



The Odyssey of Milestones and Memories of FAEO: 1972 - 2024

**By Eng. Kazawadi Papias Dedeki,
FAEO's 6th President(2023-2024)**

A journey's worth lies not in the distance, but in
the wisdom earned along the way



The Odyssey of Milestones and Memories:
The Federation of African Engineering Organizations
(FAEO): 1972-2024

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Acknowledgments

This book is a collaborative effort of FAEO leadership, past and present, as well as engineering professionals across Africa. Special thanks to all contributors for their dedication and insights in documenting this history.

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Praise for The Odyssey of Milestones and Memories (Selected Endorsements summary)

“This book is a remarkable chronicle of FAEO’s journey, capturing the pivotal moments that have shaped engineering in Africa. A must-read for engineers, policymakers, and development professionals.”

— **Ing. Prof. Robert Andoh, Adjunct Professor, School of Energy, University of Energy and Natural Resources, Sunyani, Ghana.**

“A compelling narrative that blends history, leadership, and vision, illustrating the vital role of engineering in Africa’s development.”

— **Eng. Martin Manuhwa, WFEO Chair, Capacity Building Standing Technical Committee, Harare - Zimbabwe.**

“A brilliant exposition of the Federation of African Engineering Organizations’ legacy! This book captures the challenges and triumphs of African engineers, inspiring future generations to build on this foundation.”

— **Lee Yee Cheong, Honorary Chairman, Governing Council, International Science Technology and Innovation Centre (ISTIC) for South-South Cooperation from Malaysia.**

“An engaging and meticulously documented history of FAEO that underscores the importance of engineering in Africa’s socio-economic transformation. A must-read for professionals and stakeholders in the field. The HAIR competences should be integrated in the curriculum of various engineering education and training programs.”

— **Prof Ijumba- International Research and Innovation Programme Manager, the Africa Hub of Coventry University, Kigali - Rwanda.**

“It has been such a great pleasure to read this tour de force, which tells the remarkable story of the journey of FAEO to become an inspiring and proud organization. It tells the story of the vision and resilience of its great Leaders, as well as recognizing the work of an army of dedicated supporters in different parts of the continent over the years.”

— **Prof Dawn Bonfield MBE, President of the Commonwealth Engineers Council (CEC), London - UK.**

“This book is an important record of the pioneering role played by African Engineers to pull their energy together after most African Countries gained their independence to be the spearhead of Africa’s development”

— **Eng. Ahmed Hesham-Egypt Syndicate of Engineers (ESE), Cairo - Egypt.**



Preface



The Federation of African Engineering Organizations (FAEO) has been a transformative force in Africa since its founding in 1972, addressing the continent's engineering challenges and paving a pathway for growth and innovation.

With immense pride, we present *The Odyssey of Milestones and Memories: The Federation of African Engineering Organizations (FAEO)*—a tribute to the achievements, aspirations, and collaborative spirit that define its journey.

This book captures more than historical achievements; it embodies the resilience, vision, and determination of African engineers who, from FAEO's earliest days, have worked to make a meaningful impact on the lives of millions. In a continent where infrastructure development, technological advancement, and sustainable practices are critical to economic and social progress, FAEO has positioned itself as a leader. By establishing guidelines, advocating for impactful policies, and building strategic partnerships, FAEO has elevated the engineering profession while advancing environmental protection, education, and innovation across Africa.

The Odyssey of Milestones and Memories invites readers into FAEO's history, showcasing its role in addressing Africa's pressing challenges—from clean water and energy access to sustainable urban development. Each milestone represents more than an achievement; it reflects the collective resolve of an organization that believes engineering has the power to transform societies and improve lives. The work of FAEO also exemplifies the growing interdependence of engineering and artificial intelligence (AI), underscoring the vital role engineers play in applying AI technologies that enable sustainable cities, resilient infrastructure, and efficient, accessible services for communities.

Today, engineering is integral to society not only in building infrastructure but also in pioneering smart systems that drive new forms of connectivity, energy efficiency, and resilience. FAEO's members harness AI tools and data-driven models to predict outcomes, optimize designs, and mitigate risks, all of which strengthen Africa's capacity to meet the demands of a dynamic and connected world. By collaborating with the best of AI and engineering practices, FAEO champions the ability to serve societies through sustainable solutions, adaptive technologies, and future-ready innovations.

The journey celebrated in this book has been shaped by the dedication and expertise of FAEO's leaders and members, whose unwavering commitment to an interconnected, resilient Africa forms the foundation of FAEO's growth. As Africa continues to progress, FAEO's mission to foster knowledge-sharing and develop innovative, AI-supported solutions suited to Africa's unique context remains ever-relevant. We invite readers to celebrate FAEO's legacy and join us in ensuring today's and tomorrow's engineers stay relevant, agile, and resilient.

In embracing the *HAIR* competences—*Helicopter view, Analysis, Imagination, and Reality*—we urge engineers and stakeholders alike to continuously learn, adapt to changing trends, and cultivate mental balance and emotional intelligence. Together, these qualities enable engineering professionals to tackle complex societal challenges and create solutions that genuinely improve lives.

With gratitude for the past and optimism for the future, we welcome you to explore FAEO's odyssey—a journey of purpose, perseverance, and profound impact. Join us in building a brighter, sustainable future for Africa through the dynamic synergy of engineering and artificial intelligence.

Eng. Kazawadi Papias Dedeki
The 6th President - FAEO & Past President and Chairman of Governing Council, Institution of Engineers Rwanda (IER)



Foreword



Africa is confronted with the paradox of wealth and poverty. The continent abounds in mineral richness and a diversity of natural resources, yet there continues to be economic stagnation, stunted growth and extreme deprivation. Day in, day out, we walk on

wealth and riches but are only capable of turning the surface soil to feed us from day to day without cultivating the ability to reach down the earth's belly and reap a richer harvest. Moreover, Africa has the youngest population among all continents with half of the region's population under 25. It has a high percentage of talented youth, but without the capacity to optimally convert the abundant stock of energy to employable skills. The youth are willing to risk the hazards of the high seas to get to where they perceive hope rather than stay at home to what they see as hopelessness.

These are humbling conditions that should set all of African origin on a path of deep reflection. How can we put the future generation on a better track?

We also observe that most development problems are engineering problems. Engineering is essentially the art of optimally using technology to solve practical problems for the benefit of society. It is primarily concerned with how to direct scientific discoveries to useful, economical and practical ends. It requires creative imagination to innovatively apply technology to solve problems that meet the needs and desires of society. At each step of our daily routine—from waking up in the morning through the working day to night-time retirement - the work of the engineering practitioner is visible. Thus, no nation can develop without

indigenous engineering practitioners. Indeed, in the more successful recently developed countries, engineering practitioners have been at the forefront of leadership. Hence my conviction that Africa is going nowhere without engineering and engineering practitioners. Therefore all engineering practitioners of African origin have a special duty to help to put our continent on a better trajectory for sustained socio-economic development that will lift the people from poverty and improve their quality of life.

This is the overarching mission of the Federation of African Engineering Organizations (FAEO) and the context for this book, *The Odyssey of Milestones and Memories: The Federation of African Engineering Organizations (FAEO)*

The journey of FAEO is a rich tapestry woven with milestones of progress and a wealth of shared memories. From its inception in 1972, FAEO has held steadfast to its mission: to unify, support, and empower engineering practitioners across the African continent in their pursuit of solutions for the unique and complex challenges faced by African communities. FAEO through the leadership of the engineering professional institutions, regulatory entities and advocacy groups has undertaken the following interrelated functions:

- ☑ Mobilizing engineering resources
- ☑ Maintaining Professional Standards
- ☑ Providing Civic Service
- ☑ Promoting and Recognizing Excellence

This book is an exploration of FAEO's vibrant past, a testament to its present impact, and a vision for its future. The narrative of FAEO began with a bold vision — one where African engineering practitioners could not only foster infrastructure, technology, and sustainability

for the continent but also work together to champion African expertise on the global stage. From promoting environmental stewardship and economic development to advancing innovations in clean energy and accessible healthcare, FAEO has played a pivotal role in the continent's progress. Each chapter of this book captures a defining period, a significant initiative, or a notable achievement that has left an indelible mark on African engineering.

This book is also a tribute to the individuals who have made this journey possible: the visionary founders, dedicated presidents, committed members, and partners who have shaped FAEO's path. Their collective efforts have forged a legacy of resilience, innovation, and commitment to progress. Through their leadership and dedication, FAEO has not only advocated for the engineering profession but has also been a catalyst for social and economic transformation across Africa. As we reflect on these achievements, we also look forward with anticipation. The challenges facing Africa today are complex, but they present opportunities for engineering practitioners to continue shaping a future where technology, sustainability, and human well-being intersect. FAEO remains dedicated to fostering collaboration, advocating for ethical and sustainable practices, and nurturing the next generation of African engineers who will carry this legacy forward.

FAEO envisions pushing to ensure that the continent has the requisite engineering resources for development and that those who practice engineering do so legally and competently. This includes the training and mentoring of the next generation of practitioners to keep pace with the growth and complexity of the profession and the continent's infrastructural development. Beyond

the young practitioner, sustaining the profession requires developing the pipeline by generating interest in engineering at the primary and secondary school levels with a special emphasis on girls.

FAEO can also mobilize all African indigenous engineering resources both within and outside Africa. Bringing into the fold the African diaspora would greatly support transforming "Individual Excellence" to "Group Excellence" and "Smart Individuals" to "Smart Institutions" to increase the capacity of engineering for the continent. Alongside, FAEO must undertake Engineering Evangelism to actively promote public awareness of the need for engineering and technology in all aspects of national activity and, in particular, to advocate the active use of engineering practitioners in governance at the local, district, state, national and continental levels, and the deliberate infusion of the leadership with engineering practitioners who will help to bring clarity and focus to our development problems.

Finally, FAEO must facilitate and promote the operation and growth of engineering and engineering practice; recognize and promote outstanding contribution to, and excellence in the practice of engineering; and recognize and promote the civic responsibility activities of engineering practitioners and organizations.

We invite you to join us on this journey through FAEO's history—a journey marked by growth, challenges overcome, and the persistent pursuit of a brighter future for Africa.

Ing. Dr. Boakye Kwame
Chairman of Ghana Engineering Council and Past
President, Ghana Institution of Engineering (GHIE)



Acknowledgments

The journey of the Federation of African Engineering Organizations (FAEO), spanning from 1972 to 2024, represents a remarkable legacy of vision, collaboration, and resilience. *“The Odyssey of Milestones and Memories”* could not have come to life without the support, dedication, and contributions of countless individuals and organizations who have championed the cause of African engineering and the sustainable development of our continent.

First and foremost, we extend our deepest gratitude to all past and present FAEO presidents, whose leadership has shaped and propelled FAEO through critical phases of growth. Each president, with their unique strengths and perspectives, has left an indelible mark, forging pathways that have strengthened the federation and its contributions to African engineering. We also thank the FAEO Secretariat and the team members, whose tireless efforts have brought our vision to fruition and sustained our progress, often behind the scenes.

Special appreciation goes to the engineers from various African nations at different times who collaborated, overcoming geopolitical and cultural difference laying the groundwork to create a united organization. Their dedication, commitment, and hard work form the backbone of FAEO’s achievements.

We are equally grateful to our member engineering organizations across the continent, who have remained FAEO’s steadfast partners through the years. Their collaboration and commitment to excellence have been pivotal in FAEO’s ability to fulfill its mission. Special thanks are extended to our partners and supporters globally, including the World Federation of Engineering Organizations (WFEO) and other international bodies, whose collaboration has strengthened our efforts and broadened our reach.

We also express sincere gratitude to individuals and companies that have financially supported the development of this book; Eng Ngonidzashe Musowe from Zimbabwe, Eng. Dr. Boakye Kwame and the leadership of Associated Consultants Limited in Ghana, your generous financial support has made a significant difference, and we truly appreciate your support in documenting its rich history and achievements through this book.

To my friend Doutzen Groothof for editing and everyone who has contributed to FAEO’s journey—whether as a leader, partner, or supporter—this book is a testament to your invaluable contributions, and it is with profound gratitude that we share this chronicle of our shared history.

A Lasting Impact: The Legacy of FAEO's Past Presidents



Eng. Dr. Martin Van Veelen,
2012-2014
(South Africa)



Engr. Mustafa B. Shehu,
2015-2016
(Nigeria)



Eng. Julius M. Riungu,
2017-2018
(Kenya)



Eng. Martin Manuhwa,
2019-2020
(Zimbabwe)



Ing. (Mrs.) Carlien Bou-Chedid,
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Eng. Kazawadi Papias Dedeki
2023-2024
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ABBREVIATIONS AND ACRONYMS

- 4IR** – Fourth Industrial Revolution
- A3P** – Africa, America, Asia and Pacific Accord
- AAP** – Africa, Asia and Pacific Accord
- ACE** – Africa Centre of Excellence
- ACI** – American Concrete Institute
- ADEA** – Association for the Development of Education in Africa
- ADR** – Alternative Dispute Resolution
- AEF** – African Engineering Forum
- AfCFTA** – African Continental Free Trade Area
- AfDB** – African Development Bank
- AETDEW** – Academy of Engineering & Technology of the Developing World
- ARSO** – African Organization for Standardization
- ASRIC** – African Scientific, Research and Innovation Council
- AU** – African Union
- AUC** – African Union Commission
- BIE** – Botswana Institution of Engineers
- CAFEO** – Central African Federation of Engineering Organizations
- CEC** – Commonwealth Engineers Council
- CHOGM** – Commonwealth Heads of Government Meeting
- CPD** – Continuing Professional Development
- CSO** – Civil Society Organization
- DFID** – United Kingdom Department for International Development
- EAC** – East African Community
- EACE** – Ethiopian Association of Civil Engineers
- EAFEO** – Eastern African Federation of Engineering Organizations
- ECOSOCC** – Economic, Social and Cultural Council of the African Union
- EIZ** – Engineering Institution of Zambia
- ESE** – Egyptian Syndicate of Engineers
- FAE** – Federation of Arab Engineers
- FEANI** – European Federation of National Engineering Associations
- FEIAP** – Federation of Engineering Institutions of Asia and the Pacific
- FIDIC** – International Federation of Consulting Engineers
- GECO** – Global Engineering Conference
- GhIE** – Ghana Institution of Engineering
- GIACC** – Global Infrastructure Anti-Corruption Centre
- HAIR** – Helicopter view, Analysis, Imagination, Reality
- IAPM** – International Academy of Project Management
- ICE** – Institution of Civil Engineers (UK)
- IER** – Institution of Engineers of Rwanda
- IET** – Institution of Engineers of Tanzania
- IHIP** – International Humanitarian Infrastructure Platform
- IoT** – Internet of Things
- IRC** – Infrastructure Report Card
- ISO** – International Organization for Standardization
- ISTIC** – International Science, Technology and Innovation Centre for South-South Cooperation (Malaysia)
- KIAC** – Kigali International Arbitration Centre
- MRAs** – Mutual Recognition Agreements
- NAFEO** – Northern African Federation of Engineering Organizations
- NGOs** – Non-Governmental Organizations
- NSE** – Nigerian Society of Engineers
- OIC** – Ordre des Ingénieurs du Cameroun
- PACS** – Project Anti-Corruption System
- PCP** – Programme for Country Partnership (UNIDO)
- PFL** – Practical Field Laboratories
- PFP** – Public-Private Partnership
- SAFEO** – Southern African Federation of Engineering Organizations
- SAICE** – South African Institution of Civil Engineers
- SDGs** – Sustainable Development Goals
- STEIC** – Social responsibility, Transparency, Ethical standards, Integrity, Collaboration
- STEM** – Science, Technology, Engineering, Mathematics
- UNDP** – United Nations Development Programme
- UNESCO** – United Nations Educational, Scientific and Cultural Organization
- UNIDO-AISMA** – United Nations Industrial Development Organization - Alliance for Industry and Smart Manufacturing
- UNOPS** – United Nations Office for Project Services
- UPADI** – Pan American Federation of Engineering Societies
- USA** – United States of America
- WAFEO** – Western African Federation of Engineering Organizations
- WCCE** – World Council of Civil Engineers
- WFEO** – World Federation of Engineering Organizations
- WIE** – Women in Engineering Committee

PART I- THE FOUNDATION

1. Engineering in Africa and the birth of FAOE

1.1 Historical Context Summary

The Federation of African Organizations of Engineers (FAOE) was established in 1972 to address the unique challenges facing Africa's engineering sector. It emerged in response to the continent's need for a unified platform to advance engineering science, support development, and amplify Africa's voice in global engineering discussions.

The FAOE's creation was inspired by the formation of the World Federation of Engineering Organizations (WFEO) in 1968, which sought to foster global collaboration in engineering. At the time, WFEO's membership was dominated by engineering organizations from North America, Europe, and parts of Asia, with African representation limited to a handful of nations such as Ethiopia, Senegal, Gabon, and South Africa. This reflected the fragmented state of Africa's engineering landscape, a consequence of colonial histories and post-independence disparities.

Prior to FAOE's formation, Africa engineering organizations operated largely in isolation. Countries like Egypt, Nigeria, Kenya, and South Africa had relatively

well-developed professional bodies due to colonial legacies, while many others struggled to establish even basic frameworks for engineering practice. This uneven development underscored the need for a continental body to foster cooperation, establish common standards, and address shared challenges.

The Organization of African Unity (OAU), established in 1963, issued a recommendation to create a Federation of African Organizations of Engineers, recognizing engineering as a critical tool for liberation and development. Supported by UNESCO and WFEO, this vision was formalized at a conference held in Nairobi in 1970, where representatives from 15 African countries laid the groundwork for FAOE's establishment. By November 1972, the FAOE was officially launched in Cairo, with Egypt chosen as the permanent headquarters.

1.2 Pan-Africanism and FAOE

FAOE's creation was deeply rooted in the ideals of Pan-Africanism. The Pan-African Movement, which began in 1900 and gained momentum with the 1958 All-African Peoples' Conference in Accra, Ghana, sought to unite Africans in their pursuit of self-reliance and economic development. Engineering, as a cornerstone of infrastructure development, was recognized as essential to this vision.

Led by visionary figures such as Kwame Nkrumah (Ghana), Julius Nyerere (Tanzania), and Patrice Lumumba (Congo), the Pan-African Movement aimed not only for political liberation but also for socio-economic transformation across Africa. These

leaders understood that true independence extended beyond politics and prioritized industrialization, infrastructure development, and technological self-reliance as the foundation for Africa's progress.

For example, Kwame Nkrumah envisioned Africa as a continent of unparalleled industrial and technological achievements, famously stating in his first speech at the foundation summit of the Organization of African Unity, Addis Ababa, 24 May 1963 that;

"We will accumulate machinery and establish steel works, iron foundries and factories; we shall link the various states of our Continent with communications; we shall astound the world with our hydroelectric power; we shall drain marshes and swamps, clear infested areas, feed the undernourished, and rid our people of parasites and disease. It is within the possibility of science and technology—'ENGINEERING'—to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments."

