

CAETS Visiting Committee

Lucio Caceres, CAETS Past-President, President of the National Academy of Engineering of Uruguay
Trueman Goba, CAETS Board Member (Former), President of the South African Academy of Engineering
Ruth David, CAETS Secretary/Treasurer, Foreign Secretary of US National Academy of Engineering

Hosts: NAE Executive Committee

Fola Lasisi, President, Nigerian Academy of Engineering
A. O. Ogedegbe, Vice President, Nigerian Academy of Engineering
A. O. Denloye, Honorary Secretary, Nigerian Academy of Engineering
E. Ijioma, Treasurer, Nigerian Academy of Engineering
I. K. Inuwa, Technical Secretary, Nigerian Academy of Engineering
J. O. Maduka, Immediate Past President, Nigerian Academy of Engineering
R. I. Salawu, Past President, Nigerian Academy of Engineering

Background

The Nigerian Academy of Engineering (NAE) contacted the CAETS Secretary/Treasurer in November 2014 inquiring about the requirements for CAETS membership. The NAE was invited to attend upcoming CAETS Convocations in observer status in order to learn more about CAETS activities. Delegations from the NAE attended CAETS 2015 in India, CAETS 2016 in the United Kingdom, CAETS 2017 in Spain, and CAETS 2018 in Uruguay. During the CAETS 2018 meeting, NAE expressed interest in applying for CAETS membership; subsequently, the Secretary/Treasurer invited submission of an application demonstrating their alignment with CAETS membership criteria.

Having received the NAE application in accordance with CAETS Bylaws, in March 2019 the CAETS Executive Committee appointed the Visiting Committee noted above, which completed an onsite visit on 3-4 June 2019. This report summarizes that visit and substantiates their recommendation.

Recommendation of the CAETS Visiting Committee

The Visiting Committee concluded that the Nigerian Academy of Engineering satisfies the CAETS Membership Criteria. It therefore recommends election of the NAE as a member of CAETS.

Historical Overview of the Nigerian Academy of Engineering

Until the first half of the 20th century only a few Nigerians were fully qualified professional engineers, and those few were educated abroad—largely in the United Kingdom. During the 1960's the first locally-educated professional engineers were produced. By the mid-1960's approximately 40 Nigerian universities and polytechnics were training high- and medium-level technical manpower.

As the profession matured, regulation was carried out through learned societies such as the Nigeria Society of Engineers (NSE) and a statutory registration and regulatory body, Council for the Regulation of Engineering in Nigeria (COREN).

Establishment of the Nigerian Academy of Engineering was motivated by the need for a small, focused engineering body that would include in its objectives the advancement and pursuit of excellence in Technology and Engineering as well as the provision of a national platform for experts to pool their experience and insights to inform related public and private policy. Similar academies in developed and

developing countries, including the United Kingdom, Canada, India, China, and the United States of America, provided models that shaped the NAE's organization and operations. The NAE was incorporated as a private company limited by guarantee¹ in September 1997.

The NAE Secretariat is today housed in the Chemical Engineering Complex on the University of Lagos campus. Dedicated office space, which includes meeting space and other amenities, is provided by the university at no cost to NAE. The NAE further benefits by having access to the university's auditorium when large meetings are held.

Summary of Visit

During the visit the Committee met with the NAE's Executive Committee (hosts noted previously) as well as selected Fellows from the NAE. The discussions provided an overview of the organization and operations of the NAE and included specific topics relating to the benefits the NAE hoped to realize through CAETS membership. Additionally, the Committee met with the Vice Chancellor of the university, who is a Fellow of the NAE. During that meeting the Vice Chancellor made clear his commitment and support for the activities of the NAE.

In December 2018 the NAE published a strategic plan that identifies areas of focus as well as strategic objectives for both external deliverables and internal development. It also includes a candid SWOT (Strengths/Weaknesses/Opportunities/Threats) analysis and a plan for achieving the strategic objectives. A 5-year timeline with explicit initiatives is laid out to prioritize and guide three phases of actions. The content and discussion of this plan indicated to the Committee that NAE efforts are well-aligned with CAETS expectations and objectives.

