

SOUTH AFRICAN ACADEMY OF ENGINEERING

21st ANNUAL REPORT

1 April 2018 - 31 March 2019

South African Academy of Engineering

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TT Goba

President

Introduction

The SAAE managed to consolidate its level of activities during 2018/2019 with continued support from the Department of Science and Technology (DST) grant, as well as from ASSAf. As a result the SAAE continued its participation in the international network of Academies through membership of the Council of Academies of Engineering and Technological Sciences (CAETS), and attended the annual meetings. The DST's support for maintaining international links with sister academies is appreciated.

The SAAE's membership continued to increase as did opportunities for members to participate in projects of topical societal interests, and to respond where Government and state-owned entities needed advice. A presentation at the University of the Free State in Bloemfontein became a first venture into that province.

The Fourth Industrial Revolution, the Global Revolution in Energy, and dissemination of information emanating from the 2017 CAETS Convocation on the Blue Economy were topical issues for presentations and discussions. On the other hand an evaluation of support provided by the Strategic Water Partners Network for the No-Drop Program of the Department of Water and Sanitation was undertaken, and together with ECSA and other built-environment societies an urgent call for discussions with Minister for Public Enterprises on possible interventions to operational challenges at Eskom was responded to.

Executive Committee

The Executive Committee (Exco) of the SAAE for the period 2018 – 2019 comprised the following members:

Dr M Furumele

Mr T Goba

Prof E Kearsley

Dr H Macdonald
Mr N Macleod
Mr S Mkhacane
Prof C O'Connor
Mr Bob Pullen
Dr Mike Shand
Prof W Van Niekerk

Fellow Dr TT Goba served as President of the SAAE and Fellow Prof E Kearsley was the Deputy President. Fellow B Pullen was responsible for the Treasurer portfolio.

All members of the EXCO serve on a voluntary basis, and their contribution of valuable time during 2018/2019 is highly appreciated.

Four Exco meetings took place during the Financial Year 2018/ 2019, on the following dates:

- 15 May 2018
- 14 August 2018
- 13 November 2018
- 26 February 2019

The meetings continued to take place in video conference format, with members attending in Pretoria and Cape Town. Aurecon's provision of facilities in both cities is acknowledged.

ASSAF's continued support to SAAE by providing office accommodation at The Woods, Perseuor Park, Pretoria is particularly acknowledged with appreciation. At no direct cost to the SAAE, this generosity of the ASSAf Council is greatly appreciated.

21st Annual General Meeting, 28 June 2018

The 21st Annual General Meeting (AGM) was held through electronic communication. Fifty five members participated which was an improved response by Members since the move away from actual attendance at a single venue.

Membership

Eight Fellows were elected at the AGM which was held on 28 June 2018::

- Dr Robert Adam
- Prof Neil Armitage
- Ms Marna de Lange
- Dr Rodney Jones
- Prof Gerrit Jordaan
- Mr Seetella Makhetha
- Prof Pilate Moyo
- Dr Quentin Shaw

Elected Fellows Adam, Armitage, De Lange, and Moyo were welcomed by the President and members and guests who attended the Western Cape Induction Dinner which took place in Stellenbosch on 10 October 2018.

Elected Fellows Jones, Jordaan, Makhetha and Shaw were inducted at the Gauteng Induction Dinner which took place on the 25 October 2018 at the Pretoria Country Club. Mr Edwin Kruger of the South African National Roads Agency (SANRAL) delivered a presentation on the construction of the N2 between Port St Johns and Durban which had recently commenced following several delays.

INTERNATIONAL ACTIVITIES

Council of Academies of Engineering and Technological Sciences (CAETS)

The National Academy of Engineering of Uruguay was the host of the 26th CAETS Council Meeting and Convocation which were held in Montevideo from 10 to 14 September 2018. Dr Trueman Goba as President, Dr Mike Shand, Vice President, Mr Bob Pullen, Past President and Mr Felix Reinders, Fellow of the SAAE who is actively concerned with Agricultural Engineering, represented SAAE.

The theme of the conference which was held on 11 and 12 September 2018 was “Engineering a Better World – Sustainable Development of Agricultural and Forestry Systems”. Following presentations during a plenary session on the Economics and Politics of the post-financial crisis in Latin America, on South American Trends in Bioeconomy, and on “Who Needs More Plantations”, the following sub-themes were discussed:

- Forest Plantations and Sustainability
- Engineered Wood Materials as high valued biomaterials
- Agriculture and Sustainability
- Soil and Water sustainability under Agricultural and Plantations forestry use
- Engineering Education
- Chemical Products from renewable sources
- Logistics and Information Technology
- Sustainability and certification of forestry and industrial crops
- Academy and industry synergies

Due to the large number of presentations, the sessions were run in parallel.

