



**SOUTH AFRICAN ACADEMY OF ENGINEERING**

**24<sup>th</sup> ANNUAL REPORT**

**1 April 2021 - 31 March 2022**

**E P Kearsley**

## **South African Academy of Engineering**

### **24th Annual Report**

**1 April 2021 - 31 March 2022**

**EP Kearsley**

**President**

### **INTRODUCTION**

During the past year, the Covid-19 pandemic has disrupted all activities, including those planned by the South African Academy of Engineering (SAAE). Despite the extended duration of lockdown and isolation, this disruption has had some positive consequences. The fact that physical meetings could not take place, resulted in online meetings and discussions, which made it possible for more fellows to partake in Academy activities. These activities include the expert panels that have been promoting excellence in the application of engineering for the benefit of South Africa and its people. More people than ever attended our annual lectures, in virtual format, resulting in increased visibility.

The continued support from the Department of Science and Innovation (DSI) grant and ASSAf for undertaking the administration of these funds and for providing office facilities to SAAE are highly appreciated, as this support enabled our international interaction and continued participation in the international network of Academies.

### **EXECUTIVE COMMITTEE**

The Executive Committee (Exco) of the SAAE for the period 2020 – 2022 comprised the following elected members:

- Prof Elsabe Kearsley (President)
- Mr Neil Macleod (Deputy President)
- Prof Yunus Ballim
- Prof Ian Jandrell
- Prof Alison Lewis
- Anita Loots
- Dr Hylton Macdonald
- Mr Stanford Mkhacane
- Dr Christine Render
- Prof Wikus van Niekerk

During the first Exco meeting, it was decided to co-opt the following Fellows to the Committee:

- Mr Seetella Makhetha
- Mr Hangwani Makwarela
- Mr TC Madikane
- Mr Bob Pullen (Treasurer)

Four Exco meetings took place during the Financial Year 2020/2021, on the following dates:

- 18 May 2021
- 24 August 2021
- 30 November 2021
- 8 March 2022

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

## **24 TH ANNUAL GENERAL MEETING**

The 24th Annual General Meeting (AGM) was held virtually through electronic communication on 30th June 2021. Disappointingly only 24% of the Fellows took part in the electronic meeting.

## **MEMBERSHIP**

The following new Fellows were elected during the year:

- Prof Hannes Gräbe
- Mrs Malani Padayachee-Saman
- Prof Ronnie Webber-Youngman

As a result of Covid-19 lockdown restrictions no Induction Dinners took place and the Exco decided to postpone these Dinners until lockdown restrictions are lifted.

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

### **CAETS Convocation 2021**

The 2021 CAETS Convocation was hosted by the Academy of Engineering of Argentina from September 17 to 24, 2021 in Buenos Aires. The theme of the Convocation was “The Future of Energy”. Prof Elsabe Kearsley, Mr Neil Macleod and Mr Bob Pullen represented SAAE in the Convocation. Mr Pullen who will serve on the Board of CAETS for the period 2022 – 2023, attended the Board Meeting on 20 September and Prof Elsabe Kearsley attended the Council Meeting on 24 September. Since the Convocation was presented in hybrid mode, many SAAE Fellows used the opportunity to listen to the very interesting presentations.

### **CAETS Convocation 2022**

The National Academy of Technologies of France, will host the 2022 Convocation from September 26 to 30, 2022 in Versailles. The theme of the meetings will be “Breakthrough Technologies for Healthcare”.

### **Other CAETS matters**

In accordance with the CAETS Rotation Schedule, SAAE was invited to nominate a representative to serve a 2-year term (2022-2023) on the CAETS Board of Directors. Mr Bob Pullen was nominated as SAAE’s representative on the CAETS Board of Directors for 2022 and 2023 and will attend the Board Meeting on 26 September 2022.

