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Meetings, Workshops and Conferences

ERB and ECB Visit to SAPP

ERB of Zambia and ECB of Namibia visited SAPP from 5 to 8 December 2022. The objective of the visit was to share experiences on the following:

- SAPP market trading arrangements,
- Transmission pricing arrangements,
- SAPP membership guidelines and rules,
- Ancillary services and energy imbalance settlements in SAPP,
- Regional planning and transmission capacity management.

WAPP visit to SAPP

Members of the West African Power Pool (WAPP) and ECOWAS Regional Electricity Regulatory Authority (ERERA) visited SAPP in Harare, Zimbabwe from 11 to 15 December 2022. The objective of the visit was for SAPP to share its experiences on regional transmission pricing arrangements.



SAPP, WAPP and ERERA delegates at SAPP Offices, Harare, Zimbabwe

SAPP - ENTSO-E Training

The European Network of Transmission System Operators for Electricity (ENTSO-E) organised a virtual training program for SAPP under the Beyond Membership Program that SAPP participates in. The training was attended by members of the SAPP Planning, Operating,



Markets and Environmental Sub-committees, RERA and SACREEE. The training covered the following topics:

- (i) TSO/DSO Cooperation
- (ii) Digitalisation, the present and future
- (iii) Vision for Carbon Free Power System

System Planning

SAPP Transfer Limits

The SAPP carried out studies to update the cross-border power transfer limits for the Eskom control area from 5th to 9th December 2022 in Johannesburg, South Africa.

This followed the ZESA Control Area and the ZESCO Control Area transfer limit studies that were done in November 2022 at the SAPP Coordination Centre in Harare, Zimbabwe.

Update on SAPP Projects

Angola-Namibia Interconnector Project

In the month under review, the ANNA Project Facility Agreement (FA) between SAPP and the DBSA was extended from 31 December 2022 to 31 March 2024. Similarly, the Service Level Agreement (SLA) between SAPP and ZUTARI was extended from 31 December 2022 to 28 February 2024. Extension of the two agreements facilitates completion of all ongoing transaction advisory services and arrangements for an Engineering, Procurement and Construction (EPC) contractor for the project.

The ongoing project works include the following:

- (i) Updating of the Market Analysis report
- (ii) Updating of the Financial Model report
- (iii) Preparation of a Project Information Memorandum.
- (iv) Preparation of Tender Documents.
- (v) Preparation for Contract and Financial Support.

Baynes HPP Transmission Lines Project

In the month under review, significant progress was recorded towards the procurement of

Techno-economic and ESIA Consultancy services.

Technical Study:

The AfDB/NEPAD-IPPF granted a no-objection to the opening of the financial proposals for the short-listed technical proposals. The work to evaluate the financial proposals has been tentatively scheduled for January 2023.

ESIA Study:

The Swedfund granted a no-objection to the financial proposal evaluation report, and therefore advancing the procurement process to contract negotiation with the final selected bidder.

Since the techno-economic study is the lead study on the project, it has been projected that the studies will have procured consultancy services by end of February 2023, in time to kick off implementation by 1 March 2023.

Independent Panel of Experts (IPOEs)

The SAPP submitted to the AfDB a revised EOI evaluation report for the selection of an independent panel of experts.

Inga-Soyo Interconnector Project

Following the World Bank decision to extend the closing date of the SAPP-AREP Grant Agreement beyond 30 November 2022, procurement of techno-economic study and ESIA consultancy services will commence in January 2023.

Kolwezi-Solwezi Interconnector Project

In the month under review, there has not been any change to the project status from the November 2022 report, as regards arrangements to source project financing for construction and commercial operation of the proposed transmission infrastructure.

The SAPP-PAU is committed to providing transaction advisory services and fiduciary support to the two project sponsors as they advance the project towards financial close.



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Luapula Hydro Electric Power Scheme

Commencement of the detailed feasibility study and the ESIA await the mobilisation of funds. The World Bank, NEPAD-IPPF, NEPAD-AUDA and Swedfund are being engaged for possible financial support for the detailed studies. As part of the fund mobilisation, the project was presented to potential funders during the 7th PIDA Week in Nairobi which took place from 28 February to 4 March 2022.