He championed projects like the Akosombo Dam that is termed as "Nkrumah's Baby" and the dream of development in Ghana. It remains at the center of debates and imaginations about nationhood, modernity, and development. Originally designed in the 1920s to serve the British metropole, the Volta River Project was reshaped by the country's founding leader Kwame Nkrumah in the 1950s. The revised project included a hydroelectric dam, an aluminum smelter to process Ghanaian mined bauxite, new cities, a deep sea harbor, and other infrastructural investments. The project became central to a modernization program that promised rapid industrialization and reducing the country's dependence on cocoa exports. Nyerere's policy of Ujamaa (African socialism) underscored the importance of rural development, with engineers playing a key role in water systems, transportation, and energy solutions for rural areas.

He prioritized technology transfer and local capacity-building to reduce dependency on foreign expertise.

Patrice Lumumba with his vision of Economic Sovereignty understood that Congo's immense natural wealth required local engineering expertise to ensure value addition and retain economic benefits. He championed African collaboration in technical and scientific fields to strengthen the continent's economic independence.

This combined vision of Pan-African leaders underscores the transformative power of engineering in building a united, self-reliant, and prosperous Africa. Their foresight laid the foundation for the continent to harness its resources and drive its own development.

The OAU further institutionalized this approach, with goals to eradicate colonialism, eliminate economic backwardness, and promote African solidarity. FAOE became a practical expression of these ideals, serving as a platform for engineers to collaborate on solving Africa's critical issues.

1.3 Objectives and Challenges

The FAOE's objectives were ambitious, reflecting a commitment to advancing engineering for Africa's benefit:

Promoting Engineering Science: Using engineering to address Africa's infrastructure deficits, resource management, and social needs.

Regional Collaboration: Fostering cooperation among member organizations to share knowledge and resources.

Capacity Building: Supporting professional development through training, technical assistance, and partnerships with international bodies such as UNESCO.

Advocacy and Representation: Providing a unified voice for African engineers in global discussions.

However, the FAOE faced significant challenges, including financial constraints and logistical difficulties. Member organizations varied widely in structure and capacity, reflecting the continent's diverse colonial histories. For example, Nigeria often carried a disproportionate financial burden, providing office space and operational support, while many other countries struggled to contribute.

1.4 Founding Milestones

The establishment of the Federation of African Organizations of Engineers (FAOE) was a culmination of key events and decisions made over several years. Each milestone in this process was significant in addressing the challenges of uniting Africa's engineering community and laying the foundation for a cohesive, Pan-African engineering organization. Below, these milestones are detailed to provide insight into the deliberations, actions, and decisions that shaped FAOE's creation.

1.4.1. The 1970 Nairobi Conference: Laying the Groundwork

In December 1970, a pivotal conference was convened at the UNESCO African Scientific Center in Nairobi, Kenya. Attended by representatives from 15 African countries—such as Algeria, Ghana, Kenya, Sudan, and Zambia—the conference brought together leaders from existing national engineering associations to discuss the feasibility of creating a continental engineering body.

This gathering, which also included observers from international organizations such as WFEO, UNESCO, and the Federation of Arab Engineers, marked the first step toward the formal establishment

of FAOE. Key topics of discussion included:

- ☑ The possibility of establishing a permanent Federation of African Organizations of Engineers.
- ☑ Introducing the role of this Federation in the future.
- ☑ The role that the engineering profession can contribute in developing countries.
- ☑ Areas of cooperation between Engineering Organizations, Professional Engineer specifications, and the profession's code of honor.

This resulted in several recommendations:

- ☑ The establishment of a Federation of African Organizations of Engineers.
- ☑ Egypt's election as the chair of the Executive Committee to guide the preparatory phase.

The Nairobi Conference underscored the importance of engineering in Africa's development and laid the strategic groundwork for FAOE's creation.

1.4.2. 1971 Lagos Meeting: Addressing Challenges

The progress made at the Nairobi Conference faced challenges when financial and logistical issues emerged. The Executive Office met in Lagos, Nigeria, on November 29–30, 1971, to address these concerns and finalize arrangements for FAOE's launch. The Lagos meeting highlighted two primary issues:

Funding: Many African countries struggled to finance participation in regional initiatives, limiting engagement.

Representation: Uneven development of national engineering bodies across the continent led to disparities in representation and involvement.

To overcome these obstacles, the Egyptian Syndicate of Engineers offered to cover travel expenses for one representative from each country and provide accommodation for the duration of the inaugural assembly. This gesture ensured the participation of member states and reinforced Egypt's leadership role in the process.

1.4.3. The 1972 Cairo General Assembly: The Birth of FAOE

The FAOE was formally established during the General Assembly held in Cairo, Egypt, from November 20–24, 1972. This assembly was attended by delegates from eight African countries, including Kenya, Libya, Morocco, Nigeria, Sierra Leone, Sudan, and Uganda, along with observers from WFEO, UNESCO, and the Federation of Arab Engineers. The outcomes of this historic meeting included:

Approval of the Draft Constitution: Delegates agreed upon an 18-article constitution that defined FAOE's name, objectives, governance structure, and funding mechanisms. Key provisions emphasized the promotion of engineering for humanity's benefit, fostering regional cooperation, and advocating for Africa's engineering community on the global stage.

Election of Leadership: Egypt was elected as the permanent headquarters of FAOE, with Nigeria assuming the presidency and Egypt serving as the secretariat. The Executive Committee was composed of representatives from Kenya, Morocco, Sierra Leone, and other regions to ensure balanced representation.

Establishment of Governance Structures: The assembly created an Executive Office and a General Assembly as governing bodies, each tasked with ensuring

FAOE's effective operation and regional collaboration.

This assembly marked a defining moment in African engineering history, signifying the transition from isolated national efforts to a unified continental vision.

1.4.4. Early Steps Toward Regional Engagement

The first actions taken by FAOE demonstrated its commitment to fostering collaboration and addressing Africa's development challenges:

Capacity Building: FAOE immediately prioritized professional development through training workshops, conferences, and partnerships with international bodies such as WFEO and UNESCO.

Participation in Global Forums: FAOE representatives participated in WFEO events, ensuring that Africa's engineering priorities were recognized in global discussions.

Support for National Associations: FAOE worked to strengthen member organizations, particularly in countries where engineering bodies were nascent or under-resourced.

However, FAOE's early operations were hampered by financial constraints, with many member states unable to contribute their dues. The Nigerian Society of Engineers, for example, provided critical support by hosting FAOE events and funding administrative costs during this period.

1.4.5 Reflecting on the Milestones

The milestones leading to FAOE's establishment represent a collective effort by Africa's engineering community to unite under a shared vision. From the initial

discussions in Nairobi to the formalization in Cairo, these events showcased the resilience and determination of African engineers to overcome challenges and create a platform for regional collaboration. The foundational milestones also set a precedent for the organization's future evolution. As FAOE grew, the lessons learned during its formation—particularly the importance of inclusivity, resource mobilization, and clear governance structures—remained central to its operations. These principles would later guide the transformation of FAOE into the Federation of African Engineering Organizations (FAEO) in 2012.

1.5. Legacy of FAOE

Despite resource constraints, FAOE provided a critical platform for collaboration among African engineers, advocating for infrastructure development

and professional standards. It contributed to WFEO activities, hosted regional seminars, and supported capacity-building initiatives. However, these financial and operational challenges limited its long-term impact, highlighting the need for greater institutional capacity and integration. These issues set the stage for its transformation into the Federation of African Engineering Organizations (FAEO) in 2012.

PART II- THE TRANSFORMATION ERA: 1972–2012

2. The transition from FAOE to FAEO

2.1 Early Programmes of FAOE

During its formative years, the Federation of African Organizations of Engineers (FAOE) played a pivotal role in fostering engineering collaboration and advancing the African engineering agenda. Below is a concise summary of its early programmes, key events, and achievements:

Key Milestones and Activities

(a) Admission into WFEO (1989):

FAOE gained formal recognition as an international member of the World Federation of Engineering Organizations (WFEO) during its General Assembly in Prague.

(b) Meetings to Strengthen Collaboration (1989–1991)

FAOE held a series of key meetings, such as:

Egypt, 1989: Engrs. I.K. Inuwa, Olu Awoyinfa, and Hamad Kaddah convened to strategize FAOE's direction.

Washington, USA, 1990: FAOE was represented at a WFEO meeting by Engrs. I.K. Inuwa and Olu Awoyinfa.

Arusha, Tanzania, 1991: The General Meeting emphasized aligning FAOE with global engineering

organizations like UPADI and FEANI and outlined promotional activities to expand membership.

(c) UNESCO -WFEO Engagements (1991–1994)

FAOE actively participated in international forums, enhancing its global presence:

UNESCO Meeting in Paris (1991): Focused on collaboration with industry leaders.

WFEO Executive Committee Meetings: Representatives, including FAOE's Secretary-General Engr. Olu Awoyinfa, attended sessions in Helsinki (1992), Cuba (1993), and Jordan (1994). Topics included sustainable development and increasing African contributions to global engineering discussions.

(d) Seminars and Regional Collaboration

Nairobi Seminar (1994): Held at the Jomo Kenyatta International Conference Centre, this seminar focused on "The Engineer in Sustainable Development in Africa." Sponsored by UNESCO, the Nigerian Society of Engineers, and other partners, it showcased FAOE's commitment to addressing continental challenges.

ANSTI Meeting in Nairobi (1993): Discussions with NGOs like DAAD explored funding for joint projects to enhance Africa's technological base.

2.2 Challenges and Financial Struggles

Unfortunately while FAOE achieved notable milestones, multiple circumstances and constraints plagued

its operations preventing the Federation of African Organizations of Engineers (FAOE) from being active in achieving its goals. For example:

Financial constraints; Member states failed to pay annual dues, with Kenya being the only contributor in 1994.

The Nigerian Society of Engineers (NSE) shouldered the financial burden, providing office space, staff salaries, and logistical support. It also facilitated FAOE's visibility by hosting the Secretariat in Abuja, Nigeria, and creating its first functional website.

The activities of FAOE nose-dived in 1996.

2.3 Emergence of African Engineering Forum-AEF

By the 2000s, the limitations of FAOE's structure became apparent. While it had laid a foundation for collaboration, its capacity to address emerging challenges such as climate adaptation, cross-border infrastructure, and sustainable development was constrained.

In 2001, a faction of African engineers established the African Engineering Forum (AEF) as a parallel organization to FAOE. AEF focused on rapid responses to regional engineering needs, offering a more agile and decentralized approach. However, this duplication of efforts led to fragmentation, dividing resources and energies that could have otherwise strengthened FAOE.

2.4 Reviving the Federation

2003- In this year in Tunis, a meeting of FAOE was held to revive the Federation.

2005- The 2005-FAOE General Assembly

At the 2005 FAOE General Assembly in Nairobi, officials were elected with Eng. Ogwayo from Kenya becoming the president with three (3) Vice-presidents; (North Africa) Tunisia, (Southern Africa) Zimbabwe and (West Africa) Ghana, Nigeria retained the position of Secretary-General.

Since this meeting in Kenya, there has been no noticeable activity for FAOE except for the meetings held in Ghana and Nigeria, every year under the umbrella of the FAOE, at the annual conferences of the engineering organizations of the two countries. This situation continued until 2011.

2011- At the 2011 World Engineers' Convention held in Geneva, Switzerland; representatives of African engineering institutions held a meeting on 7th September, 2011 and resolved among others to hold FAOE General Assembly in Nairobi, Kenya in April, 2012.

By 2012, it had become clear that Africa needed a unified platform to address its Pan-African engineering vision effectively. The African engineering institutions had fragmented and there had emerged groupings along FAOE and AEF. The West and East African group were aligning with FAOE, the Southern African group were aligning more with AEF while the institutions from Central Africa were somehow indifferent and those from North Africa became more aligned to the Federation of Arab Engineers. FAOE was breaking down.

Fortunately, wisdom took over and this realization of a possible breakdown resulted in reconciling different visions and priorities required to foster a shared purpose which led to the merger of FAOE and AEF, forming the Federation of African Engineering Organizations (FAEO)

2.5 Birth of FAEO - May 8, 2012

On May 8, 2012, the General Assembly convened in Nairobi to formalize the merger of FAOE and AEF.

A new name of FAEO was proposed and unanimously accepted and adopted. Special recognition goes to the proposer of the name Eng. Rosemzy Kongu of Kenya. The establishment of FAEO marked a new era of Pan-African collaboration and the entire engineering family in Africa speaking with one voice as an international member of the World Federation of Engineering Organizations (WFEO).

During this meeting several countries were represented, namely; The Republic of Benin, Burkina Faso, Cameroon, Chad, Gambia, Ghana, Kenya, Nigeria, Malawi, Republic of South Africa, Senegal, Sierra Leone, Tanzania, Togo, Uganda and Zambia.

The Constitution of the hitherto Federation of African Organizations of Engineers (FAOE) was amended in full recognition of the legacy and good work of the FAOE and the Africa Engineers Forum (AEF). FAEO's mandate emphasized addressing Africa's pressing engineering challenges, promoting technological advancement, and fostering sustainable growth. Today, it represents African engineering interests on international platforms, continuing the legacy of FAOE while charting a path for the future.

2.6 Rebranding Process: Challenges and Opportunities

The transition from FAOE to FAEO was not without challenges. Having existed for nearly four decades,

FAOE had established its identity, relationships, and processes, all of which needed reevaluation during the merger. Key challenges included:

Institutional Integration: Merging FAOE and AEF required harmonizing two distinct structures, governance models, and member bases.

Resource Management: Aligning financial and operational systems posed logistical difficulties.

Ideological Alignment: Reconciling different visions and priorities required fostering a shared purpose

Despite these hurdles, the re-branding also presented opportunities. FAEO emerged as a unified voice for African engineers, enabling more effective representation in global discussions at WFEO, the African Union, and beyond. The process also allowed the organization to refocus its mission on addressing Africa's evolving needs, such as sustainable infrastructure and technological innovation.

2.7 Conclusion

The journey from FAOE to FAEO reflects the evolution of African engineering from fragmented beginnings to a unified and influential force. By embracing collaboration, adapting to new challenges, and leveraging its Pan-African heritage, FAEO has positioned itself as a key player in shaping Africa's future.

2.8 Honoring the Pioneers of Progress

2.8.1 The Engineers Behind FAEO's Formation

Looking back at FAOE's establishment in 1972 and forward, the federation could not have been established

without the drive of visionary engineers who shaped FAEO's beginnings recognized the critical role of engineering in Africa's development. These engineers from various African nations collaborated, overcoming geopolitical and cultural differences laying the groundwork to create a united organization.

Some engineers took on organizational leadership roles, spearheading the formulation of FAEO's objectives and operational framework while others contributed as technical experts, developing strategies for addressing Africa's infrastructure and technological needs and many acted as ambassadors, promoting the importance of a unified African engineering body within their respective countries and internationally.

These engineers include;- Eng Hamad Kaddah, Egypt –1st President, Eng. Dr. Mohammed A. Bishr, Egypt, Eng. Fathy Ahmed Azzam, Egypt, Eng. Fathi Thabet, Tunisia, Eng. M.P. Grant, Zimbabwe, Eng. Prof. P. A. Oluwande, Dr. Salah Abdel Kareen, Egypt, Eng. Ife Akintunde, Nigeria, Eng. Dr. F. A. Shonubi, Nigeria, Eng. E. T. Takagi, Zimbabwe, Eng. A. W. Ogwuayo, Kenya, Eng. Olu Awoyinfa, Nigeria, Eng. Rwimi Muftah, Libya, Eng. Hammed Kaddah, Egypt, Eng. Gueye Manadou Mansour, Senegal, Eng. Ahmed Gouitaa, Morocco, Eng. Aziz Ahmed Kamil, Sudan, Eng. Raj. H. Prayag, Mauritius, Eng. Dr. S. E. Kiggundu, Uganda, Eng. Tahen Dali or Abdalla, Libya, Eng. Kohti Ali, Algeria, Eng. Okoumou Medard, Congo Brazzaville, Eng. Konate Lanoine, Cote D'ivoire, Eng. J. Kofi Asare, Ghana, Eng. Dr. Negussie Tebedge, Ethiopia, and Eng. Mrs. W. Andre, Zimbabwe, Eng. Felix Atume –Nigeria, Eng. Ibrahim Khaleel Inuwa (late)Nigeria , Eng. Manglin Pillay,-SAICE, Eng. Alade Ajibola-Nigeria, Eng. Kwesi Kwakwa- Ghana, Eng. Rosemary Kongu -Kenya, Ing. (Mrs.) Carlien Bou-Chedid -Ghana and Martin Manuwha -Zimbabwe

Their legacy continues to inspire the next generation of engineers to address Africa's challenges through

innovation and collaboration

2.9 The constitution

At the same General Assembly of 8th May 2012 in Nairobi, Kenya, The FAEO constitution was unanimously accepted and adopted.

2.10 FAEO Core Mission

FAEO's mission was crafted around five core areas:

- 1. Serving Humanity Through Technology and Innovation:** FAEO is dedicated to leveraging engineering expertise to address critical societal needs across Africa. By encouraging innovative approaches to engineering problems, FAEO helps enhance quality of life, aiming for solutions that directly impact communities positively.
- 2. Representing the African Engineering Profession Globally:** As Africa's unified engineering voice, FAEO actively engages in international forums, including the World Federation of Engineering Organizations (WFEO) and the African Union. This representation highlights Africa's engineering potential and ensures that the continent's unique needs are addressed on the world stage.
- 3. Promoting the Value of Engineering in Society:** FAEO serves as the singular, authoritative voice of the engineering profession in Africa. This unification not only strengthens the profession's identity but also raises awareness of the value and impact of engineering on society.
- 4. Synergizing Resources for Sustainable Development:** In partnership with key stakeholders, FAEO pools resources and expertise to promote sustainable development practices. By

fostering best practices and integrating sustainable principles, FAEO helps African engineers design projects that respect environmental limits while driving economic growth.

5. Building Human Resource Capacity for Sustainable Development: FAEO is committed to building a skilled engineering workforce that will enable Africa to achieve Sustainable Development Goals. Through training programs and capacity-building initiatives, FAEO prepares engineers to tackle Africa's challenges with a focus on the built environment, infrastructure, and resilient development.

As a result of this mission, FAEO has become a powerful unifying force, bringing together engineers across the continent to share knowledge, develop solutions, and coordinate projects that cross national boundaries. By addressing the structural limitations that previously restricted its predecessor, FAOE, FAEO now embodies a Pan-African ideal of engineering for development. Its commitment to fostering collaborative progress positions FAEO as a leader in advancing infrastructure, promoting climate resilience, and supporting sustainable economic growth across Africa. This marks a new era for engineering on the continent, driven by a cohesive vision for progress and a commitment to collective impact.

2.11 Regional Representation under the FAEO

The FAEO Constitution, unanimously accepted and adopted, formally acknowledged five regional Federations. These regional Federations allowed FAEO to harness localized strengths, unify strategic priorities, and streamline representation on a continental and global scale. The five regional Federations, and the typical countries involved in each as defined by the

Constitution, are:

1. Central African Federation of Engineering Organizations (CAFEO)

Countries typically include Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, and São Tomé and Príncipe.

