

Shadow Trade Design Workshop

12 December 2024

Jakarta, Indonesia



SHADOW TRADE DESIGN WORKSHOP

Overview

The aim of this workshop is to provide participants with an introduction to Shadow Trading as a means of demonstrating the way in which trading in a GMS/ASEAN-wide Regional Power Market (RPM) would operate.

Beginning with an overview of the background to the concept of the RPM and the initiatives being developed under AIMS III Phase 3 and the ongoing work of ADB, the workshop will focus on the way that Shadow Trading enables market participants to gain insight into the operation of a regional market that is focused on Day Ahead power trading as well as showcasing different design options.

The workshop will be split into sections that include briefings from ACE, ADB and their Consultants on the RPM concept and key market design options. These will be followed by a deeper dive on the operation of Shadow Trading, way the Shadow Trading platform would work and the experience of other international markets in using Shadow Trading to increase potential market participants' understanding of and confidence in the possibilities that the RPM offers.

The presentations will be interspersed with two facilitated discussions in which representatives from the ASEAN Member States, the GMS countries and other stakeholders will be invited to share their experiences of cross-border power trade to date and their views on the challenges and opportunities that introducing regional day ahead power trading would present. There will also be an opportunity for participants to raise issues that they consider will be important to enable them to participate in regional power trading and the Shadow Trading program, including legal and regulatory prerequisites and the approvals that will be required at utility and country level.

The final part of the workshop will focus on the next steps that are required to develop a detailed market design and to operationalize the Shadow Trading concept that has been introduced. This will include proposals for a process of engaging with potential vendors of the market trading platform solution and the procurement process for obtaining the platform and the training services required to implement Shadow Trading.

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Venue: Makara 1, Ground Level, DoubleTree by Hilton Hotel Jakarta-Diponegoro	
Time (Jakarta)	Item
	<p>Join Zoom Meeting https://adb-org.zoom.us/j/99428975839?pwd=EYosEbc8MevbZvs7qmeXw3cy8BUGM0.1</p> <p>Meeting ID: 994 2897 5839 Passcode: Ff2yyr5m</p>
08:30–08:45 (15 mins)	<p>Welcome and introductions</p> <ul style="list-style-type: none">• ASEAN Centre for Energy (ACE)• Asian Development Bank (ADB)
08:45–09:15 (30 mins)	<p>Regional Power Market (RPM) Development in the ASEAN Power Grid (APG) Roadmap and Minimum Requirements for Multilateral Power Trade in ASEAN by ACE</p> <p>This presentation will introduce the development of a RPM within the framework of the APG roadmap and AIMS III Phase III study. It will also present the plan for developing regional and country action plans to meet minimum technical, regulatory, and operational requirements needed to facilitate multilateral power trade and RPM in ASEAN.</p> <p>Q & A</p>
09:45–10:15 (30 mins)	<p>Leveraging India's Electricity Market Experience: Insights for Regional Power Market and Shadow Trading by Shubhranshu Patnaik, Senior Director, Deloitte India</p> <p>This presentation will introduce India's journey to a National Electricity Market, evolving from fragmented state systems (different frequencies and unconnected each other) to a nationally integrated electricity market, supported by infrastructure such as HVDC and harmonized policies, accommodating both bilateral long-term contracts and a transparent, competitive and short-term trading. The journey began with shadow trading, piloting programs and simulations to train market participants and regulators, improving understanding and confidence in market operation, implementing stepwise regulatory and institutional reforms. As a result, the Indian Energy Exchange becomes a major hub for domestic and cross-border power trade with Nepal, Bhutan, and Bangladesh.</p> <p>Q & A</p>
09:45–10:15 (30 mins)	<p>Shadow Trading: Building Confidence and Evidence for the ASEAN Regional Power Market Development by Ms. Hyunjung Lee, GMS/ASEAN Energy Program Lead, ADB</p>

