

Nigerian Academy of Engineering

Strategic Plan Report

December 2018



NIGERIAN ACADEMY OF ENGINEERING

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Terms of Reference

1. Review the Academy's Vision and Mission Statement
2. Establish core values for the Academy.
3. Carry out a Strength Weakness Opportunity Threat (SWOT) analysis to determine competitive advantage and strategic objectives
4. Establish priority, goals and activities for Calendar year (2019-2023)
5. Establish key performance indicators
6. Develop an implementation strategy.

Committee Members

1. Engr. A. O. Ogedegbe - Chairman
2. Engr. J. O. Makaju, OON
3. Engr. K. A. Adeola
4. Engr. I. S. Ogunbayo
5. 5 Engr. Dr. (Mrs.) N. E. Denloye
6. Engr. N. J. D. Erinne
7. Engr. Prof. D. A. Aderibigbe
8. Engr. Rear Admiral (rtd.) E. Ijioma,
9. Engr. Dr. O. J. Mbonu
10. Engr. Dr. T. O. Bawa-Allah
11. Engr. B. S. Musa, OFR –
12. Engr. Dr. (Mrs) F. I. Amakiri
13. Engr. Prof. M. A. Adewunmi
14. Engr. Prof. A. O" Esogbue, NNoM Member

Ad-Hoc Committee Members

1. Engr. A. O. Ogedegbe - Chairman
2. Engr. K. A. Adeola
3. Engr. Dr. (Mrs.) N. E. Denloye
4. Engr. Rear Admiral (rtd.) E. Ijioma,
5. Engr. Dr. O. J. Mbonu

Work Methodology 1

1. Re-evaluation and deliberations on the vision of the Academy.
This step included the study of the visions of similar professional associations all over the world. At the end of this exercise, a vision statement was recommended for the Academy. A report in respect of this was circulated to the full committee and the full membership of the Academy.
2. Re-evaluation and deliberations on the mission of the Academy.
This step involved the study of the missions of similar professional associations all over the world. At the end of this exercise, a mission statement was recommended for the Academy. A report in respect of this was circulated to the full committee and the full membership of the Academy.



Work Methodology 2

3. Re-evaluation and deliberations on the core values of the Academy. This step involved the listing of possible values of the academy by the ad-hoc committee and analysing and prioritising them. At the end of this exercise, a list of core values was recommended for the Academy. A report in respect of this was circulated to the full committee and the full membership of the Academy.
4. Re-evaluation and deliberations on the strategic objectives for the Academy. This step included carrying out a SWOT analysis of the Academy and then identifying what should be our strategic objectives. At the end of this exercise, nine strategic objectives were recommended for the Academy. A report in respect of this was circulated to the full committee and the full membership of the Academy.



Work Methodology 3

5. Development of strategic initiatives for the Academy. This step included the organisation of a workshop at which discipline experts were invited to advise the committee on possible strategic initiatives based on the established strategic objectives. The workshop was augmented by contributions from members of the committee who could not attend. At the end of this exercise, a schedule of strategic initiatives was developed and has been circulated to all the members of the committee and all fellows of the Academy.
6. A presentation of the work of the committee was made to the current executive committee of the Academy in September, and it was well received.
7. Exco requested that the committee should prioritise the initiatives for implementation. This request has been addressed and the prioritisation of the initiatives is included in this draft report.

Vision Statement

- **“To Be a Leading Think-Tank in the Advancement of Science, Engineering and Technology”**

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Mission Statement

- **“To Promote and Advance Science, Engineering and Technology as a Major Driver of National Development and International Competitiveness”**

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Core Values

- **Integrity:** This captures the character of the academy and each fellow
- **Professionalism:** This captures the competence and expertise of each fellow and the collective expertise of the academy
- **Diversity:** This captures the diversity of disciplines, issues, expertise, etc.
- **Objectivity:** This captures the courage to act independently and objectively
- **Commitment:** This is a demand for commitment from all fellows