2. Eastern African Federation of Engineering Organizations (EAFEEO)

Countries generally represented include Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, and Uganda.

3. North African Federation of Engineering Organizations (NAFEO)

Countries in this Federation include Algeria, Egypt, Libya, Mauritania, Morocco, and Tunisia and Sudan

4. Southern African Federation of Engineering Organizations (SAFEEO)

Comprising: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, and Zimbabwe, Seychelles, Mauritius and Madagascar

5. West African Federation of Engineering Organizations (WAFEEO):

This region typically includes Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo



Figure 1-Regions of the Federation of African Engineering organizations

By aligning countries with regional similarities and challenges, FAEO enhances collaboration, capacity-building, and policy development across Africa's engineering landscape.

2.12 FAEO Governance

The FAEO Constitution outlines a structured organization designed to facilitate coordinated engineering efforts across Africa, promote sustainable development, and represent Africa in global engineering forums. Here's a summary of its main Governance Organs:

2.1.1 General Assembly:

This is the highest decision-making body, consisting of representatives from all FAEO member countries. It convenes to review policies, sets strategic directions, and approves the budget and major organizational changes.

2.1.2 The Executive Council

The Executive Council is responsible to the General Assembly, It consist of: The President, the President-Elect, the immediate Past President, Five Vice Presidents who are the Regional Chairs (or Presidents) of NAFEO, SAFEEO, WAFEO, CAFEO and EAFEO

2.1.3 Executive Board:

The Executive Board consists of the following voting members: President, President-elect, Immediate Past President and Treasurer. The Executive Director who has no voting right is the Secretary. The Executive Board appoints the Internal Auditor and the Executive Director. The Executive Director informs all Federation Members of the actions of the General Assembly, the Executive Council, and the Executive Board

2.1.4 Regional Federations:

FAEO operates through five regional bodies: CAFEO, EAFEO, NAFEO, SAFEEO, and WAFEO. These regional federations facilitate localized initiatives, address regional engineering challenges, and coordinate with the central FAEO leadership to ensure aligned actions across all regions.

2.1.5 Standing and Working Technical Committees:

FAEO's organizational structure includes several standing technical committees and working groups that support its operational goals and governance. These include the Awards Committee: Finance Committee; Nomination Committee and Membership Committee. Working Technical Committees: focuses on specific functional areas like education, sustainable development, capacity building, Women in Engineering, Young Engineers and innovation. These committees provide expertise, conduct research, and implement programs aligned with FAEO's mission.

2.1.6 Secretariat:

The secretariat serves as an administrative hub of FAEO, managing communications, records, and logistical support. The Secretariat works under the Executive Board to support the organization's operations and the execution of programs. The FAEO Secretariat is led by

the Executive Director as the accounting officer. Since FAEO establishment the secretariat has been under the leadership of Bernard Ordams, Ovens F. Ehimatie, and Joshua Egube all from Nigeria as Executive Directors.

2.1.7 Advisory Board Committees:

Comprising seasoned professionals and former leaders, this council advises the Executive Board on strategic issues, ensuring continuity and leveraging experience. This structure allows FAEO to operate effectively at multiple levels—locally within each region, continentally across Africa, and globally through international representation—facilitating cohesive, impactful engineering efforts across the continent.

2.2 Regional Federation Governance

Each regional federation under the Federation of African Engineering Organizations (FAEO)—CAFEO, EAFEO, NAFEO, SAFEO, and WAFEO—is governed by a structure that allows it to operate semi-independently while remaining aligned with FAEO’s overarching mission and constitution. Here’s a breakdown of how these regional federations are typically governed:

2.2.1 Regional General Assembly:

Each regional federation has a General Assembly made up of representatives from the national engineering bodies within that region. The Assembly serves as the highest decision-making body for the region, discussing regional needs, setting objectives, and aligning with FAEO’s strategic goals.

2.2.2 Regional Executive Board:

This board comprises elected officials such as the President, Immediate Past President, President Elect, Secretary, and Treasurer specific to the regional federation. The board is responsible for executing decisions made by the Regional General Assembly,

overseeing day-to-day operations, and ensuring regional initiatives are consistent with FAEO guidelines.

2.2.3 Working Committees:

Regional federations may establish committees or working groups focused on critical areas, such as capacity building, education, ethics, Women in Engineering, Young Engineers, and sustainable development. These committees address region-specific challenges and report back to both the regional executive board and, where appropriate, FAEO.

2.2.4 Secretariat:

Each regional federation has a Secretariat that manages administrative functions and supports the implementation of programs, coordination with FAEO, and communication with local engineering bodies.

2.2.5 Protocol and Coordination with FAEO:

Regional federations operate within the framework set by the FAEO Constitution, which includes protocol guidelines, reporting standards, and coordination with the FAEO Executive Board.

Adjustments to protocol, secretariat, and operations are made to ensure that each federation functions effectively while upholding FAEO’s Pan-African goals.

These governance structures allow regional federations to address local needs autonomously while contributing to FAEO’s collective mission on the global stage.

PART III- ERA OF GROWTH (2012-2024)

3. Period of progress and influence: 2012–2024

The Federation of African Engineering Organizations (FAEO) has emerged as a central figure in Africa's drive toward sustainable development, resilience, and economic transformation. Since its restructuring in 2012, FAEO has taken bold steps to adapt to the evolving landscape of engineering, policy, and technology, responding to complex challenges with a clear commitment to promoting Africa's engineering capabilities on the global stage. This chapter explores FAEO's journey from 2012 to 2024, marked by visionary leadership, strategic partnerships, and pioneering initiatives that have strengthened its influence across Africa and beyond.

3.1 A New Beginning: Restructuring Vision for Unity

FAEO's 2012 restructuring marked a pivotal moment in its history, establishing a clear mission to unify African engineering organizations and prioritize sustainable development. This shift laid the foundation for what would become a decade of transformative leadership and ambitious projects. Guided by a new constitution, FAEO focused on building internal cohesion and establishing a presence within influential African and global institutions. Early initiatives under this structure fostered partnerships with the African Union (AU), the United Nations, and the World Federation of Engineering Organizations (WFEO), laying the groundwork for FAEO's expanded role in international dialogues on engineering, science, technology, and development.

The 2013 FAEO Action Plan was among the first major steps forward, mapping out a strategy to position FAEO as a central player in Africa's development narrative. This plan led to the "Abuja Declaration" with WFEO, solidifying FAEO's role as a global partner and affirming its commitment to fostering regional and international collaboration. Over the years, FAEO's presidents have built on these foundations, creating lasting change through initiatives that address Africa's engineering needs and amplify its voice on the global stage.

3.2 Strengthening Influence and Partnerships

From 2012 onwards to date, FAEO has focused on establishing Africa's engineering sector as a pillar of sustainable development, reinforcing its relationships with key stakeholders. Partnerships with the African Union Commission (AUC), the African Continental Free Trade Area (AfCFTA), and the African Organization for Standardization (ARSO) have enabled FAEO to influence policy in ways that benefit engineers and engineering education across the continent.

A significant focus of FAEO's efforts has been on aligning Africa's development agenda with engineering solutions that address infrastructure, technology, and environmental challenges. Under successive leaders, FAEO has strengthened Africa's engineering regulatory frameworks, promoted the harmonization of education standards, and emphasized the importance of building engineering capacity to achieve the continent's ambitious goals. Initiatives like Africa Engineering Week and Africa Engineering Conference and the establishment of engineering forums have encouraged

collaboration among institutions, governments, and private sectors, sparking discourse around regional challenges and innovative solutions.

3.3 Pioneering Projects for Sustainable Development

FAEO's emphasis on sustainable development has materialized in projects that assess and address Africa's infrastructure and environmental needs. For example, the Infrastructure Report Card (IRC) project, launched in 2019, evaluated Africa's infrastructure readiness and highlighted areas where engineering solutions could make the most impact, with a deep focus on Sub-Saharan Africa. The project underscored FAEO's role in advocating for sound infrastructure policies and showcased engineering as a critical factor in driving Africa's economic development and social well-being. World Engineering Day, established through FAEO's collaboration with WFEO and UNESCO among others, brought further attention to the contributions of African engineers on the international stage. Through World Engineering Day, FAEO has promoted Africa's unique perspective on sustainable development and highlighted the importance of resilience and environmental stewardship in addressing the continent's pressing challenges.

3.4 Inclusive Leadership and Diversity in Engineering

FAEO's commitment to inclusivity has been a key theme of its modern evolution. Efforts to increase

the representation of women in engineering, young engineers, and emerging technologies have shaped FAEO's approach to leadership and organizational development. The establishment of the Women in Engineering Forum and the introduction of youth mentoring programs have created opportunities for underrepresented groups to participate actively in Africa's engineering community, ensuring that FAEO's impact reaches across generations and demographics.

As FAEO has grown, it has also focused on improving its governance structures to ensure transparency, accountability, and responsiveness to member organizations. This evolution has helped FAEO foster an environment where diverse voices contribute to decision-making and drive forward innovative solutions.

3.5 Building Resilience for the Future

In recent years, FAEO's work has increasingly focused on developing sector-specific expertise to tackle Africa's unique challenges in energy, transportation, construction, and IT, manufacturing, ADR, Water, sanitation, extractive industries and creating a tailored strategy that addresses both immediate needs and long-term goals for resilience.

Each FAEO president from 2012 to 2024 has contributed to this vision, bringing unique strengths to their leadership and establishing a legacy of progress and innovation.

PART IV- LEADERSHIP- KEY MILESTONES: 2012-2024

4. Leadership and Key Milestones 2012 - 2024

From its inception in 1972 until 2012, the Federation of African Engineering Organizations (FAEO) faced several challenges that limited its impact. First, the political landscape across Africa, marked by frequent instability and transitions, made it difficult to foster unified continental efforts. Furthermore, limited funding and resource allocation impeded FAEO's ability to execute large-scale projects and provide consistent programming for engineers.

Fragmented regional participation also contributed to FAEO's slow development, with some countries forming separate organizations, such as the African Engineering Forum (AEF), to address regional needs rather than strengthening the existing FAEO structure. As a result, FAEO struggled to gain cohesive momentum across Africa until its 2012 restructuring into FAEO, which marked a shift towards a more integrated, Pan-African approach that aligned with the continent's emerging development goals.

This restructuring allowed for greater collaboration and the establishment of a united, more efficient organizational framework focused on regional cooperation and sustainable development in Africa.

4.1 Collective achievements

The achievements of FAEO are a testament to the collaborative legacy shaped by its leaders over the decades. Each president has carried forward an enduring

mission to unify and advance engineering across Africa, building on the foundation laid by their predecessors. Since its inception, FAEO has faced challenges, but each leader's contributions added continuity and resilience, collectively propelling FAEO's growth. From establishing stronger partnerships to enhancing professional standards, FAEO's success is a cumulative outcome of strategic continuity rather than individual tenure. Each president's efforts have amplified a shared vision, demonstrating the power of united, progressive leadership across generations.

FAEO's journey from its 40-year-old foundation to its prominent position today reflects a sustained commitment to addressing Africa's engineering needs through a seamless leadership transition. Every president has fostered collective progress, honoring FAEO's legacy and adapting to meet evolving challenges, ensuring that each contribution harmonizes with the federation's long-term objectives.

4.2 Defining Moments: Presidents and Their Legacies

Since the foundation for FAEO's resurgence in 2012 when FAEO adopted a new constitution, and formally solidified its mission to unify African engineering organizations, promote sustainable development, and advance the engineering profession continent-wide, the Federation experienced transformative leadership under various presidents, each of whom left a distinct mark on its growth and impact across Africa, it has made substantial achievements across several presidencies. Each leader brought unique strengths and directed FAEO through critical advancements, establishing it as a central player in the African and global engineering

arenas. Here's an overview of key milestones and the leadership contributions over the years: From 2012 to 2024, FAEO was led by six presidents from different countries. They include:

1. Eng. Martin Van Veelen, 2012-2014 (South Africa)
2. Engr. Mustafa B. Shehu, 2015-2016 (Nigeria)
3. Eng. Julius M. Riungu, 2017-2018 (Kenya)
4. Eng. Martin Manuhwa, 2019-2020 (Zimbabwe)
5. Ing.(Mrs.)Carlien Bou-Chedid, 2021-2022 (Ghana)
6. Eng. Kazawadi Papias Dedeki 2023-2024 (Rwanda)

4.3 Each President's Mark on FAEO's Journey

The following represents only a glimpse into the extensive achievements of FAEO presidents from 2012 to 2024, each of whom has contributed significantly to the organization's growth and impact. From fostering international recognition to advancing sustainable development, engineering education, and infrastructure, these leaders have driven initiatives that span countless sectors and have created lasting change across Africa. These highlighted accomplishments merely scratch the surface of the countless milestones achieved under each presidency.

1. Eng. Martin Van Veelen (2012–2014)

The first president following the 2012 restructuring, Prof. Eng. Martin Van Veelen of South Africa shall never be forgotten. Eng. Martin Van Veelen took over an organization that had no funds and had to secure funding from the South African Institution of Civil Engineers to enable FAEO to operate during his term of office

Eng. Martin Van Veelen prioritized establishing FAEO as a recognized entity within Africa and internationally. His term focused on building regional partnerships,

gaining AU recognition, and strengthening FAEO's organizational foundation. Key initiatives included developing the 2013 FAEO strategy, which outlined steps for establishing FAEO's regional and international presence, and signing the "Abuja Declaration" with the World Federation of Engineering Organizations (WFEO) to assist countries where there were no professional engineering organizations in creating such organizations and formalize FAEO's global affiliations.

2. Engr. Mustafa B. Shehu (2015–2016)

Following Van Veelen, Engr. Mustafa B. Shehu from Nigeria reinforced FAEO's ties with international institutions. During his tenure, FAEO signed an MoU with WFEO on 23rd June 2016 defining the relationship between the two organizations in respect to organizing the UNESCO African Engineering Week, which is a WFEO initiative. Other major achievements FAEO recorded during his tenure were the historic signing of the MoU on Technical Cooperation between FAEO and the African Union Commission (AUC) on 15th December 2016. In principle, the General priorities in this MoU were among others: (a). to create a harmonized engineering education qualification framework for ease of professional mobility within African countries as well as other countries outside the continent, to be developed by FAEO and supported by THE COMMISSION; (b). to create harmonized technical standards and building codes for all infrastructures in Africa for the improvement of the livelihood of communities; and (c). to build Engineering capacity by strengthening technical institutions, supporting and empowering Women and Young Engineers to develop high level skills to participate in the implementation of the Sustainable Development Goals (SDGs) in their societies. During his tenure while addressing the 3rd UNESCO Africa Engineering Week he declared that henceforth, FAEO will be holding its annual conference simultaneously with the African Engineering Week

Celebration. He also brought the idea of rotating the meetings and leadership of FAEO from region to region and from country to country to spread sense of belonging to more member countries. The Federation under his leadership gained a lot of recognition and respect in the WFEO which resulted in his appointment as Chairman of Awards Committee, Member of the President's Advisory Board, Member of Finance Committee and Member of the Strategic Planning Committee by the then President of WFEO Dr. Jorge Spitalnik from Brazil. These positions were also given to him under the presidency of Dr. Marlene Kanga from Australia. This resulted in the decision of the FAEO General Assembly in 2016 to endorse him to contest for the position of the President-elect of WFEO or Executive Vice President at the next General Assembly of WFEO that took place in Rome, Italy in October 2017. The WFEO election in 2017 turned out to be very tough with candidates from China and USA in addition to Shehu from Nigeria. It ended up with Gong Ke from China clinching the position of President-elect, Reggie Vachon from USA clinching the position of Executive Vice President while Shehu could not make it to any position. However, being a dogged fighter, this did not demoralize Shehu and he therefore re-strategized to contest again in Melbourne in 2019 for the position Executive Vice President. He won with a wide margin against his opponent. Two years later, in March 2022 (supposed to be October 2021 but was postponed) to 2022 due to COVID) he contested for the President-elect position, which he won un-opposed. Thus, in October 2023 he was inaugurated as President of WFEO, making him the first person from Sub-Saharan Africa to lead the global engineering body. This has brought a lot of pride to FAEO and happiness to the African engineering family.

3. Eng. Julius M. Riungu (2017–2018)

During his presidency from 2017 to 2018, Eng. Julius Marimi Riungu spearheaded transformative initiatives within the Federation of African Engineering

Organizations (FAEO), enhancing its governance, capacity, and influence across the continent. Riungu initiated projects to develop standardized engineering curricula, establish an African Engineering Council, and strengthen regulatory bodies across member states. His vision also extended to creating regional innovation hubs to bridge the gap between academia and industry while advocating for gender equality through initiatives like the Women in Engineering Forum, promoting inclusivity and leadership opportunities for women in engineering.

Eng. Riungu's leadership was marked by a strong focus on capacity building and collaboration. He partnered with international organizations, including the Royal Academy of Engineering (RAEng) and the UK Department for International Development (DFID), to enhance FAEO's governance and operational capacity. These collaborations resulted in initiatives like the GCRF Africa Catalyst Programme, which improved engineering education and strengthened professional institutions in Sub-Saharan Africa. He also prioritized infrastructure development by preparing an Infrastructure Report for Africa in collaboration with engineering councils and the United Nations Office for Project Services (UNOPS). This report laid the groundwork for addressing critical infrastructure challenges across the continent, ensuring data-driven decision-making and strategic investments.

A staunch advocate for inclusivity, Eng. Riungu championed gender equality in engineering, introducing Women in Engineering Day and hosting forums to highlight the contributions of women in the profession. His presidency also saw the successful organization of two Africa Engineering Weeks and Conferences, focusing on waste management in Kigali 2017 and the blue economy in Mombasa 2018, further incorporating discussions on gender inclusivity and sustainable development. Through these efforts, Riungu positioned FAEO as a vital driver of engineering

excellence and collaboration in Africa. His contributions left an enduring legacy, strengthening FAEO's foundation and emphasizing the role of engineering in fostering a more sustainable and equitable future for the continent.

4. Eng. Martin Manuhwa (2019–2020)

Eng. Martin Manuhwa, a visionary distinguished leader from Zimbabwe, brought transformative leadership to FAEO during his presidency. With a strategic focus on sustainable infrastructure, he championed initiatives that elevated FAEO's global standing and operational capacity. His leadership launched the groundbreaking Infrastructure Report Card (IRC) project, a critical assessment tool for African infrastructure aimed at guiding policymakers toward informed, sustainable decisions.

A staunch advocate for the role of engineering in sustainable development, Manuhwa spearheaded FAEO's global outreach through diplomatic engagements. These included collaborations with UNESCO member countries, the World Federation of Engineering Organizations (WFEO), and over 80 engineering organizations worldwide, culminating in the proclamation of March 4 as World Engineering Day for Sustainable Development.