The CAETS Energy Committee is preparing a report on the decarbonization of the energy end-uses which will be presented at the 2022 CAETS Convocation in France. Mr Yves Bamberger, the Chairman of the Committee for 2021-2022, asked SAAE to nominate Fellows to join several working groups which were organized to prepare the report. SAAE nominated Prof Elsabe Kearsley and Mr Bryan Perrie for the Cement Working Group, Mr Felix Reinders and Mr Thys de Wet for the Agriculture Working Group, Mr Rodney Milford for the Buildings Working Group and Prof Dave Wright for the Oil and Gas Working Group.

On 19 November 2021 CAETS released a statement committing the engineers from 30 academies around the world to assisting governments in achieving the climate goals as agreed to at COP26. SAAE is one of the signatories of this commitment.

## **PUBLIC LECTURES**

### **Hendrik van der Bijl 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, UP, was presented virtually on 17 August 2021. The lecture was delivered by Mr André de Ruyter, Group Chief Executive of Eskom Holdings SOC Limited. Mr De Ruyter delivered an inspiring lecture on the topic 'A Vision for a Restructured Electricity Supply Industry in South Africa'. The virtual lecture was attended by a record number of about six hundred people.

### **Academy Lectures**

Before 2020 the presenter of the Annual Academy Lecture travelled to various centers in South Africa to present the lecture. In the light of the good attendance of the online presentations of the Academy Lecture 2020 and the 2021 Hendrik van der Bijl Lecture, the Executive Committee of SAAE decided in future to present two instead of one online Academy Lecture annually.

On 12 October SAAE Fellow Prof Saurabh Sinha, Deputy Vice-Chancellor: Research and Internationalisation at the University of Johannesburg, presented the lecture "A paradigm shift in higher education in the context of the fourth Industrial Revolution" with the technical support of the Library of the University of Johannesburg. He argued that it is essential for the landscape of post-school education and training (PSET) both in South Africa and globally to adapt to the changing nature of work, and ideally lead this change, and that learning is a nexus between teaching, research and innovation. One hundred and twenty persons registered for the lecture.

On 26 October 2021 Prof Richard Walls of the University of Stellenbosch presented the lecture "As Africa burns... can we engineer a safer future?" online with the aid of the Conference Management Centre of UCT. Prof Walls is the head of the Fire Engineering Research Unit at Stellenbosch University (FireSUN). His areas of research include structural fire design, informal settlement fire safety, timber in fire (CLT), full-scale fire testing, modelling, structural steel and burning things down. As the number of fires and the cost of fires is increasing every year in South Africa – whilst in some developed countries the trend is going the other way - his presentation sought to introduce the profession of fire safety engineering

through posing interesting questions about the origin and spread of fires. One hundred and fifteen people attended the lecture.

## **SYMPOSIUM ON THE ENGINEERING CONSIDERATIONS OF THE WATER-ENERGY-FOOD NEXUS IN THE SADC REGION**

The SAAE Executive Committee had envisaged a Symposium with representatives of the engineering professions in countries in the SADC Region for some years. As a result of the outbreak of the COVID-19 pandemic, the Symposium planned in March 2020 had to be cancelled. When it became possible to convene a symposium in 2021, albeit subject to strict behavioural regulations, SAAE arranged the symposium to take place on 8 and 9 November 2021.

The objectives of the Symposium were to meet with and get to know our engineering colleagues in the SADC Region; introduce CAETS to the participants in the Symposium; discuss the Institutional Arrangements in the Engineering Professions in the SADC Region; and to exchange knowledge and opinions on the Water-Energy-Food Nexus in the SADC Region.

The Symposium was presented from the Engineering 4 auditorium of the University of Pretoria in hybrid mode to encourage as wide as possible participation in the event. Eight representatives of engineering institutions came to Pretoria to present papers and three presented their papers online. Twenty participants and technicians were present in the auditorium while 120 participants from all the SADC countries, including South Africa, were able to participate online. The full proceedings were recorded and streamed live for online access anywhere. The recordings are available for later reference.