The CAETS Board meeting took place on Monday, 10 September 2018, where the SAAE was represented by Dr Trueman Goba as Board Member and Chairman of the CAETS Audit Committee for the 2017/2019 term of office. In the afternoon, sub-groups of the convocation met to discuss various topics of interest to member Academies.

The Council meeting, in which all delegates participated, started early on Thursday, 13 September 2018. After various business matters, including resolutions to be taken, and administrative actions were discussed, the Council dealt with the following Agenda items:

- plans for the future,
- outcomes from sub-group discussions on the previous day,
- matters referred by the Energy Committee,
- outcomes from on-going discussions on Engineering Education,
- a report on How Engineering Academies interact with the public,
- and views on Engineering and the Sustainable Development Goals of the UN.

During a closed session of Council the Pakistan Academy of Engineering was admitted as the 27th member of CAETS.

The meeting was adjourned and the Convocation concluded on 14 September 2018 followed by optional tours to the following places of interest in Montevideo:

- A technical tour to the Montes del Plata timber mill and port facilities that produces eucalyptus cellulose pulp, located at Punta Pereira, near Conchilas, Colonia.
- A cultural tour to the UNESCO World Heritage Site at Colonia del Sacramento.

As usual, a report back to SAAE members and interested guests on Sustainable Development of Agricultural and Forestry Systems is planned for various centres around the country during the remainder of 2019.

LOCAL ACTIVITIES

No-drop Programme of the Department Water and Sanitation

During October 2018 the SAAE was appointed by the NEPAD Business Forum (NBF) to undertake a project to evaluate the support provided by the Strategic Water Partners Network (SWPN) for the No-drop Programme of the Department of Water and Sanitation. Fellows Bob Pullen and Neil Macleod undertook the work on behalf of SAAE with the assistance of other experts in the field of water supply.

Operational Challenges currently facing Eskom

On 15 February 2019 President Dr Trueman Goba and Fellow Prof Stephan Heyns attended an urgent meeting of engineering institutions on behalf of the SAAE, requested by the Minister for Public Enterprises and convened jointly by the Department of Public Enterprises and the Engineering Council of South Africa (ECSA). This followed wide-spread failure of certain Eskom power stations.

The discussion focused on the multi-faceted operational and maintenance challenges then faced by Eskom in the context of existing and varied technical capabilities of SA voluntary associations and professional institutions. It was resolved that ECSA and the SAIEE would coordinate secondments of human resources to Eskom for visits to power stations and additional supervisory skills where needed.

Consensus Study on the Status of Postgraduate Research Training in Engineering in South Africa

In cooperation with ASSAf, Fellow Prof Roelf Sandenbergh and a panel of SAAE Fellows completed a consensus study to review the status of postgraduate research training in South Africa. The other Fellows who served on the team included Prof Bea Lacquet, Prof Sue Harrison, Prof Tania Douglas, Prof Cristina Trois and Prof Deresh Ramjugernath.

On 27 March 2019, ASSAf arranged a public launch of the report on behalf of the Department of Higher Education at which the Panel Chairman, Prof Sandenbergh, presented the report. Dr Goba and two stakeholder representatives formed a panel which presented initial responses to the report.

Annual Academy Lectures

The SAAE presented a session at the Science Forum of SA 2018 entitled “The Fourth Industrial Revolution in the Context of Developing Countries”. Executive Committee Member Prof Wikus van Niekerk was the coordinator and Moderator. Fellow Dr Gustav Rohde, who served on the executive of Aurecon for the past 18 years, Dr Reabetswe Kgoroadira and Dr Vukosi Marivate were panel members.

A lecture on the same topic was presented by Dr Rohde on 15 March 2019 at the Reitz Hall, Stellenbosch University. The lecture was attended by one hundred and two people.

Prof Anton Eberhard presented the 2018 Academy Lecture “The Global Revolution in Energy and what it means for South Africa” on 1 November 2018 in the Snape Lecture Theatre at the University of Cape Town. Prof Eberhard is Professor Emeritus and Senior Scholar at the University of Cape Town where he directs the Management Programme in Infrastructure Investment, Reform and Regulation at the Graduate School of Business. The lecture was attended by more than two hundred people. On 18 March 2019 Prof Anton Eberhardt repeated this lecture at the University of Pretoria. The Lecture was attended by fifty-two people. He argued that the rapid rate of innovation in energy may cause the institutional design of Eskom to become irrelevant and that an alternative business model is needed for the utility to survive.

