



2024 Capacity Building Program To Support GMS ETTF's Clean Energy Transition Efforts

2nd GMS Energy Transition Task Force Committee Meeting



The document is for discussion with ADB GMS ETTF members, and attempts to

1. Review 2022/2023 Capacity Building activities
2. Identify and assess 2024~2026 Capacity Building program requirements, and
3. Discuss and conclude on 2024 Capacity Building program



Review of 2022/2023 Capacity Building Activities



GMS EETF Capacity Building Program in 2023:

Focused on the latest practices and policies to promote RE and EE and new green energy technologies

Modality

- 3 webinars
- 2 off-line workshops
- A 5 days study tour (to South Korea)

Contents

- RE technology (Floating solar, offshore wind)
- EE application and policies
- Battery ESS technology and applications
- Issues of RE integration to power grid
- Emerging green energy technology: hydrogen, V2G
- Green financing

Outcome

- GMS policy makers and utilities gained knowledge of
- Latest RE and EE practices
- Emerging green technologies and applications to be utilized for energy transition
- Challenges and issues of power market and power system operation with increased RE

✓ The capacity building activities in 2023 provided policy makers and public utilities in GMS with knowledge of available tools to support energy transition



Design of 2024~2026 Capacity Building Program

Approach of Capacity Building 2024~2026



2023

Provided tools to support clean energy transition

2024

To support accelerated energy transition by helping in “How to use available tools into formulating energy transition strategy”

2026/2025

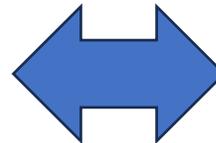
Knowledge support on individual investment decisions or action items

Needs of Capacity Building to Support GMS Energy Transition Efforts for 2024~2026



Regional Power Market Development

- Regional power pool and power market design
- Grid code harmonization
- Regional power trade fundamentals: market operation and transmission capacity



RE Development

- Power grid infrastructure advancement

- Technical standards for RE connection
- Hybridization of RE and hydro
- Development and use of emerging technologies: ESS, DR, EV, Green hydrogen, ESS

- ✓ For accelerated energy transition in GMS, the two fundamental components for energy transition should be developed simultaneously

GMS EETF Capacity Building Program in 2024-2026:

Focused on providing a holistic view and a phased approach for regional energy transition through partnership

Technology/ Infrastructure

Power system upgrade and Regional interconnection

- Grid code for RE and new technologies
- Real-time monitoring and forecast of RE
- ESS mix strategy – pumped hydro storage
- Demand-side energy efficiency, DR (Demand Response), V2G, VPP
- Emerging green energy technologies and applications

Market

Power market design

(Country level)

- RE bidding, Ancillary service market, DR market
- VPP(Virtual Power Plant) and DES (Distributed Energy System)

(Regional)

- Regional power market models, a pilot regional power market design

Financing

Financing

- Interconnectors business model and financing mechanism
- Green financing
- Carbon market and carbon financing

2024 Capacity Building Program Plan



Program	Regional Power Market Development	RE Integration/ Power Grid Infrastructure Development
1 st H	<ul style="list-style-type: none"> ▪ Study Tour to Australia (Mar to Apr) - Power system optimization with RE and emerging technologies - Power trades between states that support the balancing of supply and demand 	
Interim GMS ETTF Meeting	<ul style="list-style-type: none"> ▪ Review and assess CB demand for 2024 2H with feedbacks from GMS ETTF members 	
2 nd H	<ul style="list-style-type: none"> ▪ Workshop/ training on focused topics of regional power trading, RE integration, and smart grid with partners 	
Year-end GMS ETTF Meeting	<ul style="list-style-type: none"> ▪ Review and assess CB demand for 2025 with feedbacks from GMS ETTF members 	

Study Tour to Australia

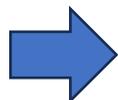


- ✓ A developed power market and an advanced power system
- ✓ Successful transition from coal-based power system to RE based power system

(Highlights)

