



SOUTH AFRICAN ACADEMY OF ENGINEERING

25th ANNUAL REPORT

1 April 2022 - 31 March 2023

Neil Macleod

South African Academy of Engineering

25th Annual Report

1 April 2022 - 31 March 2023

N Macleod

President

INTRODUCTION

During the past year, the Covid-19 pandemic reduced in severity and the National State of Disaster was lifted on 5 April 2022. This allowed a return to in-person gatherings. The Executive Committee continued to meet virtually whilst certain events such as the Academy lectures resumed in a hybrid format and induction lunches resumed in-person. As was the case in the previous year, the hybrid events resulted in increased participation and visibility for the Academy and it is foreseen that this format will continue to be used.

The DSI funded SAAE's membership of and participation in the activities of CAETS since 2009 when SAAE was accepted as a member of CAETS. SAAE was grateful for this financial support from DSI. In June 2022 this funding from DSI unfortunately came to an end when Dr Daniel Adams, the Chief Director of Basic Sciences and Infrastructure of the Department of Science and Innovation, in reply to SAAE's application for funds in the 2022/2023 financial year, informed SAAE that its CAETS activities do not fall within the mandate of the Basic Sciences and Infrastructure (BSI) Sub-Programme and that it is therefore not possible for funding from the BSI Sub-Programme to be utilised to assist with CAETS activities. The DSI gave approval that the amount of R160 040-24 which remained unspent from the Grant-in-Aid for 2021/22, be made available for use by the SAAE in the 2022/23 financial year. Dr Daniels suggested that ASSAf might be in a position to assist with the required amount through unspent parliamentary grant funds. As the result of this ASSAf funded the SAAE's CAETS membership fee for 2023 and undertook to assist in supporting one SAAE Member to attend a CAETS meeting. The ASSAf also agreed that it would consider contributing towards the cost of a local, regional and international meeting based on a budget presented by SAAE ahead of the meeting. Other activities of the Academy and its administration are funded through annual subscription fees paid by its 212 Fellows as well as through *ad hoc* sponsorships of special events. The SAAE is grateful to ASSAf for undertaking the administration of the DSI funds and for providing office facilities to SAAE.

EXECUTIVE COMMITTEE

The Executive Committee (Exco) of the SAAE comprised the following members:

- Mr N Macleod (President)
- Mr TC Madikane (Vice-President)
- Prof I Jandrell
- Mr W Jerling
- Prof E Kearsley
- Prof A Lewis
- Ms A Loots

- Mr H Makwarela (co-opted)
- Prof P Naidoo(co-opted)
- Mr RA Pullen (co-opted)
- Mr FB Reinders
- Dr C Render

During the year Mr Seetella Makhetha resigned due to poor health.

Four Exco meetings were held during the year as follows:

- 17 May 2022
- 30 August 2022
- 15 November 2022
- 7 February 2023

All the members of Exco serve on a voluntary basis and their contribution of valuable time during the year is highly appreciated.

25th ANNUAL GENERAL MEETING

In terms of a decision taken at the 2015 Annual General Meeting, the 25th Annual General Meeting of the SAAE took place by electronic communication with all members on 17 June 2022. Twenty-one per cent of the Fellows took part in the AGM. At this meeting the Annual Report and the audited Financial Statements were accepted. At the AGM it was noted that the following three persons have been elected as Fellows of the Academy:

- Prof Hannes Gräbe, Associate Professor, Department of Civil Engineering, University of Pretoria
- Malani Padayachee-Saman, CEO of MPAMOT (Pty) Ltd
- Prof Ronny Webber-Youngman, Professor and Head of Department of Mining Engineering, University of Pretoria

MEMBERSHIP

The following new members were elected during the year:

Prof Thomas Afullo

Ms Sy Gourrah

Prof Estelle Trengove

Ms Natascha Viljoen

INTERNATIONAL COUNCIL OF ACADEMIES OF ENGINEERING AND TECHNOLOGICAL SCIENCES (CAETS)

CAETS Convocation 2022

The 2022 CAETS Convocation took place in Versailles near Paris in France from 26 to 30 September. It was hosted by the National Academy of Technologies of France. The theme of the Convocation was *Breakthrough Technologies for Healthcare*. SAAE was represented at the Convocation by TC Madikane (Vice-President), Bob Pullen (Past President) and Felix Reinders (Exco Member and Treasurer). They represented SAAE in the meetings of the CAETS Communication, Energy, Diversity and Inclusion, Education and Sustainable Development Goals Working Groups which took place the day before the Convocation commenced.

