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of Minerals, Green Technology and Energy Security Honourable Lefoko Maxwell Moagi.

He highlighted the generation projects commissioned in the region and stressed the need for renewable energy projects to augment the generation supplies.

The meeting was followed by the SAPP Annual Meeting where the 2018/19 Audit Report and Financial Statements were approved.

SAPP Finance Working Group Study Tour to Europe

The SAPP Finance Working Group undertook a study tour to Belgium and Norway. The objective of the visit was to appreciate best practices in financial management and controls of regional electricity organisations.



Members of the SAPP Finance Working Group during the study visit in Belgium

Meetings, Workshops and Conferences

SAPP Executive Committee Meeting

The 47th SAPP Executive Committee Meeting was held in Gaborone, Botswana. The meeting was officially opened by the Minister

SAPP Balancing Market Workshop

A workshop on the SAPP Balancing Market was held in Johannesburg, South Africa from 9 to 10 December.



System Planning

Review of SAPP Load Forecasting Methodology

The Terms of Reference for a study to investigate the load forecasting methodologies in SAPP utilities has been developed. The SAPP aim is to have one common load forecasting methodology used by all utilities in a bid to minimise load forecasting errors. The expressions of interest were received during the month.

Transmission Maps Development

The SAPP is developing Transmission Grid Maps that will show the existing and future generation and transmission infrastructure. Generation developments by generation technology types (coal, hydro, gas etc) and transmission lines by voltage level as well as substation information will be displayed. The inception report and software identification report have been submitted.

For the software identification process – a comprehensive analysis was made on selected 5 software packages (ArcGIS, MapInfo, Global Mapper, DigPro and QGIS) and interactions were made with the software provider/partner.

A matrix weighting scorecard was used to select the platform best suited for the SAPP Grid maps based on the following considerations.

- Cost (per user per year)
- Complexity (user focus)
- Control

SAPP will select the suitable software after the evaluation.

Impact of the Integration of Renewable Energy Technologies on SAPP Grid

The draft report on the impact of the integration of Renewable Energy Technologies on the SAPP Grid was issued and comments were submitted. The final report is expected in January 2020 and this will pave way for the commencement of part 2 of the study that will include generation planning and dispatch simulation studies.

System Operations

System Disturbances

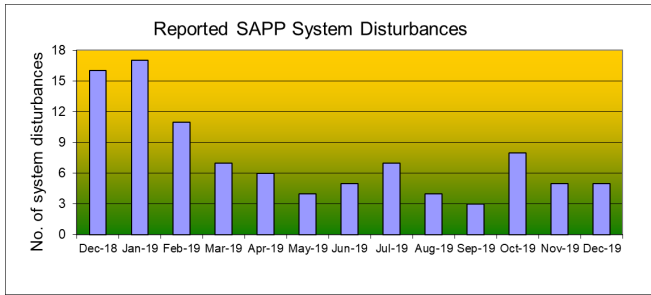
In the month of December 2019, five (5) SAPP system disturbances were reported on the interconnected power system. In the first one, the Zambia power network experienced heavy voltage and tie line interchange excursions following tripping of the 220 kV Maposa - Frontier line. A load of 104 MW was lost in the Copperbelt, two generators tripped at Itzehitezhi on overfrequency protection, and three 330 kV transmission lines tripped on over-voltage protection.

In the second disturbance, one generator tripped in South Africa from 360 MW due to furnace high pressure. Power system frequency dipped to 49.43 Hz. In the third one, the 400 kV interconnection between Zimbabwe and Botswana tripped on overload and subsequently the bus-coupler circuit breaker at Cahora Bassa in Mozambique tripped on excess energy protection. In the fourth one, the 330 kV Mozambique - Zimbabwe interconnection tripped due to over-excitation of the interconnection transformer in Mozambique. In the fifth one, a generator in South Africa tripped from 651 MW and the power system frequency dipped to 49.35 Hz. Refer to figure below for a general outlook of reported SAPP system disturbances.



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Electricity Trading

Trading

Trading on the market was higher during the month of December 2019 when compared to November 2019. 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 3% to **177 GWh** in the month of December 2019, from the November 2019 volume of **172 GWh**. The December 2019 traded volume was higher by 10% when compared to December 2018 in which traded volumes were 161 GWh.



Monthly Traded Volumes (GWh) in DAM, IDM, FPM-W and FPM-M (April 2019 to December 2019).

Market Clearing Prices

FPM Monthly Prices

Non off-peak prices remained unchanged from the November 2019 price of 10.0 USc/KWh. Off Peak prices increased by 7% from 5.6 USc/KWh in November 2019 to 6.0USc/KWh in December 2019.