Under his tenure, FAEO adopted transformative reforms, including the formalization of membership categories, introducing International Members and Distinguished Fellows. These changes were embedded in the amended FAEO Constitution and supported by the introduction of FAEO's first Rules of Procedure which was most part his efforts. His leadership also laid the foundation for robust governance systems, with FAEO's first Strategic Plan, HR and Financial Manuals, and its inaugural newsletters and magazines being introduced under his guidance. Manuhwa's presidency saw the signing of several pivotal Memorandums of Understanding (MoUs) with global

engineering bodies, including the Federation of Engineering Institutions of Asia and the Pacific (FEIAP), the Institution of Engineers India (IEI), the Federation of Arab Engineers (FAE), the European Federation of National Engineering Associations (FEANI), the World Council of Civil Engineers (WCCE), the Pan American Federation of Engineering Societies (UPADI), and the Commonwealth Engineers Council (CEC). Notably, the MoU with FEIAP laid the groundwork for the Africa, Asia, and Pacific (AAP) Accord, which was finalized and signed a year later under his successor's leadership.

Manuhwa's influence extended beyond FAEO to WFEO, where he had served in various capacities since 2011, including as Chair of Anticorruption, Chair of Capacity Building, and an influential advocate for Sub-Saharan Africa. His efforts were instrumental in elevating FAEO's prominence in WFEO, supporting African representation in leadership roles by advocating for the election of the first WFEO President from Sub-Saharan Africa. An accomplished wordsmith, Manuhwa personally drafted key FAEO documents, including the Constitution, agreements with the African Union Commission (AUC), and various MoUs.

His contributions continue to resonate, as reflected in his recognition by the Institution of Engineers (India) with their most prestigious award. In delivering the esteemed Dr. A.N. Khosla lecture to Indian engineers, Manuhwa exemplified his lifelong commitment to advancing engineering as a force for global good. Eng. Martin Manuhwa's presidency marked a period of unparalleled growth and innovation for FAEO, leaving a legacy of strategic partnerships, institutional reforms, and a vision for sustainable development that continues to shape the organization's future.

5. Ing. (Mrs.) Carlien Bou-Chedid (2021–2022)

Ing. (Mrs.) Carlien Bou-Chedid of Ghana became the first

female president of the Federation of African Engineering Organizations (FAEO) in early 2021, bringing dynamic and transformative leadership during a time when the COVID-19 pandemic had just begun to significantly impacting activities. Due to the pandemic, all plans for a physical General Assembly and grand inauguration in Accra quickly had to be abandoned, in favor of a shift to online events, which ultimately proved beneficial. Her inauguration took place in a professional studio and attracted a diverse global audience, rather than being limited to attendees able to make the journey to Accra. The event garnered considerable media coverage, generating interest both before and after.

Ing. (Mrs.) Bou-Chedid's groundbreaking presidency as the first female engineer to hold this position resonated widely, leading to numerous articles, interview requests, and invitations to address female engineers in various countries. A key focus of her presidency was promoting diversity and inclusion within the engineering workforce. Other goals included advocating for the recognition of local engineering practitioners and enhancing the competence and global competitiveness of firms across the continent. Her commitment to these objectives was reflected in her travels throughout Africa, visiting countries such as Namibia, Nigeria, Egypt, Ethiopia, Kenya, Lesotho, Tanzania, Zambia, and Zimbabwe. During these visits she engaged with female engineers, young engineers, students and government officials including the Presidents of Ghana, the Federal Democratic Republic of Ethiopia, The Vice President of the Republic of Zambia, ministers of state and other officials

Ing. Bou-Chedid's presidency emphasized empowering women and young professionals, as she seized every opportunity to engage with women and girls during her visits. With her support, the Women in Engineering Committee (WiE) initiated several impactful projects, including a Hall of Fame and the recognition of 100 Most Influential Female Engineers in Africa. A strong advocate

for STEM education, Ing. Bou-Chedid encouraged initiatives by WiE to inspire and equip young girls to pursue engineering careers. These included an annual children's art competition for children aged 6yrs and above, essay writing competitions and robotic boot camps supported by UNESCO during Africa Engineering Week which inspired many young people.

A significant achievement of her presidency was the signing of the Africa Asia Pacific Accord (AAP Accord), initiated by her predecessor. This agreement aimed to create a cohesive and inclusive framework for engineering education across Africa, Asia, and the Pacific, enabling the mutual recognition of engineering qualifications and promoting the mobility of engineers, technologists, and technicians. This landmark initiative was to ensure that African engineers could meet global standards and compete effectively in the international arena.

To showcase the capabilities of indigenous engineering practitioners, Ing. Bou-Chedid championed the establishment of Industry Sector Working Groups of FAEO that were tasked to identify major challenges within their sectors. These groups were to produce discussion papers and position papers that could be presented to governments and relevant organizations. The enthusiasm surrounding these working groups when formed was encouraging, with the Energy Working Group quickly delivering an outline paper on Africa's Energy Transition.

Moreover, Ing. Bou-Chedid strengthened FAEO's network of strategic partnerships by signing essential Memorandums of Understanding (MoUs) with organizations such as the American Concrete Institute (ACI), the International Federation of Consulting Engineers Africa (FIDIC), and the International Humanitarian Infrastructure Platform (IHIP). These collaborations fostered increased cooperation and

allowed FAEO and its partners to pool technical expertise for innovative solutions across various engineering sectors.

Ing. (Mrs.) Carlien Bou-Chedid's pioneering leadership not only advanced FAEO's mission but also set new benchmarks for inclusivity, professional development, and global integration, leaving a lasting impact on the African engineering community. Her legacy as a visionary advocate for progress continues to inspire future leaders to innovate and overcome barriers in the engineering profession.

6. Eng. Kazawadi Papias Dedeki (2023–2024)

During his presidency, Eng. Kazawadi Papias Dedeki of Rwanda made remarkable strides in advancing FAEO's international collaborations, building on the foundation laid by his predecessors. A significant highlight of his tenure was the expansion of the Africa and Asia Pacific (AAP) Accord into the Africa, Americas, Asia, and Pacific (A3P) Accord, signed on November 8, 2024, in Taizhou, China. This historic agreement represents the largest Global South cooperation in engineering education and capacity building for sustainable development, fostering mutual recognition of engineering qualifications and promoting workforce mobility. Eng. Kazawadi also prioritized impactful partnerships, beginning with active engagement across African engineering institutions and extending to strategic collaborations with the African Union (AU). His advocacy efforts culminated in presenting FAEO's vision at the AU Ministerial Retreat on Agenda 2063, solidifying FAEO's alignment with Africa's long-term development aspirations.

Eng. Kazawadi demonstrated exceptional leadership in organizing key events that strengthened the engineering profession's visibility and impact. Under his coordination, the 9th Africa Engineering Week and 7th Conference were successfully hosted in Pretoria, South

Africa, while the 10th Africa Engineering Week and 8th Conference took place in Luanda, Angola. These events fostered knowledge sharing and collaboration among engineers, industry leaders, and policymakers, with themes focused on advancing engineering education, sustainability, and infrastructure development across Africa. At both events, FAEO recognized excellence by presenting awards to outstanding African and non-African engineers for their contributions to society and humanity. These awards highlighted achievements in areas such as technological innovation, infrastructure development, and social impact, reinforcing FAEO's commitment to celebrating and inspiring engineering excellence. In October 2024, Eng. Kazawadi further coordinated the historic Global Engineering Conference (GECO 2024) in Kigali, Rwanda, the first of its kind to take place on African soil. This milestone event brought together global engineering leaders and policymakers, emphasizing innovations in engineering for a sustainable future and showcasing Africa's engineering capabilities on the international stage.

Through his visionary leadership, Eng. Kazawadi also fortified FAEO's strategic partnerships by signing MOUs with the African Organization for Standardization (ARSO), the African Continental Free Trade Area (AfCFTA) and the Kigali International Arbitration Center (KIAC). He collaborated with the Association for the Development of Education in Africa (ADEA) to enhance STEM education and capacity building for sustainable development. Additionally, the 2023 and 2024 Africa Engineering Week celebrations reinforced FAEO's focus on excellence and impact by celebrating engineers who contributed to addressing societal challenges through innovation and dedication. These alliances and recognitions not only advanced FAEO's mission but also amplified its role in driving Africa's development agenda. Eng. Kazawadi's presidency was a period of significant growth and global recognition for FAEO, leaving a legacy of strengthened

collaboration, innovation, and strategic alignment with the continent's development priorities that includes the Kigali Commitment on Sustainable Urbanization, which was adopted by member states at the Commonwealth Heads of Government Meeting (CHOGM) in 2022 and reaffirmed at CHOGM 2024 in Samoa.

4.4 Regional Presidents

As earlier stated the success of FAEO, similarly is a testament to the collective contributions of its regional presidents, whose leadership and dedication have driven progress across diverse areas of the African continent. Each regional president brings a unique perspective, addressing specific regional challenges while contributing to the unified goals of FAEO. Their combined efforts have been instrumental in strengthening the engineering profession, promoting sustainable development, and advancing impactful initiatives. By working collaboratively, these regional leaders have not only built a resilient foundation for FAEO but have also demonstrated the power of unity in pursuing continental progress. Acknowledging the contributions of all regional presidents honors the spirit of shared leadership that lies at the heart of FAEO's

achievements.

FAEO is organized into five regional bodies, each led by a president. Here are the current presidents:

1. **(CAFEO):** Eng.Fils Kazadi Nkashamba from DRC.
2. **(EAFEO):** Eng. Collins G. Juma from Kenya.
3. **(NAFEO):** Eng. Hany Dahy from Egypt.
4. **(SAFEO):** Eng. Linda Moseki from Botswana.
5. **(WAFEO):** Eng.Prof.Redwood Sawyerr from Sierra Leone.

Conclusion

FAEO's success cannot be credited to a particular president. Each FAEO president from 2012 to 2024 and regional presidents has brought unique contributions to the organization, expanding its influence across Africa and the globe and continually adapting to address regional challenges while aligning with international standards and partnerships. Through each leadership period, FAEO has taken meaningful steps to position African engineering as a cornerstone of the continent's sustainable development trajectory.

PART V - FAEO IN THE MODERN ERA

5. Responding to Global and Continental Challenges

FAEO's journey reflects an organization that has evolved to meet the needs of a dynamic continent.

The achievements from 2012 to 2024 represent only part of FAEO's larger mission to shape a sustainable, technologically advanced, and economically prosperous Africa.

Moving forward, FAEO will continue to leverage partnerships, foster innovation, and champion engineering education, positioning African engineering as an integral force in the global drive for sustainable development.

As FAEO enters its next chapter, it stands well-prepared to address the challenges and opportunities that lie ahead, drawing from the legacy of past presidents and the collaborative strength of Africa's engineering community. Since 2012, the Federation of African Engineering Organizations (FAEO) has grown as a leading voice in African engineering, navigating complex global and regional challenges. During this period, FAEO has addressed sustainable infrastructure, climate resilience, capacity building, and disaster response, although it has also identified areas for growth in strategic planning and disaster preparedness. This chapter highlights FAEO's contributions, and its evolving mission to support Africa's development.

5.1 Aligning with Global Development Goals

FAEO's mission has and is closely aligned with the Sustainable Development Goals (SDGs) and the African Union's Agenda 2063, addressing key issues related to SDGs 4,6,7,9,11, and 13 among others, collaborations with bodies such as AfCFTA, the African Organization for Standardization (ARSO), and the World Federation of Engineering Organizations (WFEO) enables and puts FAEO to play an instrumental role in setting engineering standards and policies that support Africa's long-term goals.

By working alongside these organizations, FAEO contributes to a unified approach to African engineering that fosters regional integration, economic growth, and environmental stewardship.

5.2 Capacity Building and Technological Innovation

FAEO has dedicated significant resources to building engineering capacity across Africa. Through initiatives like Africa Engineering Week and sector-specific working groups, FAEO has advanced educational standards, ensuring that engineers are well-prepared to address Africa's unique challenges. These working groups provide a platform for professionals across various fields addressing SDGs including energy, IT, construction, and transportation—to collaboratively develop solutions to industry-specific challenges.

FAEO's efforts toward inclusivity, such as the establishment of the Women in Engineering Forum and Young Engineers Forum further highlight its dedication

to building a diverse engineering workforce, providing a more holistic approach to Africa's development.

5.3 Climate Action and Environmental Sustainability

In line with Agenda 2063 and SDG 13, FAEO has prioritized climate resilience addressing critical areas such as renewable energy, sustainable urban development, and resource management, ensuring that Africa's engineering solutions contribute to long-term environmental health.

Just a recent example would be the Global Engineering Conference, held in Kigali in October 2024 through partnerships with IER and WFEO, where the Conference highlighted FAEO's climate action initiatives, aligning with the conference's themes of climate resilience and sustainable infrastructure. FAEO has helped raise awareness of African engineers' role in addressing global environmental challenges.

Although FAEO was present in a supporting role, the event also revealed the importance of a proactive approach to international forums. FAEO's involvement included a side events presentation on engineering accreditation and mobility with UNIDO - AISMA workshops, where participants reiterated their commitments to advancing engineering accreditation for mobility and best practices, industrial standards, and sustainable development through engineering. UNIDO - AISMA workshops also reiterated the importance of Smart Manufacturing for Africa's Industrialization.

5.4 Engineering a Sustainable and a Prepared Future

The COVID-19 pandemic exposed vulnerabilities across sectors worldwide, including Africa's engineering profession. FAEO, like many organizations, was caught

unprepared for the unprecedented disruptions. However, it responded with resilience, adapting its strategies to support engineering professionals and their critical roles during the crisis. This subtopic examines the lessons learned from the pandemic and highlights FAEO's renewed commitment to sustainability and preparedness.

The pandemic underscored the importance of adaptability, innovation, and foresight in managing global crises. For FAEO, key lessons included:

5.4.1. The Need for Robust Digital Infrastructure:

1. During the pandemic, FAEO faced significant challenges in communication and collaboration due to inadequate digital infrastructure. This experience emphasized the necessity of investing in virtual platforms for training, meetings, and resource sharing.

5.4.2. Strengthening Local Manufacturing Capacity:

The disruptions in global supply chains highlighted Africa's overdependence on imported engineering materials and technologies. FAEO recognized the critical need to bolster local manufacturing and innovation to ensure continuity during global crises.

5.4.3. Focusing on Emergency Preparedness:

3. The pandemic revealed the lack of contingency plans for emergencies within engineering organizations. FAEO identified the need to establish frameworks for disaster response and resilience, particularly in healthcare infrastructure, utilities, and transportation.

5.4.4. Reinforcing Multi-Stakeholder Collaboration:

4. Collaboration between engineers, policymakers, and

health professionals was crucial during the pandemic. FAEO saw the potential of cross-sector partnerships in driving solutions for crisis management and sustainable recovery

Incorporating these lessons, FAEO has to charter a course for a more prepared and sustainable engineering future.

5.4. 4.1. Investing in Digital Transformation:

FAEO needs to lead efforts to enhance digital skills among African engineers and integrate cutting-edge technologies such as artificial intelligence, big data, and IoT into engineering practices. These advancements ensure continuity and innovation, even in times of disruption.

5.4. 4. 2. Building Self-Reliance in Engineering Solutions:

By championing research and development in local engineering solutions, FAEO needs to aim advocate for reliance on imports. Initiatives include fostering innovation hubs, supporting startups, and encouraging public-private partnerships in key sectors such as healthcare and renewable energy.

5.4. 4. 3. Strengthening Infrastructure for Resilience:

FAEO need to advocate for infrastructure designed to withstand crises, from pandemics to climate change. This includes prioritizing modular healthcare facilities, resilient transportation networks, and decentralized energy systems.

5.4. 4. 4. Creating Contingency Frameworks:

To prevent future unpreparedness, FAEO need to work on creating guidelines for crisis response, ensuring that African engineers play a proactive role in emergency preparedness and recovery efforts.

5.4. 4. 5. Fostering Regional Integration and Standards:

In alignment with AfCFTA and ARSO, FAEO need to accelerate the harmonization of engineering qualifications and standards across Africa. This initiative promotes cross-border collaboration, ensuring a united and resilient response to future challenges.

The pandemic was a wake-up call for FAEO, prompting a renewed focus on sustainability and readiness. By leveraging the lessons learned, FAEO envisions an Africa where engineering drives solutions to pressing challenges, from health crises to environmental sustainability.

This vision is grounded in the fact and belief that a prepared engineering community can not only mitigate the impacts of future crises but also foster growth and transformation across the continent. With a forward-looking approach, FAEO need to commit to engineering a future that is both resilient and sustainable, ensuring that Africa's development remains robust, inclusive, and adaptable.

PART VI - THE FUTURE OF FAEO

6. Looking Forward - A Critical Assessment



By Eng. Kanigwa Emmanuel- IER (Fellow) - Independent Technical Analyst Consultant and a Change Management Strategist

6.1 General Overview

FAEO's journey thus far is a testament to what can be achieved when collective action is taken, and the future of FAEO and African engineering is bright.

But moving forward, its success will depend on translating past initiatives into impactful, measurable outcomes that benefit the African continent and its people but it also demands a renewed commitment to past promises to fully realize its mission.

FAEO needs to revisit and strengthen the commitments that have been made by strategically addressing

pending initiatives and strengthening its approach to deal with challenges. Only this way FAEO can lead the way in fostering a vibrant engineering ecosystem across Africa. Through robust follow-up mechanisms, innovative funding strategies, and sustained stakeholder engagement, FAEO can turn its vision into reality—driving economic development, environmental stewardship, and technological advancement on the continent establishing itself as a cornerstone of African engineering progress. The following paragraphs examine the pending or under-realized initiatives that require immediate follow-up, specifically the Memoranda of Understanding (MOUs), pacts, agreements, and other strategic initiatives that FAEO has already achieved to chart a forward-looking path, identifying areas for improvement and outlining a practical approach to achieving FAEO's goals.

6.2 Overview of FAEO's Key Initiatives (2012–2024)

Since 2012, FAEO has engaged in multiple initiatives designed to uplift engineering standards across Africa, foster technological innovation, and build partnerships for sustainable development. Below is a summary of these efforts:

1.Capacity Building and Training Initiatives: to address the skills gap in African engineering, FAEO has partnered with international organizations, universities, technical institutes, and training centers. These initiatives aim to build a workforce skilled in areas critical to Africa's growth, such as sustainable infrastructure and green technology. However, the

roll-out and impact of some programs have been limited due to several factors including a lack of a clear implementation plan with of course to funding constraints and logistical challenges.

2. International Partnerships and MOUs: Over the years, FAEO has signed several MOUs with international organizations, and national engineering bodies from different continents. These MOUs aim to facilitate knowledge exchange, support African engineering institutions, and promote best practices. Despite initial successes, several of these partnerships and agreements remain stalled and thus require active engagement in operationalization and setting clear timelines for implementation to realize their full potential. It is crystal clear that if the status quo remains and continues in its present state, there shall be no progress and all the energy that was put into signing them will have gone to waste and the trust put into the organization by the signing parties will be eroded.

