on the generation type) lower emissions. Multilateral public institutions, most notably the Association of South-East Asian Nations (ASEAN), have been attempting to increase cross-border electricity trade for over two decades with slow progress to date (Halawa et al., 2018). Over two-thirds of forecast global electricity growth from 2017-2040 is centred in the Asia-Pacific (IEA, 2018). This projected future electricity growth presents a significant opportunity to increase cross-border electricity trade, however, little governance exists to facilitate it within the region (Nakhoda, 2011, Van de Graaf and Colgan, 2016). There are a range of existing market failures which mean the optimal level of cross-border electricity trade is unlikely to be achieved in the absence of governance interventions to overcome them (Gillingham and Sweeney, 2010). These include uncompetitive markets, environmental and national security externalities, information market failures, credit constraints, coordination failures, regulatory failures, policy-induced distortions, and network externalities. This paper provides a detailed account of these market failures and how they relate to cross-border electricity trade. It will also provide an accessible overview of the function of multilateral public institutions in the electricity sector within the region. This includes international energy organisations, for example, the International Renewable Energy Agency (IRENA), regional intergovernmental organisations, for example ASEAN, and multilateral development banks, for example, the Asian Development Bank (ADB). The paper concludes by suggesting which of these public multilateral institutions (if any) are best suited to addressing these market failures relating to cross-border electricity trade.

## **Methods**

The paper utilises qualitative research methods, primarily literature review and in-depth interviews to map current governance of cross-border electricity trade in the Asia-Pacific. Detailed analysis of the existing roles of multilateral institutions working to facilitate increased cross-border electricity trade will be undertaken. A review of existing literature of market failures in the electricity sector will be carried out and extended to consider which failures are most relevant to cross-border electricity trade. A series of in-depth interviews with existing and previous staff of the multilateral public institutions analysed will be conducted to provide insight into their current operational responses to cross-border electricity trade in more detail than is publicly available. Interviewees will also be asked to provide their insights regarding opportunities to expand or contract the existing engagement of these institutions in this area, and the potential need for new multilateral organisations to more effectively govern dimensions of cross-border electricity trade.

## **Results**

The paper provides an overview of market failures impeding cross-border electricity trade in the Asia-Pacific and the role public multilateral institutions can play in overcoming these failures. It is expected that public multilateral institutions will be found to play some important roles in facilitating cross-border electricity trade in the Asia-Pacific, but that some market failures are best addressed by national governments. This paper analyses how different public multilateral institutions are suited to addressing different aspects of market failures, and in some instances may not be effective actors in facilitating cross-border electricity trade.

## Conclusions

With improved governance, there is potential for a significant expansion of cross-border electricity trade in the Asia-Pacific region over coming decades. ASEAN continues to progress its Asian Power Grid and a number of private sector developments have also been proposed (Melta et al. 2017). Despite this, there are a number of existing market failures, some of which require coordinated intervention by multilateral public institutions working within the electricity sector to be overcome. Our analysis identifies these market failures and describes how they are impacting cross-border electricity trade in the region. It will also undertake a detailed examination of multilateral public institutions working in the electricity sector and explore which of these failures (if any) these institutions are equipped to overcome.

## References

Chang, Youngho, and Yanfei, Li, 2013. "Power Generation and Cross-Border Grid Planning for the Integrated ASEAN Electricity Market: A Dynamic Linear Programming Model." *Energy Strategy Reviews* 2, no. 2 (September 2013): 153–60. <https://doi.org/10.1016/j.esr.2012.12.004>.

Gillingham, Kenneth & Sweeney, James. (2010). "Market Failure and the Structure of Externalities. Harnessing Renewable Energy" in *Electric Power Systems: Theory, Practice, Policy*.

Halawa, Edward, James, Geoffrey, Shi, Xunpeng (Roc), Sari, Novieta H. and Nepal, Rabindra, 2018. "The Prospect for an Australian–Asian Power Grid: A Critical Appraisal." *Energies*, Vol. 11(1), 200; <https://doi.org/10.3390/en11010200>.

International Energy Agency, 2018. *World Energy Outlook*, Paris, 2018

Melta, Samantha, Geoff, James, and Chalmers, Kylie, 2017. "Pre-Feasibility Study 2017: Evaluating the Potential to Export Pilbara Solar Resources to the Proposed ASEAN Grid via a Subsea High Voltage Direct Current Interconnector," Pilbara Development Commission, Australia 2017. [https://www.pdc.wa.gov.au/application/files/1614/4677/7716/Pilbara\\_Blueprint\\_Summary\\_Report\\_FINAL\\_RELEASE\\_Compressed.pdf](https://www.pdc.wa.gov.au/application/files/1614/4677/7716/Pilbara_Blueprint_Summary_Report_FINAL_RELEASE_Compressed.pdf).

Nakhooda, Smita, 2011. "Asia, the Multilateral Development Banks and Energy Governance" *Global Policy* vol. 2 (September 2011): 120–32. <https://doi.org/10.1111/j.1758-5899.2011.00133.x>.

Van de Graaf, Thijs, and Jeff Colgan, 2016. "Global Energy Governance: A Review and Research Agenda." *Palgrave Communications* 2, no. 1 (December 2016): 15047. <https://doi.org/10.1057/palcomms.2015.47>.