- i. Optimized power system operation with high share of solar, wind and hydro generation sources
 - number 1 in the world in deployment of small home solar systems
- i. Utilization of new technologies, BESS, PSH, and demand side resources, for power system optimization
- ii. Increased power system efficiency through interstates power trades

- ✓ Due to the vastness of its territory, Australian started with the separate power market of each state
- ✓ Until 1990s, each state power system was separated and isolated, governed by a public monopoly: Power market reform in 1990s facilitated green energy transition by opening a door to the competitive market and interstates trades

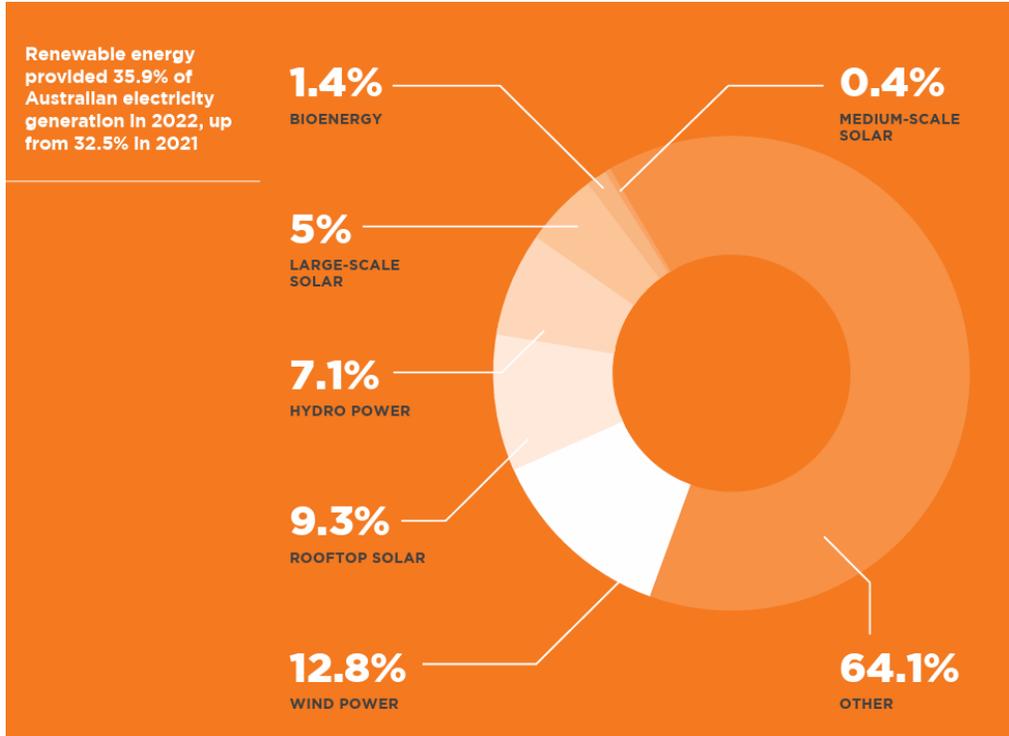


MR. Richard Neumann, DFAT, Australia will present the study tour in detail

Study Tour to Australia



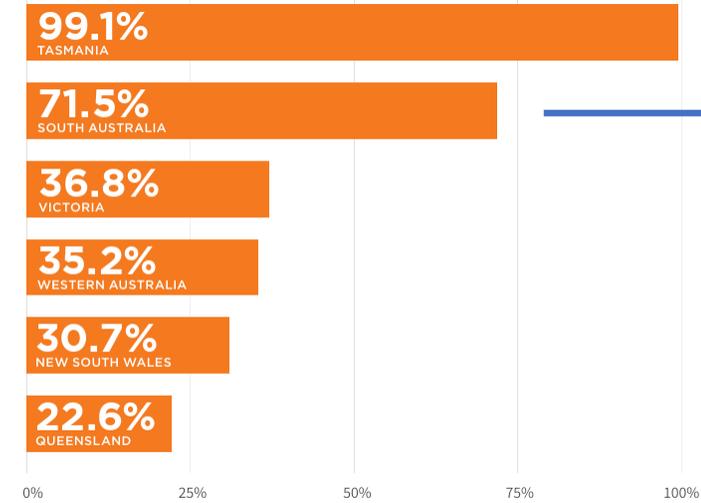
❖ Share of RE in electricity generation, Australia, 2021