Strategic Areas of Focus

- 1. Engineering Research**
- 2. Engineering Education**
- 3. Engineering Infrastructures**
- 4. Engineering Production (Manufacturing, agriculture, mining)**
- 5. Engineering Operations and Maintenance (Facilities, infrastructures)**

Strategic Objectives for External Deliverables 1

- 1. Influence Government:** by articulating policies on science, engineering and technology across all areas of engineering endeavours
- 2. Support Individual Engineers:** by empowering and promoting innovation, research and development of the individual engineer
- 3. Promote Engineering Businesses:** by developing strategies for the development of micro, small, medium and large scales engineering enterprises

Strategic Objectives for External Deliverables 2

- 4. Promote Quality of Engineering Outputs:** by advocating standards of engineering processes and products. This protects the general public who are the victims of poor quality of engineering
- 5. Collaborate with Other Academies and Institutions:** to learn and share best practices in the development of science, engineering and technology

Strategic Objectives for Internal Development

6. **Effective Leadership:** to develop and implement a governance and organisational structure to be able to deliver on its external objectives
7. **Membership Commitment:** To develop and implement policies and processes on admission and retention of fellows to promote active participation and commitment
8. **Effective Secretariat:** To develop and implement a functional secretariat able to deliver on the Academy's commitments
9. **Sustainable Finance:** To develop and maintain sustainable funding strategies

Drivers of the Recommended Strategic Objectives

Strategic Objectives

1. Influence Government
2. Support Individual Engineers
3. Promote Engineering Businesses
4. Improve Quality of Engineering
5. Collaboration with Others
6. Effective Leadership
7. Membership Commitment
8. Effective Secretariat
9. Financial Stability

Drivers of the Achievement

- Policy Formulation & Advocacy
- Knowledge & Competence Development
- Innovation, Capacity Building & Business Development
- Standards, Codes & Practice Manuals Development
- Strategic Partnerships
- Governance and Operational Structures
- Fellows Admission and Engagement Policies
- Appropriate Staffing and Infrastructure
- Sustainable Funding Strategies

SWOT Analysis 1

Strengths

Experienced fellows

Fellows network

Fellows expertise

Diversity of membership

Acceptance of leadership
by other engineering
associations

Weaknesses

Lack of commitment by
fellows

Weak administrative structure

Lack of clarity of purpose

Lack of focus

Not leveraging on strengths

Weak financial capacity



SWOT Analysis 2

Opportunities

To raise the profile of the Nigerian Engineer

To fill the vacuum in engineering thought leadership

Potential to mobilise human, material and financial resources

Threats

Membership admission policy

Perceived poor image of engineers

Poor quality of engineering education

STRATEGIC OBJECTIVES

1. Influence Government

Policy Formulation & Advocacy: Strengthen NAE's voice on national policy

- 1. Regularly Develop Policy Briefs** in areas of **Research, Education, Infrastructure, Production and Operations & Maintenance** for national development Develop Policy Briefs in the following areas as a priority:
- 2. Systematically Engage** with the **Executive and Legislative arms of government** to influence the **appointment of the leadership of engineering institutions**
- 3. Systematically Engage** with the leadership of engineering **Ministries, Departments and Agencies of Government, Universities and Research Institutes** to develop and promote best practice
- 4. Regularly Publish and Organise Forums** to disseminate opinions and findings on key engineering issues

STRATEGIC OBJECTIVES

2. Support Individual Engineers 1

Knowledge & Competence Development: Improve the perception and enhance the performance of engineers present and future

5. **Engage with Industry, Academia and Professional Associations** to design and implement **Training and Exposure Programmes** for Technicians, Technologists, Engineers and Faculties, including curriculum, staffing and infrastructure, in the areas of:
 5. Conversion of Theory to Production
 6. Design and Construction of Infrastructures
 7. Design, Fabrication and Manufacture/Production of Engineering Products
 8. Engineering Facilities and Infrastructure Management and Maintenance
 9. Emerging Areas of Engineering

STRATEGIC OBJECTIVES

2. Support Individual Engineers 2

Knowledge & Competence Development

6. **Champion/Provide Sponsorships, Scholarships, Recognition and Awards for Significant Projects, Research and Innovation**
 - Champion/Provide Sponsorships, Scholarships, Recognition and Awards for Significant Projects, Research and Innovation
 - Champion a student's competition that will boost innovation and create solutions to local and national challenges
 - Champion research/pilot projects in areas considered of significance to Nigeria's technological advancement.