Discussions with NAE leadership and Fellows addressed each of the CAETS Membership Criteria; findings are summarized below.

Alignment with CAETS Membership Criteria

In accordance with CAETS Bylaws, Section 3: **A member of CAETS shall:**

a) Be representative of the engineering and technological community of that country

The Nigerian Academy of Engineering is the only academy for engineering and technology in Nigeria. *[The Nigerian Academy of Science, which was formed twenty years earlier in 1977, includes "engineering science" in its Fellowship; the NAE works collaboratively with this academy on issues of mutual concern.]* Related bodies include the Nigerian Society of Engineers, a learned society that looks after the professional needs of its members, and the Council for the Regulation of Engineering in Nigeria (COREN), a statutory body that registers professional engineers; NAE works with both of these organizations.

b) Subscribe to the non-political, non-governmental international character of the Council

In accordance with the NAE Bylaws, the academy is "non-profit, non-political, non-religious, and multi-cultural." The NAE's objectives include:

¹ A company limited by guarantee is not a registered with a share capital and requires the prior approval of the Attorney General of the Federation before it can be incorporated. In practice, companies limited by guarantee are registered in Nigeria to undertake strictly charitable objectives. (<https://www.oseroghoassociates.com>)

- I. To promote excellence in the advancement of engineering science, education, practice and technology and related disciplines
- II. To facilitate the dissemination and exchange of ideas among members and other similar bodies and establishments, especially
 - a. To anticipate and assess the changing needs of Nigeria and to advise appropriate bodies on the technical resources that should be applied, and sponsor programs aimed at meeting those needs
 - b. To provide independent and expert advice on matters of national importance pertinent to engineering and technology and related disciplines
 - c. To interact and cooperate with other engineering and scientific professional bodies, and other academies, locally and internationally
 - d. To recognize engineering achievements, and outstanding contributions to society and country by Nigerian engineers (and engineering scientists)
 - e. To provide a forum for Nigerian engineers to report on research and development activities in engineering
 - f. To apply or petition for any legislation, parliamentary or otherwise that would further any of the objectives of the Academy

Based on discussions with NAE leadership, the Committee concluded that the NAE is operating in accordance with its objectives.

c) Have a peer elected membership with criteria for election based on significant personal contributions to engineering, technical sciences, or related activities

The NAE includes both Fellows and Honorary Fellows. Fellows are those who are elected at the Annual General Meeting in accordance with the Academy's Bylaws. Honorary Fellows are those persons who are not registered engineers, but who in the opinion of the Council have made, or are making, a distinguished contribution to the practice of engineering. As of June 2018, the membership included 148 Fellows and 4 Honorary Fellows.

NAE membership criteria require that a nominee for Fellow status must be a registered engineer (COREN or its equivalent) as well as a Fellow of the Nigeria Society of Engineers (or its equivalent). Additionally, the nominee must have demonstrated substantial accomplishments in one or more of the following:

- I. Pioneering of new and developing field of technology, engineering knowledge or engineering science
- II. Significant contribution to the art and practice of engineering
- III. Recognized by his/her professional peers for accomplishment in engineering and engineering-related disciplines as well as professional integrity

Effectiveness and efficiency in leadership of organizations that have conducted pioneering or complex programs, or that have made noteworthy contributions to the field of engineering education, shall be considered as supplementing the primary qualifications outlined above.

Engineers who are not Nigerian nationals, but are, in the opinion of the Council, of international distinction, are eligible for election as Foreign Fellows.