## **SCIENCE FORUM SOUTH AFRICA 2021**

On Thursday 2 December 2021 SAAE Fellow Dr Allyson Lawless and SAAE President Prof Elsabe Kearsley took part in a session of the Science Forum during which the implementation of the SADC Engineering Needs and Numbers study and the launch of the UNESCO Engineering Report were discussed. Dr Lawless was the leader of the SADC Engineering Needs and Numbers study.

## **EXPERT PANELS**

During the past year, the activities of the five expert panels, formed by SAAE Fellows to develop evidence-based material on matters of concern in the fields of water, energy, transport, engineering education and the engineering profession, continued in the form of online meetings, press releases and advisory notes and letters to political decision makers. The Energy Expert Panel provided input for a report entitled “The Decarbonising of End Uses” which will be published in September 2022 by the CAETS 2022 Energy Committee. On 29 September 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.

## **ASSAf**

On 9 March 2022 Prof Elsabe Kearsley, Mr Neil Macleod and Mr Bob Pullen had a fruitful meeting with the EO of ASSAf, Prof Himla Soodyall.

## **FINANCIAL OVERVIEW**

The Report of the Independent Auditor on the Financial Accounts of the SAAE for 2021/22 confirms that the financial position of the Academy as at 31 March 2022 is satisfactory with cash in hand remaining unchanged since March 2021 at about R238 000. This is sufficient to cover the fixed costs of the association, primarily administration and membership expenses, for a full year even if no income was realized. The Auditor reports that the financial performance and cash flows during the year 2021/22 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.

Attention is drawn to the following points of interest and, perhaps of concern:

- The main sources of income for the Academy are member's subscriptions, a Grant-in-Aid from the Department of Science and Innovation (DSI), and ad hoc sponsorships and donations.
- No income was generated from project activities or investigations funded by other entities and this has had a negative impact on the cash reserves of the Academy.
- There was no sponsorships for events arranged for the benefit of Members as no physical meetings could take place.
- Legal fees amounting to nearly R 23 000 were incurred due to claims of copyright infringements resulting from presentations posted on the Academy website.
- Of the funds made available to the SAAE by the DSI (formerly the DST) for memberships of CAETS and for other activities associated with international liaison in 2021/22, R307 500 was utilized. At the time of writing, this amount is still subject to confirmation. No costs were incurred in attending CAETS Board or Committee meetings due to constraints imposed by COVID-19 pandemic travel restrictions. The funds made available by the DSI grant for a regional meeting, scheduled to take place when lockdown commenced, was used to host the hybrid symposium on the Water-Energy-Food Nexus in November 2021.
- The once-only seed funding received as part of the Grant-in-Aid from the DSI for use by the SAAE in 2021/22 was used to fund development of a sustainable, income generating, funding model, profile and job description for a position as Part-time Project Officer in the Academy.
- Membership subscription fees owing on 31 March 2022 amounts to R45 871. Some debts have been written off and no provision is made for the doubtful debts which may be recovered in the coming year.

## **OUTLOOK FOR THE FUTURE**

Despite the disruption caused by the Covid-19 pandemic lingering on, the SAAE activities that took place in the past year proved that the continued use of virtual platforms make it possible for Fellows to attend activities without limitations caused by geographical location.

The activities of the Expert Panels contributed significantly to the relevance and visibility of the SAAE. We are still looking for more Fellows to contribute time towards additional Expert Panels in their field of interest and expertise. Our combined knowledge and experience should be used to promote excellence.

For the SAAE to become more visible, we need to not only increase the number of Fellows that partake in the activities of the Academy, but we also urgently need to increase the number of Fellows. I urge all Fellows to nominate candidates for election as Fellows that can assist the SAAE in promoting engineering as the tool for ensuring a better future for all the people living in South Africa.

A handwritten signature in black ink, appearing to read 'E.P. Kearsley'. The signature is fluid and cursive, with a long, sweeping underline that extends to the right.

Fellow EP Kearsley

President

South African Academy of Engineering, Johannesburg

11 May 2022