CAETS Board of Directors

Fellow Bob Pullen, Past President of SAAE, currently serves the second of a 2-year term (2022-2023) on the CAETS Board of Directors. He attended the meeting of the Board on 26 September in Versailles.

CAETS Communication Prize

The closing date for South African entries for the 2022 CAETS Communications prize for the best short videos from member academies in the categories Engineering Success Stories and High Potential Innovations, was 31 May 2022. In spite of having been advertised widely, the prize attracted only one entry in the category High Potential Innovations. An adjudication committee consisting of SAAE Exco members under Chairmanship of SAAE Fellow Prof Ian Jandrell, Deputy Vice-Chancellor at Wits, considered the entry and came to the decision that the innovation, a portable e-nose for monitoring Amitraz insecticide in cattle dip, was not yet ready for submission in an international competition. Prof Jandrell served as SAAE's representative in the adjudication panel for the international competition.

The 2023 CAETS Communication Competition was launched on 23 March 2023 and the invitation was sent all SAAE Fellows with the request that it be forwarded to persons who may be interested.

CAETS Energy report

The 2022 CAETS Energy Report, to which several SAAE Fellows contributed over the past two years, was made available on 20 February 2023. The Executive Summary of the Report was sent to all SAAE Fellows. The Executive Summary and the full report is available on the CAETS website (www.newcaets.org)

CAETS Convocation 2023

The CAETS 2023 Annual Meetings and Technical Symposium will be hosted by the Croatian Academy of Engineering from 9-11 October in Zagreb, Croatia. The symposium theme will be e² - Mobility. A technical symposium will address topics including: electrification of transport and integration with energy systems; batteries – the core technology; hydrogen, fuel cells and electrofuels; autonomous driving; and modal shift – roads, railways, ships or planes? The Croatian Academy of Engineering has invited SAAE to take part in the preparation of a report on transport decarbonisation/e-mobility.

EXPERT PANELS

The objective of SAAE's expert panels is to develop evidence-based material on behalf of the SAAE so that it can be made available to Government and in the public domain. During the report period the five panels, respectively focusing on water, energy, transport, engineering education and the engineering profession, held meetings via Zoom.

The Energy Panel held meetings on 26 August and 30 September 2022. In response to Minister Mchunu's invitation to submit comment on the National Water Resources Strategy dated 29 July 2022, the Water and Sanitation Panel prepared SAAE's response during deliberations in August and September and submitted them on 30 September 2022. The panel met again on 30 September.

On 29 September 2022 SAAE sent Advisory Note 5: Revision of the operating rules for the Lesotho Highlands Water Project, which was prepared by the Water Expert Panel, to Minister Senzo Mchunu,

The Minister of Water and Sanitation and copied it to the Ministers of Finance, Public Enterprises, International Relations and Cooperation and Minerals and Energy.

The Energy Panel held further meetings via Zoom on 28 October and 25 November 2022. On 15 November the Energy Panel sent a letter to President Ramaphosa with the heading *National Electricity Supply Crises: A Way Forward*. The aim of this letter was to outline a number of very straight-forward actions that can be implemented to make a significant positive impact on electricity supply over the short term and to assure the President of the support of the Academy for the many actions that are required from Government to secure a stable and affordable electricity supply for all South Africans, and particularly support for him in ensuring the alignment of the relevant Ministries and Government departments in this regard.

On 24 November 2022 SAAE received a letter from Mr Jacob Mbele, Director General of the Department of Mineral Resources and Energy, to invite SAAE to be part of a panel of experts to peer-review the technical input data, model development and results analysis of the Integrated Resource Plan 2023. SAAE also received a request from the Department of Minerals and Energy to participate in the peer review of the next IRP when it is published. SAAE accepted the invitation on 31 January 2023.