3. Qualification standardization, Engineering Mobility, Innovation, and Technology Transfer Initiatives: FAEO has recognized the importance of Qualification standardization to ease the engineer's mobility and technology transfer as a way to bridge the innovation gap and to create a single, liberalized market for services among African countries.

Collaborative enablers to achieve this have been established with regional and international organization plus research institutions by making promising agreements. However, it appears that very little or nothing is being done towards this end which in my opinion doesn't look good.

As a way forward to kick-start the process I propose to FAEO as a matter of urgency to immediately operationalize five (5) Memoranda of Understanding (MOUs) namely: the MOUs between FAEO and the

Federation of Engineering Institutions in Asia, and the Pacific (FEIAP), Africa-Asia-Pacific (AAP) Accord, the Africa, America, Asia & Pacific Accord (A3P Accord), the MOU with Africa Continental Free Trade Area (AfCFTA), the MOU between the African Organization for Standardization (ARSO) on standards, the MOU with the African Union Commission through ASRIC and its MOU with KIAC provided that the will and the necessary resources and commitment are mobilized to overcome the existing hurdles.

4. Policy Advocacy and Engineering Influence-FAEO seeks to be a leading policy influencer, advocating for infrastructure development, environmental protection, and sustainable growth across Africa. While it has made progress in shaping engineering policies, I see little or insignificant and inconsistent support from member states.

While there might be various factors hindering these efforts, in my opinion, it is more likely that communication and coordination gaps may be hindering this effort most. It is my observation that the regional bodies often pursue their individual goals instead of collaborating through FAEO. This fragmentation undermines efforts to create unified engineering practices and policies.

As a way forward to enhance its impact, FAEO must strengthen its relationships with regional organizations, establish clear communication channels, and align both regional and continental objectives. While this is not easy but a cohesive strategy will be crucial for advancing policies that benefit the entire African engineering community.

6.3 Challenges in Follow-Through and Implementation

The implementation of FAEO initiatives faces several challenges that require strategic interventions:

- ▶ **Funding Shortfalls:** Many initiatives have been hampered by inadequate funding, which affects every stage from planning to implementation. FAEO's reliance on little membership contributions and sometimes on donor funding has highlighted the need for sustainable financing models to support long-term goals.
- ▶ **Variations in Regional Capacity:** Africa's engineering capacity varies greatly across regions, which affects the uniformity of implementation. Member states face differing infrastructural and technical needs, leading to delays and inconsistent progress. While little can be done to address this in the immediate future but the acceleration of the engineering mobility efforts is likely to be the most viable option.
- ▶ **Stakeholder Engagement and Commitment:** Sustaining momentum requires buy-in from both public and private stakeholders. However, lapses in engagement have led to waning support for some initiatives. I agree with the present FAEO approach of its continued conferences involving different stakeholders.
- ▶ **Coordination and Communication Gaps:** Lack of clear communication and coordination between FAEO, members, and partners has affected the timely execution of projects. A consistent feedback mechanism is necessary to keep all stakeholders informed and aligned.

While there may be other factors affecting logistical problems, I propose to FAEO to consider a possibility of establishing a Liaison office in Addis Ababa by establishing a permanent presence near the AU headquarters through EACE to facilitate regular communication and follow-up

on the issues of concern to the continent.

6.4 Way Forward: A Structured Approach Follow-Up

To address these challenges and capitalize on the opportunities, FAEO must adopt a strategic follow-up framework. The following actions are recommended:

- 1. Regular Tracking and Reporting:** FAEO should establish a centralized tracking system that monitors the progress of each MOU, agreement, and initiative. This system could involve quarterly or semi-annual reporting to assess whether goals are being met and identify areas for intervention.
- 2. Dedicated Follow-Up Teams Creating follow:** Creating follow-up teams specifically tasked with overseeing the implementation of pending agreements could ensure continuity. These teams would focus on maintaining communication with partners, securing additional resources, and troubleshooting any issues that arise during the implementation phase.
- 3. Resource Mobilization for Funding:** FAEO should explore alternative funding sources, including partnerships with private-sector stakeholders, engineering firms, and international agencies. Creating a dedicated fund for critical initiatives could also help bridge funding gaps and ensure uninterrupted progress.
- 4. Standardization and Harmonization of Efforts Across Regions:** To counter regional variations in implementation, FAEO could

establish a standard framework adaptable to different contexts. By setting uniform goals to its members but allowing flexibility in execution, FAEO can address both regional uniqueness and overarching objectives.

5. Public-Private Partnerships (PPP): Re-engaging stakeholders and leveraging PPPs will be crucial to sustaining momentum and support long-term project success, specifically in engaging private companies in the engineering sector to provide the technical and financial resources needed to meet FAEO's goals while creating employment opportunities.

6. Form an advisory committee: Composed of the Past Presidents and let that committee be permanent members of the Executive Council for the purpose of the institutional memory.

6.5. Observer Status with the African Union

As FAEO addresses these challenges, it also stands at the threshold of tremendous opportunity. With its footprint across all African nations and industrialization accelerating with an increased demand for skilled engineers and sustainable infrastructure, FAEO has the chance to shape the continent's engineering future. But this is becoming extremely difficult because most continental decisions and policies are done by the AU and FAEO finds itself in a position of always only trying to fit in and sometimes it finds itself as only a body that "ONLY TALKS" I propose that FAEO finds a way to be part of the policy organ. As a starting point it can start by lobbying and applying for "Observer Status" with the African Union (AU). The observer status is a crucial step for FAEO to gain formal recognition and begin meaningful engagement with the AU. Fortunately at present there exist already in the AU the **Economic,**

Social, and Cultural Council (ECOSOCC) an advisory body of the **African Union (AU)** designed to provide civil society organizations (CSOs) with a platform to engage with the AU. Its role is to involve African citizens and civil society in the policy-making and decision-making processes of the AU, ensuring their voices and contributions shape the continent's development agenda. Organizations granted observer status by the AU may participate in ECOSOCC activities. Although they do not have voting rights, the observer status allows them to attend ECOSOCC sessions, contribute to discussions, and provide expertise and input on specific issues. *(Observer Status is typically granted to organizations that: Support AU Objectives: Demonstrate alignment with the AU's vision and mission, particularly Agenda 2063, Have Pan-African Representation: Operate across multiple regions in Africa and have a significant footprint on the continent, Contribute Technical Expertise: Offer unique expertise or services that address AU priorities, such as engineering, infrastructure, and sustainable development and Maintain Non-Governmental Status: Operate independently and without political bias, focusing on professional or developmental goals).*

6.6. Conclusion: A Renewed Commitment

The future of FAEO and African engineering is bright, but it demands a renewed commitment to past promises. By strategically addressing pending initiatives and strengthening its approach to challenges, FAEO can lead the way in fostering a vibrant engineering ecosystem across Africa turning its vision into reality

PART VII - MOVING FORWARD TOGETHER

7. Positioning Africa Engineering for Competitiveness

**Message from Eng. Papias Kazawadi Dedeki,
The 6th FAEO President**

7.1 Introduction- Africa's Engineering Future

Africa stands at a critical juncture in history, with the Fourth Industrial Revolution (4IR) / **“Industry 4.0”** transforming industries, economies, and societies worldwide. Emerging technologies such as artificial intelligence (AI), digital twin technologies, advanced robotics, and the Internet of Things (IoT) are reshaping the world at an unprecedented pace. For Africa, this revolution presents both a tremendous opportunity and an urgent challenge. To secure its place in a rapidly evolving global landscape, Africa must run, not walk, toward a future that leverages these innovations. This requires a bold and immediate overhaul of engineering ecosystem from education to practice, policies, and partnerships.

The Federation of African Engineering Organizations (FAEO) has a crucial role in leading this charge, ensuring that Africa's engineering professionals are equipped, adaptable, and ready to meet these challenges head-on. This chapter emphasizes the urgency of advancing innovation, revamping education practices, and building cohesive strategies for African engineering in the 4IR / **“Industry 4.0”**

7.1.1 Innovation in the Age of the Fourth Industrial Revolution (4IR)

With 4IR technologies reshaping how we live and work, African engineering must prioritize innovation to stay competitive and resilient. Engineers across the continent must embrace technologies like AI-driven solutions, digital twins, and smart systems that respond to Africa's unique challenges and opportunities. These technologies are transforming everything from healthcare to infrastructure and from agriculture to finance, making them essential for Africa's sustainable development.

However, Africa cannot afford to lag in technology adoption. Countries worldwide are integrating AI and IoT into essential services and infrastructure, and the continent must act with urgency to follow suit. FAEO can help by coordinating research initiatives, establishing technology transfer frameworks, and advocating for investment in critical R&D areas. African engineers need the resources and support to innovate, allowing them to harness the power of new technologies and lead the continent's journey into the future.

7.1.2 Urgent Need for Curriculum Overhaul and Accreditation

Africa's engineering education systems must undergo a rapid transformation to prepare students for the demands of the Fourth Industrial Revolution (4IR). Traditional curricula are no longer sufficient in a world that increasingly values adaptability, digital fluency,

and interdisciplinary skills. The new curriculum must be dynamic, integrating subjects like data science, AI, machine learning, and cyber-physical systems to produce engineers equipped to thrive in this advanced technological landscape.

For Africa to truly embrace this transformation curriculum reform cannot be limited to universities alone; it must begin at the foundational levels of education. From early childhood education through to primary and secondary school, the entire educational framework needs to incorporate elements that foster critical thinking, problem-solving, and technological literacy. Introducing concepts related to engineering, robotics, and digital skills from as early as kindergarten will lay the groundwork for a more technology-savvy generation ready to excel in higher education and beyond.

FAEO has a critical role to play in driving this transformation by setting accreditation standards that align with global best practices. It must advocate for continuous curriculum reviews across African institutions to ensure that engineering programs are relevant, forward-looking, and rigorous. Furthermore, establishing continent-wide accreditation standards will elevate the quality of engineering education, enabling African engineers to work across borders and apply their expertise wherever needed.

Without swift, foundational changes in education, Africa risks producing a generation of engineers unprepared for the future, unable to meet the demands of the 4IR, and missing out on opportunities to drive the continent's technological and economic advancement.

7.1.3 Continuing Professional Development (CPD)

Continuing Professional Development (CPD) programmes are essential for the continuous learning and professionalization of engineering training. These

structured learning activities, including workshops, seminars, technical courses, and conferences, help engineers stay updated with evolving technologies, industry standards, and best practices. CPD is often a requirement for professional licensing and registration, ensuring compliance with regulatory and ethical standards. It also enhances engineers' skills, promotes innovation, and strengthens their ability to address emerging challenges in the field. By fostering lifelong learning, CPD contributes to career growth, professional credibility, and the overall advancement of engineering, making it a critical component in maintaining high industry standards and driving sustainable development.

7.1.4 Enhancing Industry-Academia Collaboration for Skills Development

The HAIR competences—Helicopter View, Analysis, Imagination, and Reality

Helicopter view provides stakeholders with a comprehensive, strategic perspective of the industrialization ecosystem, enabling them to see the “big picture” and understand how its various components interconnect revealing how inadequate skills hinder workforce readiness and industrial growth. By stepping back, (from the helicopter perspective) they can analyze the broader landscape of academia, industry demands, and global trends, uncover patterns, identify opportunities, and foster a more holistic understanding of the system's dynamics.

Analysis is the foundation for understanding and improving the industrialization ecosystem, focusing on the current state of industry-academia collaboration, identifying skill gaps, and evaluating industrial needs. Without a thorough, data-driven approach, efforts to enhance collaboration risk being disconnected from

real-world challenges. For instance, examining why many engineering graduates lack practical, industry-relevant skills despite their academic qualifications can reveal critical misalignments between academic curricula and industry requirements. By delving into such specifics, analysis identifies barriers that hinder graduates from meeting industrial demands and ensures that interventions are targeted, grounded in data, and address measurable issues.

Imagination Once the gaps are identified, through imagination, we envision a future where universities and industries co-develop curricula and training pathways, enabling engineers to stay competitive in emerging technologies and global trends. It envisions initiatives to modernize academic training that align education with industry demands. It also envisions current challenges and future solutions, inspiring innovative approaches to equip graduate engineers with the skills needed for industrialization.

Reality anchors analysis and imagination into actionable and practical steps, requiring commitment from both academia and industry. Universities must adapt to evolving industry needs, while industries should invest in upskilling young engineers and fostering collaboration. Reality emphasizes and ensures that solutions are feasible, resource-aligned, and impactful in strengthening the industrialization ecosystem. Without practical implementation, even the best ideas remain theoretical.

7.1.5 Engineering Mobility and Workforce Readiness

To respond effectively to global shifts, Africa must facilitate the movement of its skilled engineers across countries. Engineering mobility is crucial for deploying talent to regions that most need specialized skills and for sharing expertise across borders. FAEO should

prioritize establishing a regional engineering license and accreditation framework that enables African engineers to work seamlessly across the continent. Such a framework would support large-scale projects and encourage knowledge sharing, making the African engineering workforce more adaptable and resilient. Moreover, geopolitics is increasingly affecting the engineering sector, as countries worldwide compete for skilled labor and technological dominance. African engineers need to be competitive on the global stage, able to work on complex international projects and bring critical skills back to the continent. By advocating for reciprocal recognition of African engineering qualifications globally, FAEO can open pathways for African engineers to gain valuable experience and contribute to the continent's technological advancement.

7.1.6 Policy Alignment and Government Support

An urgent shift in policy is needed to create an environment where engineering can thrive in the context of the 4IR. African governments must align their national policies with continental goals for infrastructure development, environmental protection, and economic growth. FAEO has a unique role in advocating for these policy changes, emphasizing the necessity of integrating engineering practices into national strategies for sustainable development.

To enhance its effectiveness, FAEO is collaborating with the African Union (AU) need to provide the necessary push for national leaders to prioritize engineering in their agendas. This collaboration shall mean to reinforce the idea that collective action and shared responsibility among African nations are essential for addressing regional challenges and achieving sustainable development. By leveraging the influence of the AU, FAEO can encourage member states to transcend narrow national interests and invest in

engineering initiatives that benefit the entire continent. Without cohesive policies, Africa risks fragmentation in engineering practices, making it difficult to realize a unified engineering future that addresses both regional and continental needs.

7.1.7 Accelerating Collaboration and Technology Transfer

Africa's engineering future requires strong international collaboration to keep pace with rapidly advancing technology. Many developed countries and organizations are eager to invest in Africa's growth, and FAEO has been instrumental in establishing partnerships to facilitate technology transfer and capacity building. However, these partnerships must now focus explicitly on technologies related to 4IR, including AI, digital twins, and renewable energy systems.

The need for technology transfer has never been more urgent. African engineers must have access to advanced tools and expertise to compete globally and develop solutions tailored to Africa's needs. FAEO should work to secure partnerships with leading technology institutions, establishing engineering Sandboxes and Practical Field Labs (PFL) that act as centers for technology prototyping, experimentations, and skills testing. By ensuring that the continent has access to the latest innovations, FAEO can position African engineers at the forefront of sustainable and resilient development.

7.1.8 Embedding Sustainability into Engineering Practices

Africa's engineering future must prioritize sustainability and resilience in the face of climate change. The continent is highly vulnerable to climate impacts, and future infrastructure must be designed to withstand these challenges. Engineers must develop climate-

resilient solutions, from flood-resistant infrastructure to renewable energy grids that reduce dependency on fossil fuels.

Renewable energy holds immense potential for Africa, and FAEO should lead efforts to advocate for investments in Renewable Energy like solar, wind, and hydropower infrastructure.

The time to act is now, as the impacts of climate change are already being felt across the continent. By embedding sustainable engineering practices into all future projects, Africa can reduce its environmental impact while building resilience against climate disruptions. FAEO must prioritize training engineers in sustainable practices and encourage policies that mandate climate resilience in infrastructure projects.

7.1.9 Alternative Dispute Resolution (ADR) mechanisms across the continent

To enhance competitiveness in African engineering within the Fourth Industrial Revolution (4IR), it is crucial to address the gap in Alternative Dispute Resolutions (ADR) mechanisms across the continent. Currently, many ADR processes in Africa are handled by foreign professionals, which can lead to delays, higher costs, and a lack of regional context. Establishing robust, locally-driven ADR frameworks will not only build trust in resolving disputes efficiently but also foster self-reliance and expertise within the African engineering and business sectors. Developing ADR training programs, certifications, and institutions across Africa can empower local professionals to manage conflicts, streamline operations, and contribute to a more resilient, sustainable and competitive engineering and infrastructure development landscape prepared for the future.

7.1.10 Engineering for Social Impact and Equity

Africa's engineering future must be inclusive, ensuring that technology and infrastructure benefit all communities, especially the most vulnerable. Engineers can drive social impact by addressing issues such as clean water access, rural infrastructure, and affordable housing. FAEO should promote engineering solutions that uplift underserved populations, encouraging engineers to address social inequalities and contribute to a more equitable society.

FAEO can support this by enhancing the already established awards system and incentives for projects that focus on social impact, recognizing engineers and individuals who contribute to community development. By prioritizing social equity, FAEO can help foster an engineering sector that is committed to inclusive growth and social justice.

7.1.11 Promote Groom and Grow of Indigenous Engineering Consulting Firms and Contractors for the Africa we want

The Federation of African Engineering Organizations (FAEO) is uniquely positioned to lead the advocacy for the "Groom and Grow" policy, a transformative approach that has proven successful in China since 2000. This policy emphasizes the strategic development of indigenous engineering consulting firms and contractors as a cornerstone for Africa's sustainable infrastructure growth. By nurturing strong, locally rooted engineering firms, Africa can address its unique challenges through solutions tailored to the continent's needs. Indigenous firms not only foster innovation but also serve as incubators for young engineers, equipping them with the skills and knowledge necessary to tackle infrastructure challenges effectively. This vision requires robust legal, policy, and institutional frameworks that

support the emergence and growth of these firms, ensuring they become pivotal players in driving Africa's engineering renaissance.

FAEO's commitment to advancing engineering education and capacity building aligns seamlessly with the groom and grow philosophy. By promoting collaborations that emphasize hands-on training, mentorship, and technology transfer, FAEO can ensure that indigenous firms become the torchbearers of engineering excellence across the continent. These efforts will empower local engineers to innovate, execute sustainable projects, and build resilient infrastructure, contributing to the realization of Agenda 2063 of the Africa We Want. Through strategic advocacy, FAEO can champion this policy at the highest levels, urging governments and stakeholders to adopt frameworks that prioritize the development of local engineering capacity, ensuring that Africa's infrastructure is built by Africans for Africans. This paradigm shift will not only address the continent's immediate infrastructure needs but also lay the foundation for long-term prosperity and self-reliance.

7.1.12 FAEO Call to Action to AfCFTA and vice versa:

Empowering AfCFTA's Vision and Strengthening Its Impact through Collaboration with FAEO to Propel Engineering Service Liberalization by Harnessing FAEO's existing Agreements

The African Continental Free Trade Area (AfCFTA) has indeed established a framework for facilitating the free movement of services across its member states. This is managed under the Protocol on Trade in Services, which aims to create a single, liberalized market for services among African countries. The protocol covers several key areas, such as cross-border service provision, consumption of services abroad, commercial presence

of service providers in other countries, and temporary movement of natural persons for work purposes.