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	<p>This presentation will introduce the concept of shadow trading as a critical tool to support the multilateral power trade and regional power market in accordance with the APG roadmap. In detail, it will provide an overview of shadow trading objectives, design options, and approaches, and present the implementation arrangements and plan under ADB's new technical assistance.</p> <p>Q & A</p>
10:15–10:30 (15 mins)	Coffee and tea break
10:30–11:30 (60 mins)	<p>Market Options, Trading Principles, Pricing Mechanisms, Bidding, and Settlement by Mr. Jonathan Hedgecock, ADB Consultant</p> <p>This presentation will introduce the market options and the way that trading and pricing is conducted in them. In particular, it will explain price formation and the impact of cross-border transmission limitations. An overview of trading and settlement actions will be presented.</p> <p>Q & A</p>
11:30–12:30 (60 mins)	<p>Facilitated discussion: Regional Power Market principles and practicalities</p> <p>This session will enable participants to share their experience of cross-border trade to date and their questions regarding the implementation of a regional power market. Participants will be divided by a small number of groups and discuss the following topics.</p> <ul style="list-style-type: none">• Country experiences with regional power trading to date<ul style="list-style-type: none">○ IPP-to-Grid○ Grid-to-Grid• Experiences with existing and upcoming subregional power trade initiatives:<ul style="list-style-type: none">○ GMS regional power trade○ LTMS○ BIMP○ LTC○ existing IPP-based bilateral trades• Regulatory and legal requirements to enable participation in the RPM – national and regional considerations

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12:30–13:30 (60 mins)	Lunch
13:30–14:30 (60 mins)	<p>Shadow Trading: The Market Model, Operating Arrangements, Risk Management and Experience from Other Markets by Mr. Hans-Arild Bredesen, ADB Consultant</p> <p>The presentation will explain with practical examples how bids into the market are formulated. The types of traders will be introduced and the timelines for trading described. The details of Shadow Trading will be explained including a description of the operation of a typical market trading platform and the outcomes for participants.</p> <p>Q & A</p>
14:30–15:30 (60 mins)	<p>Facilitated Discussion: Operationalizing Shadow Trading</p> <p>This session will introduce the issues to be considered and actions that need to be taken by potential participants to prepare for shadow trading.</p> <p>Participants will be divided by each country and discuss and present feedback on the following topics per country.</p> <ul style="list-style-type: none">• Potential shadow trading participants from each country – utilities, regulators, IPPs, others• Expected benefits and challenges considering each country's power supply and demand projections• Requirements for each country to participate in shadow trading in terms of pre-requisites, approvals, practical considerations• Recommended activities for country-specific activities to increase participants' preparedness for shadow trading and capacity building needs for market participants, regulatory authorities and other stakeholders
15:30–15:45 (15 mins)	Coffee and tea break
15:45–16:30 (45 mins)	<p>Next steps:</p> <p>ACE: MPT / RPM country and regional action plan preparation (2025-2026)</p> <p>This presentation will outline the methodology and process for preparing national and regional action plans for the MPT/ RPM, covering stakeholder engagement, policy alignment, gap analysis, and action plan preparation.</p>

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	<p>ADB: Shadow trading platform procurement, operation and governance architecture (2025-2026)</p> <p>This presentation will suggest the steps for shadow trading platform procurement, operational setup, and options for governance structure and invite comments/suggestions for subregional approach and applications.</p> <ul style="list-style-type: none">○ APGCC, HAPUA, AERN○ BIMP○ GMS○ LTMS○ LTC <p>Feedback on related initiatives from Development Partners</p>
16:30–17:00 (30 mins)	<p>Closing</p> <ul style="list-style-type: none">• Feedback from participants• Closing from ACE and ADB

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HIGHLIGHTS

Shadow Trading Workshop
Jakarta, Indonesia: 12 December 2024

Summary

The aim of this meeting was to present the ADB's proposed approach to developing Shadow Trading as a means of demonstrating the potential benefits to the ASEAN Member States (AMS) of participating in a regional Day Ahead power market.

The meeting opened with a scene-setting presentation giving a high-level overview of the Shadow Trading Platform and the proposed approach and implementation plan for taking this forward. This emphasized the importance of adopting a stepwise approach to the expansion of regional power trade, evolving from the current situation that is dominated by cross-border bilateral Power Purchase Agreements (PPAs) towards multi-lateral power trade and an ASEAN-wide Regional Power Market (RPM). The compatibility of this approach with multi-speed development of national power markets was highlighted.

Four stages in the implementation of Shadow Trading were described, moving from the Concept Paper that has been developed into high-level design of the RPM, procurement of the shadow trading platform, and a period of implementing the shadow trading, with workshops to support participants in preparing for the operation of the Shadow Trading. The coordinated approach being adopted by the ADB was highlighted, whereby Shadow Trading is being developed alongside support for technical feasibility studies of cross-border interconnectors and continued work on associated regulatory and transmission issues (including transmission pricing and third-party access).