Nominations may be submitted by current Fellows of NAE, by completing a form which requires both a nomination and a second. Detailed profiles of all nominees are sent to all current Fellows for scoring against established criteria. Those scores are provided to a Screening Committee, constituted by the Council and chaired by the NAE Vice President, which evaluates the candidates, considers the scores received from the Fellows, and provides a rank-ordered list to the membership for election during the Annual General Meeting. Additional considerations in creating the rank-ordered list include a balance between academia and industry, geographic diversity, gender diversity, and technical field diversity. Fellows are nominated, screened, and elected by NAE Fellows.

d) Be governed by its elected membership

Officers, who must be Fellows of the NAE, include: President, Vice President, Honorary Secretary, Treasurer, and Technical Secretary. There are two governing bodies: 1) the Executive Committee, which includes the Officers together with the last two Past-Presidents, and is responsible for the day-to-day affairs, and 2) the Council, which is the primary governing body. The Council comprises all EXCOM members plus eight other Fellows elected at the Annual General Meeting.

The out-going Vice President automatically succeeds the President at the end of his/her tenure. The nomination of officers and the eight other members of the council is made by the Council and subject to affirmation at the Annual General Meeting. Candidates for Vice President must have served on the Council for at least two years.

All members of Council have a two-year tenure but are eligible for re-election provided that no member may serve for more than three consecutive terms but the same position. The President may serve for only one term of two years.

e) Be engaged in significant activities demonstrating that its objectives are compatible with the objectives of CAETS

The NAE uses a variety of mechanisms to generate and communicate policy ideas and advice, as well as recognition of achievements in its efforts to promote advancement and excellence in the practice of engineering and technology. Activities include:

- Learned discourses and position papers
- Meetings, lectures
- Sponsorship of foreign travels and of distinguished foreign visitors
- Scholarships and awards
- Relevant studies and programs

Recent activities include:

- Public Lecture: “Improving Electricity Power Sector Performance: The Role of the Nigerian Electricity Regulatory Commission” by Engr. Prof. F. N. Okafor, 29 March 2017
- Academy Annual Lecture: “Training Engineers for the Global Century” by Engr. Prof. M. A. Adewumi, 6 July 2017
- Public Lecture: “Modular Refineries: Prospect and Challenges” by Engr. Tony Ogbuigwe, 8 November 2017

- Public Lecture: “Engineering Innovation and Last-Mile Development: Towards a Synergy between Investors and Research” by Engr. Prof. Ibidapo-Obe, 12 April 2018
- Academy Technology Dinner Lecture: “Cracking the Code of Industry-Academia Partnership in Nigeria: Challenge to Knowledge Academies” by Engr. Prof. Mike Ol Faborode, 20 June 2018
- Annual Lecture: “Current Developments in Nigeria’s Water Resources Sector” by Engr. Suleiman Hussein Adams, 21 June 2018

During its Annual General Meeting, the NAE hosts a dinner during which awards are presented for excellence in post-doctoral work as well as best paper awards for dissertations and theses.

The NAE was supported by the UK Royal Academy of Engineering under the Africa Catalyst Programme for development of Nigerian Standards for Professional Engineering Competencies. They issued a first edition publication titled “Guidelines and Standards for Accreditation of Engineering Programmes” on 31 July 2017.

Additionally, the NAE’s current strategic plan identifies near-term initiatives intended to further increase their influence and impact. Examples include:

- Establish procedure for identifying competent engineers for appointment into key engineering positions and modality for engaging government
- Establish an annual engineering award as part of the annual conference, including cooperation with the Nigeria Innovation Prize

f) Have sufficient financial support to pay the costs of CAETS membership and the costs of participation in CAETS activities

The NAE provided audited financials for four years (2014-2017) and draft financials for 2018, which indicate that the NAE has operated at a surplus for three of the past five years. They realized an overall surplus of approximately \$54,000 during that 5-year period, which increased the value of the Accumulated Fund by 47%. [During that period, NAE delegations attended CAETS meetings 2015-2018.]

Prior to development of the 2018 Strategic Plan, the NAE largely relied on funding drives targeting donations from members and industry. Going forward, one of the strategic objectives identified for internal development was “Sustainable Finance: To develop and maintain sustainable funding strategies.” A financial advisory committee was chartered to provide guidance on potential new sources of funding for the NAE. The Committee believes the NAE has already demonstrated the ability to sustain its operations, including participation in CAETS activities, and that NAE leadership focus on this issue will further strengthen their fiscal footing over the coming years.