To support this, the protocol aims to facilitate professional mobility by encouraging mutual recognition agreements (MRAs) for qualifications and certifications among African countries that will allow professionals from one country to work more easily in another, provided they meet agreed-upon standards and qualifications.

However, there are still challenges and gaps in implementation. For instance, to implement this, the AfCFTA requires each member country to outline specific commitments and regulatory adjustments where individual countries list their commitments in “Schedules of Specific Commitments,” specifying the extent of market access granted to foreign professionals in certain fields among others. However, while the framework is in place, actual implementation varies, as many countries are still in the process of finalizing these commitments and harmonizing their regulations. Below are just a few of the challenges

(a) Limited Institutional Capacity: Many African nations lack the institutional capacity to effectively enforce and monitor the liberalization of services.

(b) Diverging Regulatory Standards: Different regulatory frameworks across African countries can and are creating barriers to the free movement of services

(c) Lack of Harmonized Standards and Qualifications: There is a lack of common standards, qualifications, and accreditation systems for professionals and service providers across the continent. This disparity can impede cross-border service provision, especially in technical sectors like engineering.

However, the African Federation of Engineering Organizations (FAEO) has already made substantial

progress in creating frameworks that can help address these challenges through its Memoranda of Understanding (MOUs) with regional bodies like the Federation of Engineering Institutions in Asia and the Pacific (FEIAP), Africa-Asia-Pacific (AAP) Accord, the A3P Accord (Africa, America, Asia & Pacific Accord), Association for Development of Education in Africa (ADEA) and the African Organization for Standardization (ARSO) on standards provide a robust foundation for harmonizing qualifications, regulatory standards, and professional mobility across the continent.

AfCFTA can leverage these existing frameworks to overcome the hurdles of inconsistent regulatory systems, divergent qualifications, and lack of uniform reference standards. By aligning with FAEO’s MOUs and agreements, AfCFTA can ensure that engineering professionals and service providers benefit from streamlined accreditation processes, recognized qualifications, and enhanced opportunities for cross-border movement. This collaboration would provide a practical and efficient solution for achieving the objectives of the Protocol on Trade in Services, specifically for the engineering sector.

We urge AfCFTA to leverage these existing frameworks in its implementation strategy for the free movement of engineering services. By working closely with FAEO, AfCFTA can streamline accreditation, boost regulatory harmonization, and create greater opportunities for engineers to move freely across the continent and also strengthen the capacity of the continent to compete globally, this collaboration will not only accelerate the liberalization process but also strengthen Africa’s engineering sector, driving innovation and economic growth across the region.

7.2 Strategy for The African Engineering future

A corruption free future

A corruption free future is a prerequisite to all that FAEO envisages. Success in the development of everything that is written in this book all depend on whether this pandemic is well handled. For example adequate infrastructure can never be achieved unless we can conquer the scourge of corruption. FAEO, in partnership with the Global Infrastructure Anti-Corruption Centre (GIACC), is committed to combating corruption, a major barrier to poverty alleviation, national prosperity, and infrastructure development. FAEO will focus on raising awareness of the risks and costs of corruption through publicity, training, and workshops. It will encourage its member institutions to take leadership roles in preventing corruption in their countries and promote the adoption of anti-corruption controls, such as ISO 37001, by both public and private sectors. Additionally, the FAEO will advocate for the implementation of the Project Anti-Corruption System (PACS) in public infrastructure projects and encourage effective reporting, investigation, and enforcement of corrupt activities.

7.3 A Call to Action for Africa's Engineering Future

The future of African engineering is full of promise, but action is required now. With the 4IR accelerating changes worldwide, Africa cannot afford to lag behind. FAEO, as the continental body representing African engineers, must lead the way by advocating a curriculum reform, that shall make the Africa engineers competitive.

Not with standing the protocol of implementation as set forth in the A3P accord that shall be implemented by FAEO, in order to navigate the Africa urgent challenges

of lagging behind the world in the current and future technology, FAEO must implement the AAP protocol in its own unique comprehensive strategy with clear milestones that address the educational, policy, and collaborative needs of the Africa engineering sector in the context of the Africa we want. And therefore; -

In addition to addressing the standardization of our curricular to have a unified & inclusive engineering education accord that promotes substantial equivalence of engineering education for engineers, engineering technologists and engineering technicians in Africa, by having its register Africa must specifically and in particular address the new and emerging technologies.

The following strategy outlines key areas of focus and possible milestones as a way forward:

A. Policy Advocacy and Government Engagement

Year 1: Collaborate with the AU to establish a continental agenda for engineering that aligns national policies with regional goals in relation to the A3P accord.

Year 2-3: Facilitate workshops and training sessions for policymakers on the importance of integrating engineering in national development strategies, in at least 30-member states.

Year 4-5: Evaluate policy changes at the national level, aiming for a 70% increase in engineering-related funding and support from governments.

B. Curriculum Reform and Accreditation

Year 1-2: Conduct a comprehensive review of existing engineering curricula across member states to match our developed pillars and identify gaps in relation to 4IR technologies.

Year 2: Develop and publish a standardized curriculum

framework that incorporates essential skills for AI, data science, and sustainability.

Year 3: Establish an accreditation body under FAEO to evaluate and certify engineering programs based on the new framework, aiming for a 50% accreditation of existing programs within five years.

C. Engineering Mobility and Workforce Readiness

Year 1: Launch an initiative to create a regional engineering license that facilitates cross-border mobility, engaging with relevant government bodies and stakeholders.

Year 2: Develop a recognition framework for qualifications that ensures engineers can practice across African countries without bureaucratic hindrances.

Year 3-5: Implement a mentorship program linking experienced engineers with recent graduates to enhance skill transfer and workforce readiness.

D. International Collaboration and Technology Transfer

Year 1: Identify and secure partnerships with five leading global technology institutions for technology transfer initiatives.

Year 2-3: Establish engineering hubs in at least three African countries to facilitate technology transfer and skills development, with a focus on 4IR technologies.

Year 4-5: Measure the impact of these partnerships through increased access to technology and training opportunities for African engineers.

E. Sustainability and Climate Resilience Initiatives

Year 1: Initiate a research project to assess climate vulnerabilities in key infrastructure sectors across Africa.

Year 2: Develop a sustainability guideline for engineering projects, incorporating climate resilience principles.

Year 3-5: Collaborate with governments and NGOs to implement at least ten pilot projects focusing on climate-resilient infrastructure.

7.4 Funding

Embedding Value Proposition in all FAEO projects

Embedding a strong value proposition in all FAEO projects is essential to attract funding and drive support for its ambitious initiatives. A well-defined value proposition clearly communicates the unique benefits, impact, and long-term value each project offers to stakeholders, funders, and communities. By articulating how projects solve specific problems, promote sustainable development, or enhance engineering capacity across Africa, FAEO can demonstrate its projects' relevance and potential return on investment. This approach not only strengthens the case for funding but also aligns projects with FAEO's vision, fostering credibility and fostering greater commitment from partners and donors.

7.4.1 Sources of Funding

To support the ambitious strategies outlined for advancing African engineering, the Federation of African Engineering Organizations (FAEO) can explore various funding sources. Here are some potential avenues for securing financial resources:

7.4.1.1. Government Grants and Support

National Governments: Seek funding from African governments that recognize the importance of engineering in national development. Engaging in discussions with ministries of education, infrastructure, and technology can yield grants and budget allocations.

African Union (AU): Collaborate with the AU for funding through its initiatives aimed at enhancing infrastructure and technological capacity in Africa.

7.4.1.2. International Development Agencies

World Bank: Apply for funding through the World Bank's programs focused on infrastructure, technology transfer, and education in developing countries.

United Nations Development Programme (UNDP): Engage with UNDP for funding opportunities related to sustainable development projects and initiatives that promote engineering education and capacity building.

UNIDO: Offers funding and technical assistance through programs supporting industrial development, capacity building, and sustainable growth. Like UNIDO's technical cooperation, Program for Country Partnership (PCP), and sector-specific trust funds. Funding depends on project alignment with UNIDO's priorities and regional programs.

AfDB: Direct financial assistance and technical support through its infrastructure, industrialization, and skills development programs, aimed at fostering sustainable growth and innovation across the continent.

7.4.1.3. Non-Governmental Organizations (NGOs) and Foundations

Bill & Melinda Gates Foundation: Seek partnerships

for projects focusing on social impact, infrastructure, and technology initiatives that align with their goals.

African Development Foundation: Apply for grants that support innovative solutions to improve infrastructure and promote sustainable development across Africa.

Master Card Foundation; Funds a variety of initiatives to support young people, entrepreneurs, and small businesses.

7.4.1.4. Private Sector Partnerships

Technology Companies: Collaborate with multinational corporations in the technology sector (e.g., Microsoft, Google, IBM) that have corporate social responsibility (CSR) initiatives focused on education and technology transfer.

Engineering Firms and Contractors: Partner with leading engineering firms and contractors interested in investing in local capacity building and education initiatives.

7.4.1.5. Academic Institutions and Research Grants

Collaborations with Universities: Engage with universities and research institutions globally that may offer research grants or sponsorships for collaborative projects on technology and engineering education. If applicable, explore funding through European Union programs that support research and innovation partnerships with African institutions.

7.4.1.6. Crowdfunding and Public Engagement

Crowdfunding Platforms: Utilize various available social network platforms to raise funds for specific

projects or initiatives that resonate with the public and potential donors.

Awareness Campaigns: Launch campaigns to raise awareness about the importance of engineering in Africa, encouraging individual donations and contributions from the community.

7.4.1.7. Investment Funds and Venture Capital

Impact Investment Funds: Approach impact investors who are focused on generating social and environmental impact alongside financial returns. These investors may be interested in projects that promote sustainable engineering practices and technology adoption.

Venture Capital for Startups: If applicable, seek venture capital for innovative engineering startups that align.

with the 4IR agenda and technology transfer initiatives.

7.4.1.8. Membership Fees and Organizational Contributions

Member Contributions: Leverage the support of FAEO member organizations by establishing a funding mechanism through membership fees dedicated to specific initiatives.

Annual Conferences and Workshops: Host events to generate revenue from registration fees, sponsorships, and partnerships that contribute to FAEO's initiatives.

By diversifying funding sources, FAEO can ensure that it has the necessary resources to implement its strategies effectively, making a significant impact on the future of engineering in Africa.

7.5 Monitoring and Evaluation (M&E) Framework

To ensure the successful implementation of FAEO's strategies for advancing African engineering, a robust Monitoring and Evaluation (M&E) framework will be essential. Without an effective M&E system, initiatives may falter, reducing substantial efforts to mere documentation and discussions without tangible outcomes. This framework will provide a structured approach to assess progress, measure results, and facilitate continuous improvement. Here's a concise outline of the M&E process:

1. Define Key Performance Indicators (KPIs)

Establish clear KPIs for each strategic objective, including metrics for curriculum reforms, accreditation rates, engineering mobility, technology transfer, and sustainability initiatives.

2. Data Collection Methods Utilize both qualitative and quantitative methods to collect data, including surveys, interviews, focus groups, and project reports. Baseline Assessment- Conduct a baseline assessment at the onset of the implementation phase to provide a reference starting point and to evaluate progress.

3. Regular Monitoring

Implement a systematic schedule for monitoring progress, including quarterly and annual reviews. Use dashboards and reporting tools to track KPIs and trends in performance.

4. Evaluation Framework

Conduct periodic evaluations (mid-term and final evaluations) to assess the overall effectiveness of

initiatives, identify challenges, and recognize successes. Use evaluation findings to adjust strategies ensuring alignment with FAEO's goals.

5. Stakeholder Engagement

Involve stakeholders throughout the M&E process, providing opportunities for feedback and input.

Regularly communicate findings to stakeholders to foster transparency and collective ownership of progress.

6. Learning and Adaptation

Create mechanisms for learning from successes and failures, encourage a culture of continuous improvement within FAEO and its member organizations, and utilize lessons learned to refine strategies for enhancing project implementation.

Early Visionaries

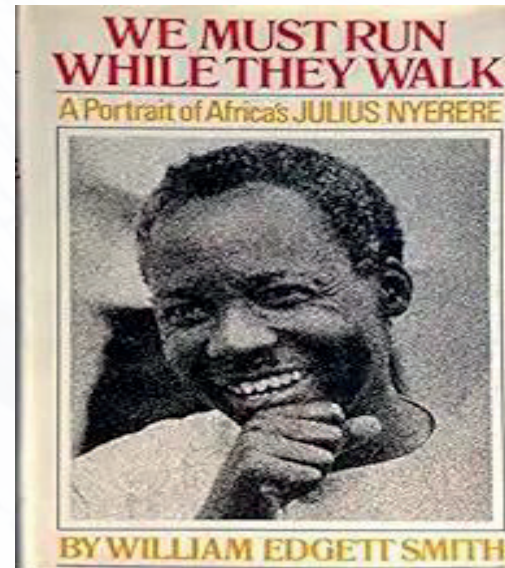
Kwame Nkrumah



Kwame Nkrumah, first speech at the foundation summit of the Organization of African Unity, Addis Ababa, 24 May 1963

"We shall accumulate machinery and establish steel works, iron foundries and factories; we shall link the various states of our Continent with communications; we shall astound the world with our hydroelectric power; we shall drain marshes and swamps, clear infested areas, feed the undernourished, and rid our people of parasites and disease. It is within the possibility of science and technology "ENGINEERING" to make even the Sahara bloom into a vast field with verdant vegetation for agricultural and industrial developments".

Julius Nyerere



PART VIII - SNAPSHOTS OF MEMORABLE MOMENTS

8. Pivotal moments captured: Visual Chronicles - Pictorial highlights



The South African Institution of Civil Engineering (SAICE) president, Dr Martin Van Veelen, has been elected as the new president of the Federation of African Engineering Organizations (FAEO).

Published on 8 Oct 2012. Posted under Industry News



Immediate past president of Federation of Africa Engineering Organization (FAEO); Dr Martin Van Veelen (Third from right) who handed the baton of leadership to Engr. Mustafa B. Shehu (5th from right).



FAEO president Mustafa Shehu and the AU ASRIC Director, Dr. Ahmed Hamdy signing the MoU on Technical Cooperation between FAEO and African Union Commission (AUC)-2016.



FAEO President, Mustafa B. Shehu 2016.



Mustafa B. Shehu - former president of the Federation of African Engineering Organizations, FAEO, inauguration as WFEO President. He was the 17th president of WFEO and the first person from Sub-Sahara Africa to be elected president of the engineering organization.

Society of Engineers - UAE Honors New WFEO President, Eng. Mustafa B. Shehu, in Prague

Prague, Czech Republic - October 2023



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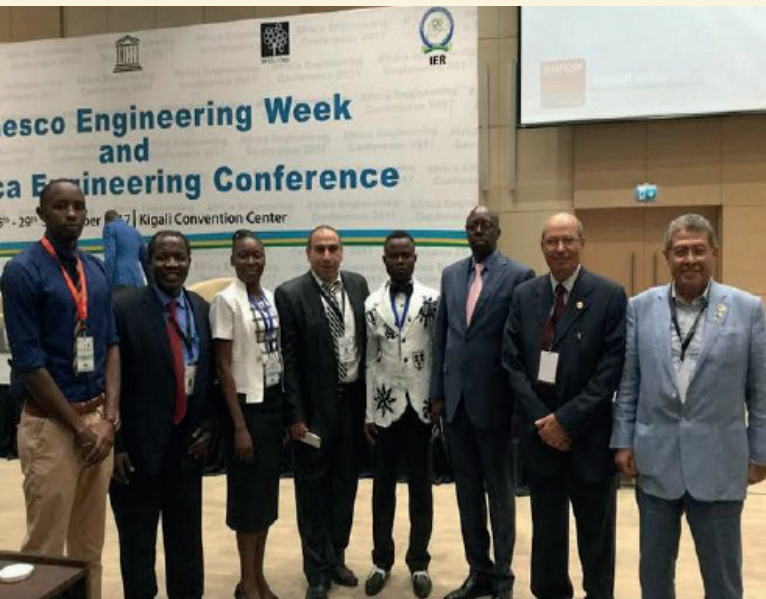
Mustafa was elected to the position of President-Elect at the Federation's General Assembly in San José, Costa Rica in March 2022 and became President of WFEO at the General Assembly in Prague, Czech Republic, in October 2023.



FAEO President Julius Riungu at the Africa Engineering Conference 2017 / UNESCO Africa Engineering Week, September 2017.



FAEO President Julius Riungu.



FAEO President Julius Riungu second from left with delegates from Egypt (R-L -1st , 2nd , and 5th) DRC (R-L-4th and 6th) Rwanda 3rd and 8th R-L) at the Africa Engineering Conference 2017 / UNESCO Africa Engineering Week, September 2017 in Kigali.



During one of the visits to African Union (AU), President of FAEO, Engr. Martin Manuhwa 2nd from R-L, Former President of FAEO, Engr. M . B Shehu 4th FNSE Executive Director of African Union - Scientific Technical Research Commission, (STRC), Dr. Ahmed Hamdy- 3rd and FAEO Executive Director Bernard Ordams 1st - 15th January 2019, @ Abuja-Nigeria.



President of FAEO Eng. Martin Manuhwa who is also the Vice President World Federation of Engineering Organization (WFEO), visit to FAEO Secretariat, 14th -17th January 2019, @ Abuja-Nigeria. L-R; President, The Nigeria Society of Engineers, Engr. Adekunle Mokuolu, FNSE , President Federation of African Engineering Organizations, Engr. Martin Manuhwa, and the former President of FAEO, Engr. Mustafa Balarabe Shehu.



Prof. Gong Ke, President of WFEO (Top right), Huang Wei, President of FEIAP (Top left), and Martin Manuhwa (bottom right) President of FAEO, attended and addressed the online meeting respectively on Engineering Education Accreditation System and Capacity Buildings. Engineering education experts from Malaysia, Singapore, Zimbabwe, other countries shared their views and experience in engineering education with more than 100 participants via online webinars. 7th Nov, 2020 (During Covid).



ZIMBABWEAN Engineer Martin Manuhwa, has been elected into the Executive Council of the World Federation of Engineering Organization (WFEO), becoming the first Zimbabwean to do so. He will double as vice-president and chair of the engineering capacity building technical services committee in the WFEO. WFEO during its recent general assembly held in San Jose, Costa Rica.



Meeting at the UNESCO headquarters in Paris, WFEO and FAEO delegations pushing for the World Engineering Day.