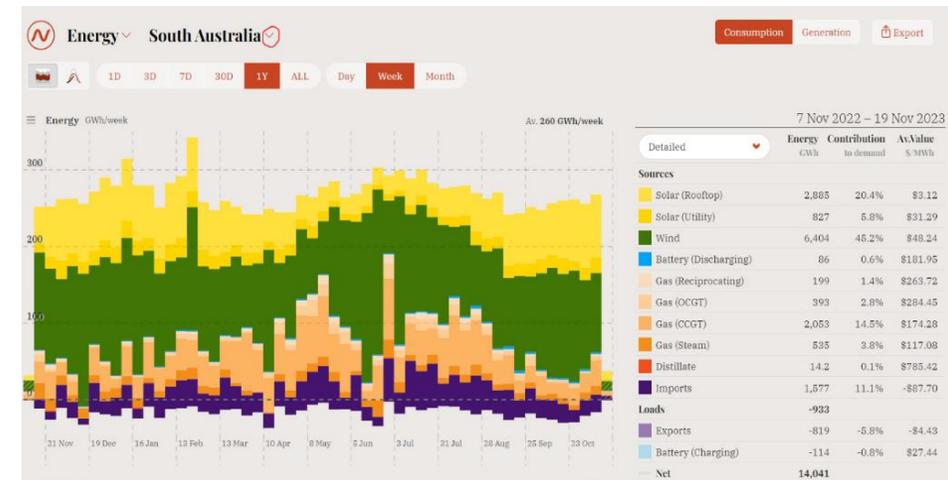
Clean Energy Australia Report, 2023

- Interstate power trades and RE developments based on different RE profiles of states support each other and contribute to the clean energy transition of Australia

Renewable energy penetration by state as proportion of generation



❖ One full year generation data of South Australian power system



Captured from OpenNEM: NEM, Nov. 19, 2023

2024 Capacity Building Program Plan: Regional Power Market Development



➤ In-depth study on detailed tasks for regional power trading

Program	Modality	Date	Collaborating Institution
Data Sharing practice and governance for advancing power trading	TBD (virtual or jointly)	TBD	ACE
Grid Code Harmonization for bilateral and multilateral power trading			
Wheeling Charge Methodology/Calculation			
Dispute Settlement Leading Practice for power trading			

- ✓ The CB program for Regional Power Market will be developed in coordination with “Shadow Trading” training

2024 Capacity Building Program Plan: RE Integration/Power Grid Infrastructure Advancement (Smart Grid)



RE Integration	Smart Grid
<ul style="list-style-type: none"> ▪ Workshop “Hybridization Strategy” ▪ Hybridization of RE and emerging technologies <ul style="list-style-type: none"> - BESS and PSH - Demand-side resources including EVs - VPP - Green hydrogen - Power market changes: RE bidding ▪ Modality: in-person workshop (2~3 days) ▪ Time: 2H of 2024 	<ul style="list-style-type: none"> ▪ Seminar of selected topics <ul style="list-style-type: none"> - Grid code of RE system - Realtime RE monitoring and forecasting - VPP and DES (Distributed Energy System) - New power system analysis modeling ▪ Modality: on-line sessions with invited speakers, or on-line materials ▪ Time: TBD
<ul style="list-style-type: none"> ▪ Collaboration Partner: USAID 	<ul style="list-style-type: none"> ▪ Collaboration Partner: TBD

Consideration of Capacity Building Modality Design



- **Customized training sessions, including study tour**
- **On and offline seminars** with invited speakers on selected topics

Also consider to include;

 Brief video clips of a lecture-style knowledge series on the selected topics (for example, regional electricity market design and operations, minimum technical standards for interconnection operation, etc.) for convenient access and repeated utilization of the contents with the capacity building program?



Suggestions or Requests?