5A decision has been made to proceed with the feasibility study for Site CX since the NEPAD - IPPF have provided funding for this. The ESIA sites for the same site will delay until funding has been secured. The ToRs for the feasibility study for Site CX have been finalised and the requirement for an environmental expert has been incorporated in the consultant's team to ensure that the study aligns with the environmental screening study earlier conducted.

Malawi - Zambia Interconnector Project

The Feasibility and ESIA studies for the proposed Malawi – Zambia Interconnector studies will be co-funded by the Swedfund and the World Bank. Approval from Swedfund for the funding has been granted.

The procurement of consultants for both the feasibility and ESIA studies are at contract negotiation stage.

Mozambique - Tanzania Interconnector Project

The Mozambique – Tanzania Interconnector Project (MOTA) is supported by the NEPAD-IPPF. The financial support caters for both the techno-economic feasibility and ESIA studies.

Mozambique - Zambia Interconnector Project

The techno-economic feasibility and ESIA studies for the Mozambique – Zambia Interconnector are funded by the NEPAD-IPPF and the World Bank under the AREP Programme.

Feasibility Study

The techno-economic studies were completed in December 2021 and the final reports approved in March 2022.

The funding for the scope of preparation of specifications and tender documents has not yet been secured. The initial funding for the feasibility study was insufficient to accommodate this scope. Efforts to secure funding for this component are still ongoing.

ESIA Study

The final ESIA reports for the project in Mozambique were approved by the Mozambique Environmental Authority in July 2022.

For the Zambian component, comments were received from the Zambia Environmental Management Agency (ZEMA) on the Final Draft Environmental Impact Assessment Report (including the Environmental and Social Management Plan) and the Resettlements Policy Framework Report. The consultant has since completed revising the reports. ZESCO is expected to submit the reports to the environmental authority for final review and approval.

Mozambique - Zimbabwe Interconnector Project

Following the conclusion of drafting the Projects IGMOU and the IUMOU documentation by the legal task team from EDM and ZETDC, the project technical planning team are planning to hold their first working meeting in January 2023, to develop an action plan, through which to prepare for project funding sourcing, procurement of Consultancy services, contracting and implementation of project preparation activities.

Mphanda Nkuwa Technical Assistance

In the month under review, the GMNK office coordinated the implementation of the transmission study associated with the development of the 1,500MW Mphanda Nkuwa hydropower plant in Mozambique, requested for network analysis base case files for power system modelling and a list of completed projects,



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to facilitate project preparation activities and production of relevant results.

The requested information includes Power System Simulators/Electrical (PSS/E) base case files for network analysis and completed feasibility study documentation to aid the consultant carry out techno-economic analysis with all other projects acting simultaneously, to propose a sustainable HVAC and HVDC transmission solution, with impact at SAPP and Mozambique network levels combined.

Zambia-Tanzania Interconnector Project

There are ongoing efforts by the ZESCO/Government of Zambia for the mobilisation of resources for the implementation of the project. The scope of works in Zambia includes construction of about 600 km of 330 kV lines and associated substation works from Serenje to Nakonde. The connection with Tanzania will be from the planned substation at Nakonde to the Tanzanian Border.

In Tanzania, the funding for the implementation of the project was secured from the World Bank, Agence Francaise de Development (AFD), The European Union (through AFD) and the Government of Tanzania. The scope of works includes construction of about 616 km of 400 kV double circuit transmission lines and associated substations from Iringa to Sumbawanga. The connection with Zambia will be from Tunduma substation which is about 14 km to the Zambian Border. The project has reached over 82% of the EPC-contractor Procurement Phase.

Commissioning of the Interconnector is expected within 2025.

ZIZABONA Project

Feasibility studies for the ZIZABONA Project were completed in 2017. The ESIA studies for the scope in Zimbabwe, Zambia and Botswana were also completed. The project has been under consideration for an appropriate funding structure.

The Management Committee and Steering Committee meetings were held in Johannesburg

on 22nd and 23rd November 2022 respectively. The utilities renewed their commitment to the project since the project is still relevant and required. One of the outcomes of the meeting was to allow the participation of Meridiam on the project. The first phase of their activities will include review of available information and identification of gaps to enable them to prepare a scope and budget for the update of the studies. During this phase, Meridiam will also carry out a due diligence of the four countries' procurement laws and regulations among other aspects. The ongoing collaboration with the Green Grids Initiative Africa (GGIA) on the project was also approved. GGIA undertook a project preparation mission in December 2022. The meeting also approved the renewal of the IUMOU.