PUBLIC LECTURES

Hendrik van der Bijl Memorial Lecture

The Hendrik van der Bijl Memorial Lecture, which is presented annually by SAAE in collaboration with the Faculty of Engineering, Built Environment and Information Technology of the University of Pretoria, was presented in hybrid mode on 27 October 2022 from the Senate Hall at the University of Pretoria by Natascha Viljoen the Chief Executive Officer of Anglo American Platinum. The topic of the lecture was *Mining, money, state and industry – how hydrogen can fuel a just energy transition*. It was attended by 90 in-person guests and 167 guests registered to attend the lecture online.

Academy Lectures

In the light of the good online attendance of the presentations of the Academy Lecture and the Hendrik van der Bijl Memorial Lecture in 2021, the Executive Committee decided to present the 2022 Academy Lectures in hybrid mode in order to make it accessible to a wider audience while allowing local guests the opportunity to meet the lecturers in person. Both the 2022 Academy Lectures were very successful.

On 11 October 2022 SAAE Fellow Prof Cristina Trois, Professor in Environmental Engineering and holder of the NRF South African Research Chair in Waste and Climate Change (SARCHI) at the University of KwaZulu-Natal, presented the first of the 2022 Academy Lectures in the Unite Building on the Howard College Campus of the University of KZN. The title of the lecture was *Waste and climate change – Building a sustainable future for South Africa*. The lecture was presented in hybrid mode and was attended by 80 in-person guests and 239 people registered to attend the lecture online.

On 21 November SAAE Fellow Prof Hannes Gräbe associate professor in the Department of Civil Engineering in the Faculty of Engineering, Built Environment and Information Technology (EBIT) at the University of Pretoria presented the second 2022 Academy Lecture in the Auditorium at

Engineering4 on the Hillcrest Campus of the University of Pretoria. Prof Gräbe holds the Chair in Railway Safety, sponsored by the Railway Safety Regulator and the topic of his lecture was *Smart technologies for a safer rail network*. The lecture was attended by 25 in-person guests and 100 people registered for online attendance.

INDUCTION LUNCHES

On 18 November 2022 an Induction Lunch for new Fellows elected in 2019, 2020 and 2021 was held at STIAS in Stellenbosch. Four new Fellows were inducted and thirty Fellows attended the lunch. The lunch was sponsored by Zutari.

On 17 March 2023 an Induction Lunch for new Gauteng Fellows elected in 2020, 2021, 2022 and 2023 was held at the Country Club Johannesburg (Woodmead). Eleven new Fellows were inducted and thirty Fellows attended the lunch. The lunch was sponsored by Igoda Projects (Pty) Ltd and the UP Chair in Railway Engineering.

ASSAf

On 15 September the President of SAAE, Mr Neil Macleod, Mr Bob Pullen and Ms Heleen Duffey met with Prof Himla Soodyall and Ms Raj Mahabeer to discuss possible funding of SAAE's CAETS membership by ASSAf as suggested by Dr Daniel Adams in his letter dated 9 June 2022 as well as participation of SAAE Fellows in the STEMI Standing Committee. On 24 November SAAE received a positive reply from Prof Soodyall regarding the funding of SAAE's CAETS membership for 2023. SAAE will have to apply for this support annually. SAAE is grateful to ASSAf for this and for providing office facilities to SAAE.

FINANCIAL OVERVIEW

The Report of the Independent Auditor, Greenpen Audit, on the Financial Accounts of the South African Academy of Engineering for 2022/23 confirms that the financial position of the Academy as at 31 March 2023 is satisfactory. The annual financial statements present fairly, in all material respects, the financial position of SAAE as at 31 March 2023, and its financial performance and cash flows for the year then ended in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities and the requirements of the constitution of the organisation.

With the funding from DSI that unfortunately came to an end in June 2022, the cash in hand changed since April 2022 with a loss of R33 971 to R204 247. This is sufficient to cover the fixed costs of the association, primarily administration and membership expenses, for a full year. The Auditor reports that the financial performance and cash flows during the year 2022/23 are fairly presented in all respects in the Annual Financial Statements. These Statements are based on Management Accounts which were prepared for consideration by the Management Committee during the year.

SAAE is grateful to ASSAf for funding its CAETS membership fee for 2023, which was paid during the report period, as well as for providing office facilities to SAAE.

CONCLUDING REMARKS

The demographics of the Fellows of the Academy, in terms of age and gender, continue to be of concern to Exco and Fellows are encouraged to nominate potential candidates who meet the requirements for admission.



Neil Macleod
President
South African Academy of Engineering
Durban
31 May 2023