STRATEGIC OBJECTIVES

3. Promote Engineering Businesses 1

Innovation, Capacity Building & Business Development

Help to promote Sustainable Engineering Enterprises, advancing national capacity for innovation and international competitiveness, and creating openings for rewarding career pathways in the profession

7. **Facilitate** the Development of **Engineering Business Roadmaps for Start-Ups** by Professional Associations and others in the areas of:

- Research-Based Businesses
- Design and Construction of Infrastructures
- Design, Fabrication and Manufacture/Production of Engineering Products
- Engineering Facilities and Infrastructure Management and Maintenance
- Emerging Areas of Engineering

STRATEGIC OBJECTIVES

Promote Engineering Businesses 2

Innovation, Capacity Building & Business Development

8. **Promote Local Content** of Engineering Services and Products
9. **Encourage and facilitate industry-Academia Relationship** for local engineering problem solving in both directions
 - Industry requiring solutions to production problems
 - Academia wanting to test concepts and innovations
 - Commercialisation of viable research outputs

STRATEGIC OBJECTIVES

4. Improve Quality of Engineering

Establish, Maintain and Monitor Standards, Codes & Best Practices: Help to entrench a culture of high standards

- 10. Engage with Relevant Professional Bodies/Institutes on the Development and Utilisation of Standards and Best Practices** in Research, Education, Infrastructures, Manufacture/Production and Operations & Maintenance
- 11. Create and Maintain a Database of Major Engineering Projects** in the country and periodically review and influence policy and practice

STRATEGIC OBJECTIVES

5. Collaboration with Others

Strategic Partnerships with Academies & Other Institutions

Forge strategic partnerships for synergy and enhancement of delivery of objectives.

- 12. Provide leadership for the coordination of engineering associations in Nigeria**
- 13. Establish relationship** with key international **engineering academies**
- 14. Establish relationship** and build synergy **with non-engineering local and international development institutions** such as NESG, NIA, UNESCO, etc

STRATEGIC OBJECTIVES

6. Effective Leadership

Governance and Operational Structure

- 15. Review existing system that places responsibilities for governance and operations on the president and executive committees**
- 16. Consider full time head of operations of the cadre of a fellow**

7. Membership Commitment

Policies on Admission and Engagement of Fellows

- 17. Review conditions and process of admission of fellows to consider not only past achievement but future commitments**

8. Effective Secretariat

Appropriate Staffing and Infrastructures

- 18. Consider higher calibre staff that can take responsibilities for strategy execution**
- 19. Provide adequate infrastructure for strategy implementation**

STRATEGIC OBJECTIVES

9. Financial Stability

Sustainable Funding Strategies

20. Consider All Potential Sources of Finance for the Academy, Including:

- Advisory services for fees
- Subscriptions
- Endowments
- Sponsorship of value adding

STRATEGIC INITIATIVES

- **Group 1 to be completed within two years.**
 1. Establish procedure for identifying competent engineers for appointment into key engineering positions and modality for engaging government.
 2. Establish the modality for regularly engaging leadership of engineering institutions starting with MDAs led by engineers (as a captive audience)
 3. Facilitate the sourcing of funds for scholarship and sponsorship
 4. Establish an annual engineering award as part of the annual conference, including cooperation with the Nigeria Innovation Prize
 5. Set up committee to advise on organisational structure, membership commitment and effective secretariat for the academy
 6. Review conditions and process of admission of fellows to consider not only past achievement but future commitments
 7. Conclude the work of the on-going financial advisory committee on sustainable financing of the Academy