A GGIA Retreat is being planned to be held in February 2023 to discuss support mechanisms for the ZIZABONA regional transmission project taking cognisance of the decarbonisation potential of the project. Other regional transmission projects will also be presented during the workshop.

Regional Transmission Infrastructure Financing Facility (RTIFF)

The SAPP continued to make progress across various critical workstreams during the reporting period, which covers December 2022 despite the holidays schedule. Notably, the SAPP Market Operator compiled key statistics from interconnectors following the meetings in November 2022 where stakeholders requested energy flows both from the bilateral and SAPP auction markets on existing interconnectors. The rationale is to demonstrate how the market and cash flows work, how risks are managed, and to develop all the documentation required for the RTIFF and SPV structures. To date the following information has now been gathered:

- (i) 5 years auction market data of monthly energy flows across all the interconnectors.
- (ii) Constrained and unconstrained market prices trend for 5 years.
- (iii) Portfolio summaries of daily and monthly averages of production and consumption in the auction market.



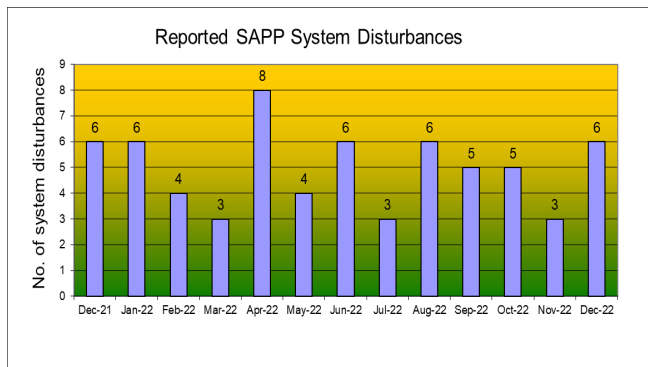
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System Operations

System Disturbances

In the month of December 2022, six (6) SAPP system disturbances were reported. In the first one, a generator tripped in South Africa from 729 MW and power frequency momentarily dropped from 50.093 Hz to 49.375 Hz. The second one was also a low-frequency incident caused by inter-Area power imbalance from schedule and Stage 3 load-shedding action in South Africa. The power frequency temporarily dropped from 49.760 Hz to 49.486 Hz. In the third one, a generator tripped in South Africa from 618 MW and power frequency momentarily dropped to 49.486 Hz. In the fourth one, the 400 kV Botswana - Zimbabwe interconnector and the 330 kV Mozambique - Zimbabwe interconnector tripped. The cause is still under investigation. The fifth one was a low frequency incident (49.450 Hz) caused by tripping of a generator in South Africa. The sixth one was caused by tripping of the 533 kV Mozambique - South Africa HVDC pole no. 1 from 649 MW. Power frequency temporarily dropped to 49.428 Hz. Refer to figure below for an outlook of reported SAPP system disturbances in the last 12 months.



Power Supply – Demand Situation

The table below shows the power supply and demand situation in SAPP in December 2022.

Country, Utility	Peak Demand (MW)
South Africa, Eskom	25,176
Botswana, BPC	590
Eswatini, EEC	207
Mozambique, EDM	998

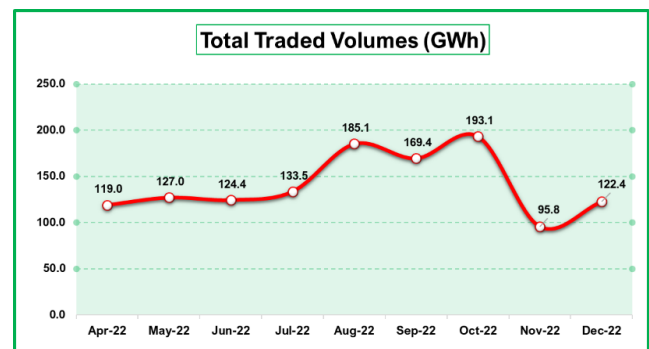
Namibia, NamPower	622
Zambia, ZESCO	2,194
Zambia, CEC	219
Zimbabwe, ZESA ¹	1,300
Lesotho, LEC	148
DR Congo, SNEL	1806