FPM Weekly Prices

The average price for the peak period was higher by 35% at 21.4USc/KWh in December 2019 from the November 2019 figure of 15.9USc/KWh. Standard period average prices increased from the November 2019 figure of 8.0USc/KWh to 9.9USc/KWh in December 2019. The average off-peak price increased from 3.3USc/KWh in November 2019 to 4.3USc/KWh in December 2019.

Day Ahead Market

The monthly average DAM market clearing price (MCP) was higher during the month of December 2019 at 8.5USc/KWh when compared to 7.4USc/KWh recorded in November 2019.

Intra Day Ahead Market (IDM)

The average IDM price for the peak period for the month of December 2019 was 12.4 USc/KWh, down from the November 2019 figure of 15.7 USc/KWh. The average off-peak period price increased from 2.7USc/KWh in November 2019 to 3.2 USc/KWh in December 2019.

Market Revenues

A total of **USD 15 million** was exchanged on the competitive market during the month of December 2019 when compared to a total of **USD 12 million** exchanged in November 2019. The change is mainly attributed to change in traded volumes in the month of December 2019 when compared to November 2019. USD 7 million was exchanged on the competitive market during the same month of December in 2018.

Update on SAPP Projects

Inga – Soyo Interconnector

The Inga – Soyo Interconnector between DRC and Angola is being promoted by the two utilities SNEL and RNT. The SAPP was appointed as Project Coordinator. A Project



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framework has been prepared and at the Project Management Committee meeting held on 13 November 2019, the two parties agreed to the terms of reference and thus RNT and SNEL signed and adopted the terms of reference for the feasibility studies during the SAPP Executive Committee Meeting in Gaborone.

Luapula Hydro Electric Power Scheme

The draft terms of reference for the Engineering feasibility studies were prepared by the parties and are being finalized.

Environmental Corner

Environmental Project Management

Following the 53rd ESC meetings held in Harare, Zimbabwe, an EIA Task Team was set up to address the expiring of project environmental approvals, prior to implementation. The utilities have since submitted requisite data for the task team to commence the task. The Task Team mandate includes, but not limited to the following:

- Plausible enhanced aligning of environmental and technical planning taking cognizance of project implementation schedules;
- Benchmark with European countries on management of expiring certificates; and
- Consider other interventions in managing the expiry of certificates.

Upcoming Events - 2020

DATE	EVENT
10 – 12 January 2020	IRENA Assembly, Abu Dhabi, UAE

13 – 17 January 2020	Capacity Building and Training on Transmission Tariff Calculation Tool, Harare, Zimbabwe
22 – 23 January 2020	Finance Working Group Meeting, Maseru, Lesotho
28 – 30 January 2020	Dynamic Stability Studies for Cross-border Power Transfer Limits in the ZESA and ZESCO Control Areas, Kitwe, Zambia
3 – 7 February 2020	SAPP CC Strategic Breakaway, Cape Town, South Africa
10 - 13 February 2020	SADC Energy Coordination Meetings, Gaborone, Botswana
18 - 19 February 2020	Crime Prevention Working Group Meetings, Victoria Falls, Zimbabwe
18 - 21 February 2020	Joint MSC, OSC and PSC Meetings, Johannesburg, South Africa
19 - 21 February 2020	RERA Annual Conference, Victoria Falls, Zimbabwe
25 – 26 February 2020	Integrated Demand Management Working Group Meetings, Maputo, Mozambique
27 February 2020	4th RENPOWER Mozambique – The Renewable Energy, Off-Grid & Power Infrastructure Investors Conference, Maputo, Mozambique
25 - 27 February 2020	SADC SCOM, Tanzania
March 2020	SAPP HRWG Meetings, Maputo, Mozambique
3 - 5 March 2020	54th SAPP Meetings, Malawi
DATE	EVENT
4 March 2020	42nd SAPP CC Board Meeting, Malawi
11 - 13 March 2020	International Renewable Energy Conference, Victoria Falls, Zimbabwe



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11 - 13 March 2020	African Power Pools Meetings with EU, Brussels, Belgium
26 March 2020	48th SAPP Executive Committee Meeting, TBA
April / May 2020	SADC Energy Thematic Group Meeting, Gaborone, Botswana
11 – 14 May 2020	African Utility Week, Cape Town, South Africa
May 2020	SADC Energy Ministers Meetings, Tanzania
18 - 24 June 2020	20 th Congress and Exhibition of Association of Power Utilities of Africa (APUA), Dakar, Senegal
30 June - 3 July 2020	Africa Energy Forum, Barcelona, Spain
25 – 27 August 2020	55th SAPP Meetings, Lesotho
October 2020	SADC Energy Thematic Group Meeting, Gaborone, Botswana



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