Eng. Martin Manuhwa WFE0 Vice President: The WFE0 President's representative and Chair of the WFE0 Capacity Building Committee, Eng. Martin Manuhwa His quote: "Let us strive to leave Africa better than we found it. We have an opportunity to enlighten and light Africa". GECCO Oct 16, 2024 Kigali



Ing. Mrs. Carlien Bou-Chedid, a female Ghanaian Engineer was sworn-in as the President of the Federation of African Engineering Organization (FAEO). The impressive FAEO 5th Presidential Investiture ceremony was hosted by the Ghana Institution of Engineering (GhIE), whose Immediate Past President, Ing. Mrs. Carlien Bou-Chedid, was

elected as the President for the organization. Due to COVID-19 restrictions, the investiture was done via zoom meeting platform, where sizeable number of Engineers around the continent, joined in to crown Ing. Mrs. Carlien Bou-Chedid as the 5th President of Africa Engineers.



From left to right: Leslie Alexander Ayeah, President of GhIE; Ing. Mavis Allotey-Chair, LOC; Justice Anthony Oppong, Court of Appeal Judge; Ing. Mrs. Carlien Bou-Chedid, President Elect, FAEO; Ing. Kwabena Agyei Agyepong, Executive Director of GhIE; Dr. Enyoyam Kpekpena, President of Women in Engineering Ghana; and Ing. Harold Esseku, Vice President of GhIE, posed after the Zoom meeting of the Presidential Investiture in Accra.



FAEO President visited HE the President of Ghana, Nana Akufo Addo, Alex Ayeh



The Federation of African Engineering Organization (FAEO), has resolved to support the implementation of the African Continental Free Trade Area (AfCFTA) agreement to help boost free trade across the Africa continent. In a 12 points declaration, the President of FAEO, Engineer Carlien Bou-Chedid and the Chairman of the Conference, Engineer Martin Manuhwa, who is also the Immediate Past President of FAEO, jointly presented the conference declaration to the media in Accra on Friday, 8th October, 2021.



On line AAP Accord signing ceremony



Oath taking of the 6th President of FAEO, Eng. Papias Kazawadi



Dr. Hermogene N. Secretary General of African Organization for Standardization - ARSO signs with Eng KAZAWADI Papias Dedeki President of Federation Of African Engineering Organizations (FAEO) with representatives from The Institution of Engineers of Kenya; a Strategic Partnership MoU on Collaboration in Standardization & Conformity Assessment in the Engineering Sector on 4th August 2023 at the ARSO Central Secretariat.



The Kigali International Arbitration Center (KIAC) has signed a partnership agreement with the Federation of African Engineering Organizations (FAEO) to enhance the knowledge and skills of African engineers in resolving disputes without resorting to courts. The agreement, signed on November 21, 2024, aims to provide training for FAEO members.



FAEO president Eng. Papias Kazawadi Dedeki (3rd L-R) signing a historic agreement representing the largest Global South cooperation in engineering education and capacity building for sustainable development, fostering mutual recognition of engineering qualifications and promoting workforce mobility.



FAEO president Eng. Papias Kazawadi Dedeki (3rd L-R) signing a historic agreement representing the largest Global South cooperation in engineering education and capacity building for sustainable development, fostering mutual recognition of engineering qualifications and promoting workforce mobility.



FAEO president Eng. Papias Kazawadi Dedeki (3rd L-R) signing a historic agreement representing the largest Global South cooperation in engineering education and capacity building for sustainable development, fostering mutual recognition of engineering qualifications and promoting workforce mobility.



PART IX - LESSONS FROM COVID-19

9. Disaster Preparedness

Disaster preparedness involves proactive measures to anticipate, prevent, and respond to natural and human-made disasters to minimize loss of life, property damage, and disruptions to critical infrastructure. It includes risk assessments, early warning systems, emergency response planning, capacity building, and public awareness initiatives. Engineering plays a key role in disaster resilience through the design of durable infrastructure, sustainable urban planning, and the implementation of safety standards. Collaboration between governments, private sectors, and communities is essential to ensure a coordinated and effective disaster response, ultimately enhancing resilience and reducing vulnerabilities.

9.1 Engineering Response to COVID-19 in Africa

The COVID-19 pandemic took the world by surprise, exposing weak healthcare systems, fragile supply chains, and limited local manufacturing capacity. Many nations especially in Africa were unprepared, leading to overwhelmed hospitals and economic hardships, especially for those in the informal sector. The crisis highlighted vital role of engineering in addressing health crises and exposed Africa's need for better preparedness and urgent need for resilient systems, local innovation, and better preparedness for future emergencies. The pandemic greatly challenged the African engineering communities to look inward to indigenous technology in preventing or managing the deadly virus. But it also showed us that we have the potential and that "WE CAN" if we determine,

9.2 FAOE Response to COVID-19

The Federation of African Engineering Organizations FAEO, led by the then President, Eng. Martin Manuhwa recognized its critical role and that of its members in managing the impact of the COVID 19 pandemic, which had affected millions of people in over 200 countries of the world. FAEO called on all the Professional Engineering Institutions to use their expertise in collaboration with its partners to respond to this dreadful corona virus.

Among others FAEO's roles in the response to Corona virus were as follows;

- ✓ All FAEO staff had to work from home. All meetings and gatherings were being held on remote platforms to ensure we are still carrying out FAEO activities. Provision for remote working was made by the organization for all staff.
- ✓ Authentic WHO messages on Covid 19 controls were sent to all our members and the importance of correct, accurate and up to date information.
- ✓ FAEO encouraged individuals, companies and universities to manufacture PPEs, sanitizers and ventilators.
- ✓ FAEO developed a comprehensive Engineering Response Strategy Manual. FAEO President himself was working on his country task force (Zimbabwe) on the Covid 19 response, his team working on a project on big data online contact tracking system.

9.3 Results of its efforts and Lessons learned

Though little, but the sensitization resulted into some positive results; Here are only a few of the images **SHOWING THAT WE CAN**

1. GHANA



- ☑ Ghana started using Zipline drones to take samples to testing sites. In a good example of reverse engineering, the United States was also using Zipline drones for similar tasks after successful pilot programs conducted in Africa.
- ☑ To the right-surveyors are making input into the spatial planning arrangements for high density population enclaves that are at risk for community spread.
- ☑ A team of Structural Engineers from the Ghana Institution of Engineering (GhIE) paid a working visit to a construction site of the 100-bed Infectious.

Disease Isolation and Treatment Facility at the Ga East Municipal Hospital

2. ZAMBIA

The Engineering Institution of Zambia (EIZ) made appeal for its members to donate some money that will be presented to the ministry of Health to help the wellbeing of the communities and circulated tips and safety guidelines on COVID-19.



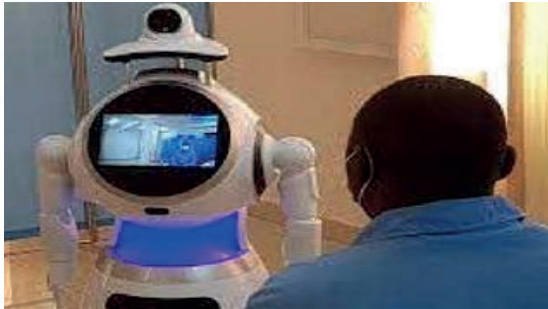
3. ZIMBABWE

- ☑ Zimbabwe universities showed innovation to help fight Covid-19 in the production of face masks, hand sanitizer, and even a prototype ventilator, to help fight the pandemic.
- ☑ The Chinhoyi University of Technology has got its Fashion Textile Department producing 3,500 face masks per day.
- ☑ The Harare Institute of Technology has produced a prototype oxygen ventilator.

4. RWANDA

- ☑ Rwandan biomedical engineers from the Integrated Polytechnic Regional College Kigali (IPRC) successfully developed a ventilator that works exactly as the ones available on the market in eight days.

- ☑ Engineers of IER made use of locally assembled drones to increase awareness through in-flight public broadcasts, and robots to screen and monitor COVID-19 patients.



5. SENEGAL

- ☑ Students from the Dakar Polytechnic School in Senegal built a multifunctional robot designed to lower the risk of Covid-19 contamination from patients to caregivers. The device was equipped with cameras and is remotely controlled via an app.

The robot could move around the rooms of quarantined patients to take their temperatures and deliver drugs and food. The device called 'Dr. Car', was able to measure patients' blood pressure and temperature.



6. NIGERIA

- ☑ The Federal Polytechnic Ilaro in Ogun State, Nigeria, designed and manufactured a ventilator using locally sourced materials. Rector of the Institution, Olusegun Aluko, said it took the team seven days to produce the functional ventilator with less than one million naira. (633.50 US Dollars) He added that they were ready for mass production and coupling.
- ☑ The Nigerian Society of Engineers (NSE) produced and distributed a couple of hand sanitizers and nose mask in various communities across the country.
- ☑ The Nigerian Society of Engineers (NSE) reviewed a Nigerian made medical ventilator that could serve many people at a time.

The discovery, which would be the first of its kind across the world as other ventilators are meant to cater for only one individual.



7. KENYA

- ☑ Nine-year-old Kenyan schoolboy Stephen Wamukota invented a wooden hand-washing machine to help curb the spread of corona virus. The machine allowed users to tip a bucket of water to wash their hands by using a foot pedal. This helped users avoid touching surfaces to reduce the risk of infection.

Kenyan mobile money agent Danson Wanjohi built a wooden device that sanitizes cash notes that are passed through a slot in the machine. Wanjohi constructed the mechanism using a motor, a rubber band and gears which enable notes to pass through the machine. As the notes pass through the device, they are sanitized with a sanitizing solution.



8. SOUTH AFRICA

South African tech entrepreneurs Daniel Ndima and Dineo Lioma made a Covid-19 testing kit which provided results in just 65 minutes. Typically, it could take up to three days for Covid-19 tests to produce results. The testing kit was named qPCR, and features a technology used to measure DNA. The testing kit needed to undergo regulatory approval before it could be rolled out.

9. UGANDA

The Africa Centre of Excellence (ACE) Project is proved its innovation capacity. In Materials, Product Development and Nanotechnology at Makerere, in partnership with a local engineering company, it developed a “self-sanitizing” facemask with an inbuilt sanitizer, which made it possible for the mask to disinfect the user while protecting the face and mouth from acting as entry points for the virus.

10. CONGO (DRC)

Feeling powerless to help her native country in Africa amid the coronavirus pandemic, an electrical engineer at the University of Toledo found a way for people in the Democratic Republic of the Congo (DRC) to build their own breathing machines from scratch using equipment and materials accessible to them. In three weeks, the team of about 20 people who answered her call to volunteer worked together through videoconferencing and emails — and developed a prototype of a life-saving ventilator using open-source specs from the Massachusetts Institute of Technology. The working prototype needed to undergo testing and certification, which Mubenga hoped to accomplish by the end of this 2001(No follow-up has been made by the author for its eventuality). Mubenga teamed up with many partners, including a hospital in Kinshasa and the national trade school.

11. TUNISIA

- ☑ Authorities in Tunisia deployed police robots on the streets of the capital Tunis in April to enforce lockdown measures. The surveillance robots, called PGuards, spied on people walking on the street and approached them to ask why they were out. Offenders then had to show their ID and other documents to the cameras attached to the robots.

The four-wheeled devices were equipped with thermal-imaging cameras and light detection and ranging technology.

- ☑ Also Engineers in Tunisia created an online platform that scans lung X-rays to try to determine if a person could be suffering from coronavirus. When an X-ray is uploaded onto the platform, it run a test to detect signs of a possible coronavirus infection.

Researchers at the National Institute of Applied Science and Technology in Tunis said the tool was 90% effective in indicating the probability of infection.



The platform is still in development, but thousands of lung X-rays have been fed into the system to enable it to recognise the impact of Covid-19 on lungs.

12. CAMEROUN

In Cameroon's Bafoussam, the chief regional city in the western part of the country, at the basement of an uncompleted building, engineers of L'Agence Universitaire pour L'innovation produced prototypes of the much-needed ventilator and a vaporized sanitizing door.

Serge Apupoh, the technical director of the university noted that they mostly import things even when they can produce them locally and with this innovation it is clear that Cameroon has great engineers who can compete at international levels. He added that they have all of his support when any need arises. "Worthy of note is that the government is expected to evaluate and support the mass production of these products made in Cameroon so as to curb the increasing threats of the pandemic.

13. MOROCCO

- ☑ 13 million masks were produced and distributed, made of Moroccan fabric and conformed to international standards, They were even distributed in local shops across Morocco to meet demand.
- ☑ The Moroccan School of Engineering Sciences (EMSI) announced that its students developed in a short time three medical inventions that could help fight the spread of the novel coronavirus. The three winning inventions were names "African Savior", "Digital System Medical Respiratory" and "Moroccan Electronic Perspective."

☑ "African Savior" is a system that collects a nasal swab from patients for screening tests, especially for COVID-19, using drones equipped with test kits that patients could use by themselves. There is a mobile phone application to establish communication with patients and determine, based on the symptoms they present with, whether or not they should do the test.

- ☑ Digital Medical Respiratory System: The second invention, "Digital Medical Respiratory system" aims to ensure proper medical follow-up for patients. The respiratory system sends data such

as pressure and breath frequency to the doctor, without exposing the doctor to any risk of infection.

- ☑ Moroccan Electronic Perspective: The third winning invention, the **“Moroccan Electronic Perspective,”** a mobile app that works as a doctor’s prescription. Patients can communicate

the medication they need at a pharmacy without relying on a piece of paper. The consulting doctor sends the electronic prescription to any pharmacy. The patient identifies their pharmacy with a code and receives the medication, with no physical contact between patient and pharmacist.

PART X - EPILOGUE: FAEO'S ODYSSEY – A LEGACY FORGED IN STEEL AND VISION

As the odyssey starts with a quote: “A journey’s worth lies not in the distance, but in the wisdom earned along the way.” Indeed, from the embers of a dream in 1972 to the roaring flame of transformation in 2024, the Federation of African Engineering Organizations (FAEO) has carved its legacy into the very bedrock of our continent. What began as a flicker of unity among Africa’s engineers has erupted into an unstoppable force, shaping the destiny of nations and industries alike.

Through decades of unwavering resolve, FAEO has championed the cause of innovation, sustainability, and engineering excellence. Each milestone—etched in sweat, intellect, and vision—has led to this defining moment: Africa’s engineers no longer stand at the periphery of decision-making; they are now architects of the continent’s future.

Sealing Africa’s Engineering Future

The signing of historic accords has cemented FAEO’s dominion over the engineering landscape:

The African Union Commission (AUC) – No longer a whisper in the halls of power, FAEO now has a resounding voice at Africa’s highest table, where policies that define our infrastructure, industries, and progress take shape.

The African Continental Free Trade Area (AfCFTA) – Borders dissolve as Africa’s engineers gain the right to build, innovate, and trade freely, unchained from the past, driving an era of boundless possibility.

The African Organization for Standardization (ARSO) – Quality is no longer negotiable; a new gold standard for African engineering is set, ensuring that our infrastructure rivals the best the world has to offer.

The Kigali International Arbitration Centre (KIAC)

– A citadel of justice now stands, safeguarding the integrity of engineering contracts, shielding Africa’s builders from exploitation, and ensuring that fairness reigns.

The Africa-America-Asia Pacific Accord for Engineering Education Accreditation

– The bridges of knowledge are built; African engineers now walk the global stage as equals, their skills recognized, their expertise unchallenged. We only need to walk the talk.

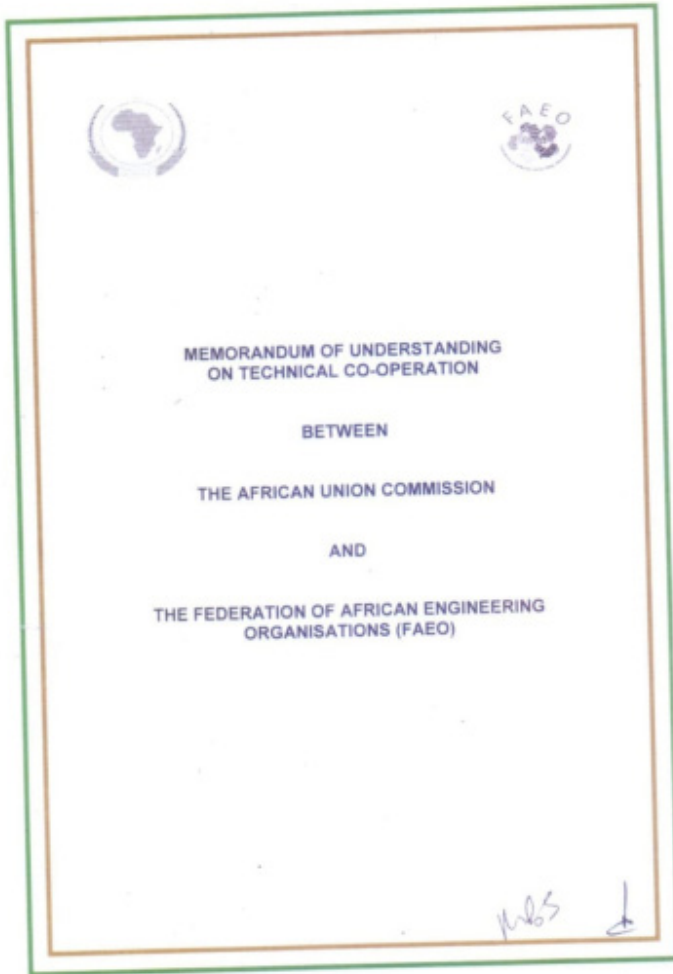
A New Era of Leadership and Influence

With these alliances plus others not listed here, FAEO has shattered the glass ceiling, stepping into a realm where Africa’s engineering destiny is no longer dictated by others. This is the dawn of a new era—one where our people shape their own future with steel, concrete, and an unbreakable will.

This is not an end, but a declaration. Africa’s engineers are no longer confined to the shadows of global discourse. FAEO now stands as a beacon of progress, a vanguard of innovation, a guardian of Africa’s grand ambitions.

The odyssey continues, but now, the path is ours to forge. The table is set, the seats claimed, and the voices of Africa’s engineers will echo across generations. The future is engineered and it is African.

10.1 Summary of key MoUs for future direction





**AFRICA, AMERICA, ASIA AND THE PACIFIC
ACCORD
(A³P ACCORD)**

By



**Federation of African
Engineering Organisations
(FAEO)**



**Federation of Engineering
Institutions of Asia and the
Pacific
(FEIAP)**



**Pan American Federation of
Engineering Societies
(UPADI)**

AFRICA, AMERICA, ASIA AND THE PACIFIC ACCORD (A³P ACCORD)

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Contact: UPADI@upadi.org.br

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Federation of African Engineering Organisations (FAEO),
Suite 205, NEC Building, National Engineering Centre, Off National Mosque
Labour Market Road, Central Business District, Abuja, Nigeria.
Email: info@faeo.org



**MEMORANDUM OF UNDERSTANDING
(MoU)**

BETWEEN

**THE AFRICAN ORGANISATION FOR STANDARDISATION,
P.O. BOX 57363-00200
NAIROBI, KENYA
AND**

**FEDERATION OF AFRICAN ENGINEERING ORGANISATIONS
SUITE 205, NEC BUILDING,
NATIONAL ENGINEERING CENTRE OFF
NATIONAL MOSQUE LABOUR HOUSE ROAD
ABUJA, NIGERIA**

FOR

**COLLABORATION IN STANDARDISATION & CONFORMITY ASSESSMENT IN THE
ENGINEERING SECTOR**



PRC



PART XI - APPENDICES

APPENDIX I: FULL LENGTH ENDORSEMENTS

1. Ing. Prof. Robert Andoh, Adjunct Professor, School of Energy, University of Energy and Natural Resources, Sunyani, Ghana.