¹Estimated, load shedding of about 260 MW

Electricity Trading

Traded Volumes

Market performance during the month of December 2022 was higher when compared to November 2022. Total traded volumes on the Day Ahead Market (DAM), Intra-Day Market (IDM), Forward Physical Monthly Market (FPM-M), and Forward Physical Weekly Market (FPM-W) increased by 27.8% to 122.4 GWh in the month of December 2022, from the November 2022 volume of 95.8 GWh.



Monthly Traded Volumes (GWh) in DAM, IDM, FPM-W, and FPM-M (April 2022 to December 2022).

Market Revenue

A total of USD 11.4 million was exchanged on the competitive market during the month of December 2022 compared to USD 16.7 million exchanged in November 2022. The change is mainly attributed to a change in prices. USD 8.5 million was exchanged on the competitive market during the same month of December in 2021.

Market Surveillance

Market Monitoring and Surveillance

During the period under review the Unit received a query on the DAM price spikes on two days that were not consistent with the general known



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pattern, and from our investigations these inconsistent spikes were caused by shortages in supply against a huge appetite for electricity in the DAM market.

The average hourly DAM clearing prices for December 2022 are significantly lower than those of November 2022 for all the times of use. This is due to reduced appetite for power from large consumers like mines and industries as they shut down for the festive season.

Trades were observed on the FPM-Weekly during off-peak periods for December 2022. There were no trades on the Balancing Market (BM) during the month under review.

There were no major transmission capacity outages reported during the month and the transmission capacity utilisation was deemed to be efficient.

The Market Operator observed its own processes and procedures. Capacity building of Market Surveillance Officers and Market surveillance Module enhancement of the MPT is still on-going.

Environmental Corner

Environmental Specialist at SAPP

Mr Steadmore Musenyi joined the SAPP Coordination Centre as an Environmental Specialist with effect from 1 December 2022. He will drive the activities of the SAPP Environmental Sub-Committee.



Steadmore Musenyi

SAPP Environmental Specialist

Drought Sensitivity and Resilience Assessment for the SAPP

The objective of phase 1 of the Drought Sensitivity and Resilience Assessment for the SAPP (DSRAS) is to have a deeper understanding of the potential impacts of climate change on SAPP security of supply and remedial adaptation measures, particularly type and sequencing of investments under different climate change adaptation pathways. The SAPP utilities continued to update outstanding data.

Upcoming Events – 2023

DATE	EVENT
13 - 18 Jan 2023	IRENA Assembly and World Energy Future Summit, Abu Dhabi, United Arab Emirates
16 - 20 Jan 2023	South Asian Delegation visit to SAPP, Harare, Zimbabwe
30 Jan - 03 Feb 2023	PSS/E training under CMP project, Dakar, Senegal
6 - 10 February 2023	Transient Stability Simulations: ESKOM Control Area Transfer limits, Harare, Zimbabwe
17 February 2023	SAPP Protection System Coordination Task Team meeting, online, Microsoft Teams
20 - 23 Feb 2023	International Renewable Energy Conference, Madrid, Spain
21 February 2023	SAPP Crime Prevention Working Group meeting, online, Microsoft Teams
27 February - 3 March 2023	60 th SAPP Meetings, Lesotho
13 - 17 March 2023	4 th SPLAT-Africa model Training, Kigali, Rwanda
20 - 22 March 2023	CMP Stakeholders Meeting, Kigali, Rwanda
21 - 24 March 2023	International Renewable Energy Conference & Expo 2023, Victoria Falls, Zimbabwe



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March 2023	SAPP Executive Committee Meeting, DRC
29 - 30 March 2023	Energy Efficient Lighting and Appliances Stakeholder Forum, Nairobi, Kenya
26 - 27 April 2023	9 th Mozambique Mining and Energy Conference and Exhibition, Maputo, Mozambique
20 - 23 June 2023	25 th Africa Energy Forum, Nairobi, Kenya



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