Detailed presentations interspersed with facilitated group discussions then took place, as follows:

- **Presentation: Market options, trading principles, bidding and settlement.** This set the development of the regional power market in the context of key market design options, highlighting the potential coexistence of bilateral contracts, Day Ahead and Intraday markets, and a Balancing market, and the possible evolution towards the creation of the shorter-term markets as part of the RPM. The differences between self-dispatch and central dispatch were highlighted, together with the concept of Balance Responsibility. Transmission issues supporting the market were also presented, including the calculation of Available Transfer Capacity (ATC) and the treatment of transmission congestion. This concluded with a summary of bidding timelines and market participants' responsibilities in the Day Ahead Market (DAM).
- **Facilitated discussion: Regional Power Market principles and practicalities.** This session split the audience into groupings according to subregional power trading initiatives, including LTMS, LTC, BIMP-EAGA, GMS, LCM and other non-affiliated countries. The discussion focused on the countries' experience of power trade to date, and included discussions of technical, commercial, regulatory and institutional issues. Points raised in discussion included the largely bilateral basis of trading to date

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(including IPP-grid trades under fixed PPAs); the challenges posed by synchronous operation and achieving stable system operation (especially in the presence of increased renewable penetration); the importance of allocating clear responsibilities for system operation; the need for consistent technical standards; the lack of independent regulatory authorities amongst the AMS; and the need for investment capital to be made available for the expansion of cross-border interconnections. At a governance and institutional level, the countries identified the importance of having an effective intergovernmental agreement in place to facilitate the introduction of the RPM, and the need for a regional Market Operator.

- **Presentation: Shadow Trading – the market model, operating arrangements, risk management and experience from other markets.** This presentation began with an explanation of the process of creating orders in the DAM, including an example of portfolio planning and bidding. Potential sources of risk and associated risk management strategies in the market were discussed. The presentation then introduced the example from Eastern African Power Pool of how a Shadow Trading environment and the way in which interconnections and bidding zones are represented allowing for experimenting with not only trade based on existing interconnections, but also introduction of new interconnections. It also highlighted the opportunity to showcase different markets and setups. Examples of the output from this Shadow Trading exercise were presented and explained such as trading statistics and the financial calculation of benefits, giving participants an insight into the potential understanding that can be gained from engaging in the Shadow Trading exercise for ASEAN. It also highlighted the effort required from each of the participants which in the EAPP was limited to 4-8 hours per week.
- **Facilitated discussion: Operationalizing Shadow Trading.** For this discussion participants were split into groups by country and asked to consider the following questions:
 - Which organizations should take part in the Shadow Trading program?
 - What do the countries hope to gain from the Shadow Trading?
 - What preparation may be needed before the countries can participate in the Shadow Trading effectively?
 - What specific steps will be needed to prepare individual participants?

The responses indicated that a broad range of stakeholders should be involved in the trading, including not only utilities but also ministries and regulators with responsibility for market oversight, and IPPs who might be potential market participants. The country representatives' aspirations from the Shadow Trading included an opportunity to gain more insight into the future market operations, and to understand what would need to be developed for full market implementation in terms of human resources and IT infrastructure. Key desired learning outcomes included learning on trading strategies and price discovery in the market. Potential challenges they would like to see addressed included issues around data security, confidentiality and cyber security. The countries also highlighted the need for high level approvals to enable organizations to participate in the Shadow Trading¹. A possible need for more capacity building at the individual level

¹ A side note to this, as also was discussed during the workshop, is that participation in the Shadow trading doesn't involve any commitment to engage in any future trading. As the shadow trading is not leading to any physical nor

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was highlighted in preparation for participation in the Shadow Trading program, together with the importance of obtaining individual and organizational commitment to supporting participation. The possibility of exploring sub-regional pilot trading was noted.

Next Steps

The discussion of next steps focused on the procurement process for the Shadow Trading platform and the stages to be followed. These will comprise:

1. The development of scenarios for the RPM, building on the Concept Paper and the discussions in the workshop;
2. The delivery of a potential Vendor Conference at which the RPM concept can be presented and potential vendors of the trading platform will describe their existing relevant products and solutions;
3. The development of simplified trading rules to be the foundation of the trading platform;
4. The preparation of a tender specification in which functional requirements, technical requirements and technical support provisions that can be incorporated and against which vendors can submit tenders; and
5. Procurement and delivery of the RPM Shadow Trading system and the commencement of trading operations.

The target timeline for commencement of shadow trading was shown as Q3-2025.

financial impacts, the need for formal agreements, market rules, operational harmonization etc. will not be required for the shadow trading. However, all of these are requirements for the pilot market where real trading will take place. The plan, as explained, is to develop these in parallel with the shadow trading where the experiences from this exercise will have important influence of the formal governance of the RPM.