The Odyssey of Milestones and Memories: The Federation of African Engineering Organizations (FAEO) 1972 to 2024” is a compelling chronicle that captures the essence of African engineering’s journey over the past five decades. This landmark book provides a detailed account of the FAEO’s formation, evolution, and impact on the African engineering landscape. It highlights the organization’s milestones, challenges, and triumphs, offering readers a comprehensive understanding of its journey. Readers will gain insights into the FAEO’s technical contributions, including its role in promoting sustainable development, technological innovation, and capacity building across the continent.

The book also showcases the leadership and advocacy efforts of the FAEO, emphasizing its influence on policy, education, and industry standards in Africa. This book is an invaluable resource for a diverse audience, including:

Engineers and Technical Professionals: Those working in the engineering field will find inspiration and practical insights from the FAEO’s initiatives and achievements.

Policy Makers and Government Officials: The book offers valuable perspectives on the role of engineering in sustainable development and policy advocacy, making it a useful guide for decision-makers. • **Academics and Researchers:** Scholars studying engineering, development, and African studies will benefit from the detailed historical and technical information presented in the book.

Students and Young Professionals: Aspiring engineers and young professionals will be motivated by the stories of innovation, leadership, and resilience, encouraging them to contribute to Africa’s engineering future.

General Readers: Anyone interested in the history of African development, engineering, and the impact of collaborative efforts will find this book enlightening and engaging.

Commendation: The Federation of African Engineering Organizations (FAEO) deserves commendation for its unwavering commitment to advancing the engineering profession in Africa. Its achievements over the past five decades are a testament to the dedication and hard work of its leadership and members. The FAEO’s vision for a sustainable and technologically advanced Africa is both inspiring and essential for the continent’s future. As we look ahead, the FAEO’s continued efforts will undoubtedly lead to even greater milestones and memories.

2. Ir. Academician Emeritus Prof Tan Sri Dato’ Dr Chuah Hean Teik from Malaysia

I am extremely happy to read this book. It is certainly a great record of the history and journey of FAEO. This book is not a record of history of formation and objectives of FAEO, but also talks about the vision and future plans for FAEO in particular, and the whole Africa Continent in general. The HAIR principles are very visionary and practical. I am particularly pleased to note the mention of initiatives and collaboration with FEIAP, the AAP and A3P Accord. Let us continue to work closely together for the engineering fraternity and build a sustainable world for future generations.

3. Eng. Ahmed Hesham, Egypt Syndicate of Engineers (ESE)

I congratulate you on your distinguished effort in preparing “The Odyssey of Milestones and Memories-The Federation Of African Engineering Organizations (FAEO) -1972-2024”

This book is an important record of the pioneering role played by African engineers to pool their energy together after most African countries gained their independence to be the spearhead of Africa’s development.

Your linguistic formulation of the book reflects the distinguished culture of African engineers. Today, the Africa faces challenges similar to those of the independence period, perhaps more dangerous.

Our slogan for the coming period must be : “Those who will build Africa are its sons, and at the forefront are the engineers.” I wish you success and continued serving African Engineers. I hope, soon, you will be the President of WEFO.

4. Dato’ Ir. (Dr.) Lee Yee Cheong, Honorary Chairman, Governing Council, International Science Technology and Innovation Centre (ISTIC) for South-South Cooperation from Malaysia

My heartiest congratulations to you and FAEO for the wonderful book “The Odyssey of Milestones and Memories: FAEO 1972-2024”. It records vividly the achievements of FAEO as well as its trials and tribulations Highlights;- This comprehensive volume chronicles the remarkable journey of the Federation of African Engineering Organizations (FAEO), tracing its evolution from its origins as the Federation of African Organizations of Engineers (FAOE) in 1972 to its reformation as FAEO in 2012 and its subsequent growth. The book vividly captures FAEO’s dedication to advancing engineering science, fostering collaboration, and addressing Africa’s pressing infrastructure and sustainability challenges.

Notably, it highlights FAEO’s pivotal milestones, including its recognition by the African Union and its active engagement in global forums such as the World Federation of Engineering Organizations (WFEO). The book also showcases FAEO’s impactful initiatives, such as the Infrastructure Report Card (IRC), and its commitment to inclusivity through programs like Women in Engineering and youth mentorship. It is a compelling account of FAEO’s contributions to the African engineering landscape and its role in shaping the continent’s future.

5. Dr. Straton Bullet Ruhinda, The Open University of Tanzania, Dar es Salaam

The Odyssey of Milestones and Memories is an invaluable resource for understanding FAEO’s historical trajectory and its contribution to engineering in Africa. Its celebration of milestones and vision for the future of African engineering is laudable, though future editions would benefit from a more critical approach to ongoing challenges and clearer thematic organization.

6. Eng. Martin Manuhwa, WFEO Chair Capacity Building Standing Technical Committee, Harare - Zimbabwe.

What a beautiful valedictory piece and indeed you moved and shook the hearts of many pan Africanists and Engineering Practitioners. You knocked at the doors of policy makers and you ran up and down the corridors of the AU, AfCFTA, ARSO, ADEA, and you watered the seeds we planted in the FAEO Constitution we wrote in 2012 (Nairobi) in and reviewed in 2019(Livingstone) and as a living document will continue to be enriched for the betterment of FAEO. We thank you for the journey and understanding that the FAEO leadership is a service to engineering towards the attainment of the Africa we Want! It’s not an accolade for a CV but a contribution to the betterment of humanity in Africa. It’s to unite us, build teams, to adhere selfless professionalism and to build on the success of your predecessors! That you

have achieved! Thank you and welcome to the club of elders and past presidents.

7. Eng. Professor Jonas Redwood Sawyerr

Congratulations Mr. President. You fully justified the confidence the membership reposed in you by your election to serve the Organization for the past two years. I can with confidence state that you acquitted yourself with honor and success, raising the bar of achievements once again as did your predecessors. The compilation of the Odyssey of FAEO is a landmark achievement that will remain your legacy for many years to come as would the several MoUs signed on behalf of FAEO. Well done. We pray for your continued cooperation and collaboration in your new role as IPP working in support of our new President as we together move FAEO to even greater heights than it has ever reached. Congratulations once again.

8. Prof Ijumba International Research and Innovation Programme Manager, the Africa Hub of Coventry University, Kigali - Rwanda.

Thank you very much for sharing this book. It is a very useful document which must be a recommended/mandatory historical document to read by those in the leadership of the profession in Africa. The report provides a very useful historical perspective and also an important analysis for the future. The HAIR Competences should be integrated in the curriculum of various engineering education and training programmes. Congratulations to you and the team for producing this document. A lot has been achieved and it is something to be proud of. All the best and kind regards.

9. Neill Stansbury: Co-founder and Director: Global Infrastructure Anti-Corruption Centre (GIACC).

Infrastructure Anti-Corruption Centre (GIACC) congratulates the FAEO on its Odyssey between 1972 to

2024, and for its inspired leadership in promoting and supporting the vital role and growth of engineering in Africa. GIACC has a long-standing alliance with the FAEO, under which we together raise awareness of the cost and risk of corruption through publicity and training, and encourage and promote the implementation of effective anti-corruption measures by government and corporations and on infrastructure projects. GIACC will continue to work jointly and successfully with FAEO on this important initiative.

10. Dr. Ivan Emile MWIKARAGO, PhD. Rwanda-FDA analyst and senior lecturer University of Rwanda, College of Medicine and Health Sciences –(CHMS)

A. Critical Analysis of “The Odyssey of Milestones and Memories”

Overview The book registers the journey of the Federation of African Engineering Organizations (FAEO) from its inception in 1972 to 2024, highlighting milestones, challenges, and transformations in the engineering landscape across Africa. It provides a comprehensive overview of the federation’s evolution, emphasizing its role in promoting engineering as a catalyst for development.

Key Strengths

1. Historical Context:

The book effectively situates FAEO within the broader historical and socio-political context of Africa, illustrating how Pan-Africanism has influenced engineering practices and collaborations.

2. Milestones and Achievements:

Detailed accounts of significant milestones, such as the establishment of FAEO and its transformation into GIACC, highlight the federation’s adaptive strategies in response to challenges.

3. Leadership Contributions:

The profiles of various presidents provide insight into leadership styles and their impact on the federation's direction, showcasing a legacy of commitment and innovation.

4. Focus on Inclusivity:

The emphasis on gender equality and youth involvement in engineering reflects a modern understanding of the need for diverse perspectives in addressing Africa's challenges.

5. Response to Global Challenges:

The discussion on the COVID-19 pandemic and FAEO's proactive measures illustrates the federation's agility and relevance in times of crisis.

B. Academic Researchers' Areas of Interest in "The Odyssey of Milestones and Memories"

1. Engineering Development in Africa:

Exploration of the historical context and evolution of engineering organizations in Africa, particularly the FAEO. Analysis of the role of engineering in addressing socio-economic challenges on the continent.

2. Pan-Africanism and Collaboration:

Examination of how Pan-African ideals have shaped engineering practices and policies is missing rather vaguely a hint to improve for new readers. Interest in the collaborative efforts among African nations to unify engineering standards and practices.

3. Impact of Leadership:

Studies on the influence of various leaders within FAEO and their contributions to the organization's growth and direction. Assessment of leadership styles and their effectiveness in fostering collaboration and innovation

4. Sustainable Development Goals (SDGs)

Research on how FAEO aligns its initiatives with the UN's SDGs, particularly in infrastructure, education, and environmental sustainability. Evaluation of projects aimed at promoting sustainable engineering practices.

5. Technological Innovation:

Investigation into the integration of new technologies in engineering practices across Africa. Focus on the role of engineering in advancing technological solutions to local challenges.

6. Gender and Diversity in Engineering:

Analysis of initiatives aimed at promoting inclusivity, particularly for women and youth in engineering. Research on the impact of diverse perspectives on engineering solutions and practices.

C. SWOT Analysis of FAEO Based on the Book

Strengths

Established Network: FAEO has a strong foundation and network of engineering organizations across Africa.

Leadership Legacy: Experienced leaders have guided the organization through various challenges, ensuring continuity and resilience.

Focus on Sustainability: Commitment to aligning engineering practices with sustainable development goals.

Weaknesses

Financial Constraints: Dependence on member contributions and external funding can limit operational capacity.

Fragmented Participation: Variability in regional participation and engagement can hinder unified efforts and progress.

Limited Awareness: Some member states may lack awareness affecting participation and support.

Opportunities

Technological Advancements: The rise of new technologies presents opportunities for innovation in engineering practices.

International Collaboration: Increased global interest in African development can lead to partnerships that enhance capacity and resources.

Youth Engagement: Growing youth interest in engineering can be harnessed to drive future initiatives and innovations.

Threats

Political Instability: Political challenges in various member states can disrupt collaboration and progress how this has been contextualized is missing for readers in this point of view.

Economic Challenges: Economic downturns can affect funding and resource allocation for engineering projects. criteria analysis on this point could have been ideal

Global Competition: Increased competition from other regions in engineering and technology could impact, This write Africa's-up should give the positioning perspective.

D. Conclusion

1. The Odyssey of Milestones and Memories” serves as a vital resource for understanding the evolution of engineering in Africa through the lens of FAEO. Its strengths lie in its comprehensive historical narrative and focus on leadership and inclusivity. However, enhancing the analytical depth and incorporating diverse perspectives could further enrich its contributions to the field. Overall, the book is a commendable effort to document the journey of African engineering organizations and their pivotal role in the continent's development.

2. The book provides a rich resource for academic researchers interested in the evolution of engineering in Africa. It highlights both the challenges and opportunities faced by the FAEO. The SWOT analysis offers insights into the organization's current standing and future potential, making it a valuable tool for further research and strategic planning.

3. The book “The Odyssey of Milestones and Memories” provides a comprehensive analysis of the integration of AI and the Internet of Things (IoT) within the context of the African workforce. It highlights how these technologies are transforming industries and creating new opportunities for growth and development across the continent. Despite the potential benefits, there are significant challenges, including limited infrastructure, access to technology, and the need for regulatory frameworks to guide the ethical use of AI. This write-up would sound solid to mention but a few in engineering in Rwanda and Africa as a whole.

4. Mention smart cities and why engineering is critical in this area: Various African cities are beginning to implement smart city projects that utilize IoT technologies to improve urban living conditions, does any of the milestones mention this if relevant, it could be vital to incorporate.

Health care and innovations: The book should mention that the milestones have come out at a time when AI is being used to enhance healthcare delivery, and engineering innovations with applications in diagnostics, patient care, and administrative efficiency and Telemedicine and remote monitoring systems powered by IoT are expanding access to healthcare services, especially in rural area, this book should mention if there no milestones on record in use of AI and internet of things engineering.

11. Prof. Dawn Bonfield MBE, FEng, CEng, FIMMM FICE, HonFIStructE FWES, HonDEng, President, Commonwealth Engineers' Council (2023-2025).

A. FAEO – Odyssey of Milestones and Memories,

It has been such a great pleasure to read this tour de force which tells the remarkable story of the journey of the Federation of African Engineering Organizations, to become the inspiring and proud organization it is today.

From the perspective of the Commonwealth Engineers' Council, I recognize the story of the ups and downs that are often common to long established organizations, and there is no doubt that FAEO has gone from strength to strength as it has overcome hurdles along the way, and has come out stronger and more united as a result.

It tells the story of the vision and resilience of its great leaders, as well as recognizing the work of an army of dedicated supporters in different parts of the Continent over the years. It catalogues the defining moments of FAEO and gives visibility to the contributions of many individuals.

It is clear that the values and the priorities of the people of Africa are at the heart of this organization, and that it seeks to use engineering as a tool to ensure a sustainable future. FAEO clearly has an important role in shaping the success of Africa, and the priorities that have been identified are spot on.

The changing climate and the rise of digitalization will affect many aspects of our life, as urban areas grow rapidly and require planning and visionary leadership for success, with topics that are clearly in the engineering domain, such as energy, transport, infrastructure decarbonization, materials, water, sanitation, and data being key components.

Engineering leadership of the type that FAEO can

provide is crucial at this important time, and the past and future partnerships that have been forged will be key to success.

Recognizing the importance of industry relevant and mutually recognized skills and training, whilst providing sufficient capacity to deliver change at the pace required is another key driver for FAEO, and is rightly one of the future areas of focus.

I am inspired by the wonderful story of the journey of FAEO, and at the Commonwealth Engineers' Council we renew our support for the identified goals you have laid out in response to global challenges that we see all around the world. Please do count on our support going forwards, and we look forward to joining you in addressing some of these future challenges together, where appropriate.

12. Eng. Dr. Gemma Modu, Immediate Past President, Institution of Engineers Tanzania (IET)

Review on “The Odyssey of Milestones and Memories -FAEO 1972-2024”: observations/comments and recommendations:

Generally, the book provides a valuable historical account and remarkable journey from 1972 to 2024 of FAEO. The book discusses challenges in scattered sections. Considering the importance of the matter, and to ensure a focused and structured discussion, a dedicated chapter titled “Challenges, Strategic Responses, and the Way Forward” should be introduced. This chapter should systematically outline:

Key challenges FAEO has faced over the years.

Strategic interventions that have been applied.
Future recommendations for overcoming emerging challenges.

A “Conclusions and Recommendations”

Chapter should be introduced to provide a comprehensive wrap-up of FAEO’s journey, summarizing key takeaways and strategic insights for the future; and

The book lacks a clear referencing system to support its historical and factual narratives. To ensure credibility, citations must be indicated where applicable, and a References section should be added at the end of the book.

APPENDIX II - REFERENCES

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APPENDIX III - ABOUT THE AUTHOR



Eng. KAZAWADI Papias Dedeki

Visionary Engineer | Change-Maker | Yearning for Driving Africa’s Progress through Engineering and Innovation.

Eng. Kazawadi Papias Dedeki is a transformative engineer and institutional leader with **25+ years** of proven impact across engineering policy, infrastructure systems, and sustainability in Africa. He is the Founder and CEO of **TASKS AFRICA CBC**, architect of innovative public-private partnerships, and thought leader in the circular economy and ethical engineering governance. He is also the Immediate Past President of both **the Federation of African Engineering Organizations (FAEO)** and **the Institution of Engineers Rwanda (IER)**.

Eng. Kazawadi is highly recognized for championing and pioneering the **HAIR-STEIC Framework**—a unique values-driven model for engineering excellence—and for co-chairing the **A3P Accord**, a landmark platform for Pan-African and global engineering collaboration. He is driven by a mission to **“Innovate, Educate, Elevate”** and create engineering-led solutions aligned with **Agenda 2063** and Africa’s development aspirations.

APPENDIX IV: SPONSORS



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- Water & Sanitation
- Energy & Industrial Establishment
- Environmental & Social Impact Assessment

OUR MISSION

To provide high quality multi-disciplinary services in infrastructure development in Ghana and the Africa region.

OUR VISION

To be recognised as the premiere consulting firm and center of excellence delivering world-class, environmentally sensitive solutions for sustainable development of infrastructure in Africa.

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By helping young professionals identify, engage, and leverage on the power of five (cheerleader, mentor, coach, friend, peer) in career enhancements for confidence and Ultimate Success



Our Vision

To be a catalyst for nurturing talents within the built environment, driving resilient and sustainable infrastructure development for Africa's prosperous and sustainable future.



Our Mission

To empower talents and foster innovation in the built environment by upholding Social responsibility, Transparency, Ethical standards, Integrity and collaboration, leveraging holistic analysis and visionary approaches to drive sustainable infrastructure development in Africa.



Core values

1. Social Responsibility
2. Transparency
3. Ethical Standards
4. Integrity
5. Collaboration

Tasks Africa Scope



Engineering for Problem-Solving Platform

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local partners of
HATCH

*"Let us strive to leave Africa
better than we found it. We
have an opportunity to
enlighten and light Africa"*

ENG. DR. MARTIN MANUHWAL, 2024

Our Journey: Milestones and Memories

Since 2010, ZAIDG has been at the forefront of Africa's engineering evolution. From pioneering energy projects to advancing sustainable infrastructure, our journey reflects a commitment to excellence and innovation. As we celebrate over a decade of impact, we look forward to shaping the next chapter of Africa's development.

Projects

1. Owners Engineers with Hatch for Kariba Expansion Project (300MW)
2. Technical Advisors with Hatch for ZPC on Hwange 7 & 8 (600MW)
3. Environmental and Engineering Consultants for various entities in SADC
4. Harare Masterplan Power and Energy Lead Consultants



Civil & Structural Engineering

Building resilient foundations for Africa's growth.



Electrical & Mechanical Engineering

Powering progress with cutting-edge technology.



Environmental & Energy Solutions

Leading the way in sustainable development.



Project Management

Delivering excellence from concept to completion.

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