Information emanating from the 2017 CAETS Convocation in Madrid, Spain, on the theme “Engineering a Better World – Challenges of the Bio-economy and Energy and presentations focused on the Future of Food, Genetic Engineering, and the Blue Economy” was presented by Fellow Felix Reinders at meetings open to Fellows and to the public. These presentations took place on 29 August 2018 at University of Stellenbosch, on 5 September at the University of Pretoria and on 25 September 2018 at the University of Free State. Fellow Felix Reinders is President of the International Commission on Irrigation and Drainage (ICID). The lectures were presented with the kind cooperation of the Deans of Engineering of the host Universities and with the financial support from the NSTF proSet.

Hendrik van der Bijl Lecture

On 25 September 2018 Dr Gustav Rohde FSSAE and CEO of Aurecon presented the Annual Hendrik van der Bijl Memorial Lecture in the Senate Hall of the University of Pretoria. The lecture is presented annually by the SAAE in collaboration with the University of Pretoria. The topic for the lecture was “The Fourth Industrial Revolution. Digital Transformation – An Opportunity to Reposition”. The lecture was attended by one hundred and twenty people.

Science Action Plan for Shale Gas Exploration in the Karoo Basin

SAAE collaborated with ASSAf in a consultative workshop at Kievits Kroon in Pretoria on 14 and 15 March 2019, on the Science Action Plan for a shale gas industry for South Africa. The event was designed to discuss one of six flagship research programmes proposed by the Science Action Plan which was drafted by ASSAf and SAAE at the request of Department of Science and Technology and following findings of the 2017 report on South Africa’s Technical Readiness to Support the Shale Gas Industry.

Dr Goba presented the welcome address at the workshop and Prof Cyril O’Connor reported on the background and how far the project had evolved. Honorary Fellows, Dr Mike Shand, and Mr Bob Pullen were participants in the workshop.

FINANCIAL OVERVIEW

The Report of the Independent Auditor on the Financial Accounts of the SAAE for 2018/19 confirms that the financial position of the Academy as at 31 March 2019, and financial performance and cash flows during the year are fairly presented in all respects. The Financial Accounts for 2018/19 were prepared by the Management Committee that was in office during the year.

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

- The assets of the Academy comprise primarily cash and cash equivalents represented by cash in the bank accounts which has been accumulated from retained earnings over many years. This stands at R228 827, down by about R17 000 from the previous year.
- Accounts receivable representing arrears subscriptions amounts to R11 000, about R50 000 less than at this time in 2017/18. This significant change has come about by a decision of the Committee to apply more strictly its Rules regarding the management of member’s subscriptions. During the year it was decided to make a provision in the accounts for arrears subscriptions more than one year old after the prescribed reminders have been sent. Arrears accumulated in the provision can possibly be recovered in future or will be written off as Bad Debts.
- The three main sources of income for the Academy are member’s subscriptions, a grant from the Department of Science and Technology to fund membership of CAETS and participation in its activities together with other the costs of maintaining relationships with institutions in the engineering professions in other sub-Saharan countries, and grants from other bodies to undertake investigations or studies on their behalf.

- The investigation of the Department of Water and Sanitation's No-Drop initiative, which was supported by the Strategic Water Partnership Network (SWPN) of the Nepad Business Forum, yielded a nominal but welcome surplus for the Academy.
- The most significant increase in expenses relates to the presentation of Academy Lectures. This reflects an increase in the activities of the Academy.
- Comparisons with income and expenses items with the previous year are not always meaningful because of the impact of investigations undertaken for other bodies.

OUTLOOK FOR THE FUTURE

The focus of the SAAE is on improving the mobilization of knowledge and experience of its members to formulate independent, evidence-informed advice, usually on policy matters, for transmission to Government and to Industry.

This implies that every effort has to be made towards identifying new platforms where such advice may be of value, and to take the initiative as early as possible so that members have an opportunity to contribute their expertise. In this regard some industrial companies may see the benefit of having such support available from the SAAE and be attracted to contributing financial support which could strengthen the SAAE.

Fellow TT Goba

President

South African Academy of Engineering, Johannesburg

12 June 2019