STRATEGIC INITIATIVES

- **Group 2: that can be immediately acted upon by the executive committee**
 1. Develop Policy Briefs in the following areas as a priority:
 - Research, ICT, Power, Agriculture & Oil, Health Tech & Gas, Operations & Maintenance, Emerging Areas of Engineering
 2. Cooperate with the on-going efforts of CODET, COREN, MAN & NUC to develop industry – Academia cooperation for improved engineering training and production
 3. Consolidate the on-going efforts with ARCO on commercialisation of viable research outputs, and extend the partnership to other stakeholders
 4. Lobby government for the adoption of local content for engineering businesses; Establish a structure to support businesses to benefit from Executive Order No. 5 on local content for engineering businesses

STRATEGIC INITIATIVES

Group 2 contd

5. Initiate and manage annual or biennial meetings of engineering associations and help to define roles and responsibilities
6. Consolidate on the relationship between NAEng and not more than five international academies in the first two years
7. Establish strategic partnership with NESG

STRATEGIC INITIATIVES

Group 3: Initiatives to follow Groups 1 and 2

1. Publish annual reports on policy briefs and national engineering development
2. Organise annual or biennial conferences on engineering and development
3. Establish a data centre for the collection, collation, review and analysis of all engineering designs across all disciplines
4. Prepare engineering business roadmap
5. The table below shows the time lines for all the initiatives based on the grouping above.
6. The coverage period of the initiatives is five years, and performance will be assessed every quarter.

STRATEGIC INITIATIVES TIME LINE

		YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
Strategic Objectives	Specific Initiatives Requiring Committees	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Influence Government	a. Establish procedure for identifying competent engineers for appointment into key engineering positions and modality for engaging government.	—————																			
2. Support Individual Engineers	b. Establish the modality for regularly engaging leadership of engineering institutions starting with MDAs led by engineers	—————																			
3. Support Individual Engineers	c. Facilitate the sourcing of funds for scholarship and sponsorship d. Establish an annual engineering award as part of the annual conference in e above					=====															
4. Effective Leadership	e. Set up committee to advise on organisational structure, membership commitment and effective secretariat for the academy	—————																			
5. Membership Commitment	f. Review conditions and process of admission of fellows to consider not only past achievement but future commitments	—————																			
6. Effective Secretariat																					
7. Financial Stability	g. Conclude the work of the on-going financial advisory committee on sustainable financing of the Academy	—————																			
Strategic Objectives	Specific Initiatives for Immediate Implementation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Influence Government	a. Develop Policy Briefs in the following areas as a priority: - ICT, Power, Agriculture & Oil & Gas - Operations & Maintenance - Emerging Areas of Engineering	=====																			
2. Support Individual Engineers	b. Cooperate with the on-going efforts of CODET, COREN, MAN & NUC to develop industry – Academia cooperation for improved engineering training and production	=====																			
3. Promote Engineering Businesses	c. Lobby government for the adoption of local content for engineering businesses; Establish a structure to support businesses to benefit from Executive Order No. 5 on local content for engineering businesses d. Consolidate the on-going efforts with ARCO on commercialisation of viable research outputs, and extend the partnership to other stakeholder	=====																			
4. Collaboration with Others	e. Initiate and manage annual or biennial meetings of engineering associations and help to define roles and responsibilities	=====																			
	f. Consolidate on the relationship between NAEng and not more than five international academies in the first two years	=====																			
	g. Establish strategic partnership with NESG	=====																			
Strategic Objectives	Specific Initiatives for Deferred Implementation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Influence Government	a. Publish an annual report on policy briefs and national engineering development							=====													
	b. Organise an annual or biennial conference on engineering and development							=====													
2. Promote Engineering Businesses	c. Prepare engineering business roadmaps in at least five areas of engineering every two years							=====													
3. Improve Quality of Engineering	d. Establish a data centre for the collection, collation, review and analysis of all engineering designs across all disciplines							=====													