



# ENGINEERING MAGAZINE



A PUBLICATION OF IER



November 2023



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# Table of content



TABLE OF CONTENT

1. Governing Council.....	4
2. Secretariat.....	5
3. IER at Glance.....	6
4. A word from the Director General, Rwanda Housing Authority.....	7
5. A Word from the Chairman.....	9
6. IER Executive Secretary on Milestones of Engineering .....	10
7. IER Strategic Direction.....	14
8. International Affiliation.....	15
9. Partners & Stakeholders.....	15
10. IER Membership .....	16
11. Harnessing professionalism and ethical standards among engineers.....	17
12. What do you need to become a member of IER?.....	19
13. Certification of Electrical Practitioners.....	20
14. Capacity Building Initiatives.....	21
15. Equipping young engineers with Valuable Industry specific skills.....	24
16. Geotechnical solutions for Sustainable Infrastructure Development in Rwanda....	26
17. Empowerment of women engineering professionals.....	27
18. The Quest to ensure safety and Quality of engineering Assets.....	30
19. Innovations in the Construction Sector.....	33
20. Conferences and Public Outreach .....	34
21. Ten things about Engineering in Rwanda .....	39
22. IER Community visits Murambi Genocide Memorial.....	41
23. Opportunities for Local Engineers.....	43
24. Stakeholder Collaboration.....	44
25. IER to host Global Engineering Conference, 2024.....	45



# 1. Governing Council

The Governing Council is the policy making arm of the General Assembly. Its main responsibilities include; putting in place internal policies, programmes and guidelines for promoting the engineering profession and best practices, examine applications for admission and admits new members, determine the standard rates of professional fees payable to engineers and ensure compliance with engineering code of ethics.



**Eng. Gentil KANGAHO,**  
President & Chairman, Governing Council



**Eng. Leo B. KASSANA**  
Vice President & Chairman



**Eng. Alexis D. HATEGKIMANA**  
Registrar and Member



**Eng. Yvette U. MUNYANEZA**  
Treasurer and Member



**Eng. Joseph BYUKUSENGE**  
Member



**Eng. Ely SAFARI**  
Member



**Eng. Redempta DUSANGWE**  
Member



**Mr. Steven SABITI**  
Executive Secretary/  
Chief Executive Officer



## 2. Secretariat



The Secretariat is responsible for the day to day administration of IER activities. In this respect, it prepares all technical documents needed by the Governing Council, including policy documents, strategic and operational plans and budgets as well as activity reports. The Executive Secretariat is responsible for implementation of all policies, programs and projects that have been approved by the Governing Council and undertaken by IER financial reporting.



**Mr. Steven SABITI**  
Executive Secretary/  
Chief Executive Officer



**Eng. Lydie E. Uwantege**  
Operations Manager



**Lucky NDAYISABA**  
Finance and Administration Manager



**Diana MUTONI**  
Communication and Public Relations  
Manager



**Gaudence INGABIRE**  
Membership & Registration  
Officer



**George RUCINYA**  
Data Reconciliation Officer



**Viviane SANGWINEZA**  
Archives and Digitization  
Officer



### 3. IER at Glance

We have entered a new era where we should advance the vision and mission of the great Institution of Engineering Rwanda (IER) using all channels of communication available to ensure that every engineering professional is aware of our reason for existence.

The Engineering Magazine is one big leap forward in our vision to share the activities of IER with members and those aspiring to join the esteemed profession. This, our maiden issue, has all the hallmarks of an informational, educational, and entertaining publication.

In this issue, we shall share tremendous growth achieved in the last three years, despite covid 19 that shocked the world,

IER through able leadership managed to sail through, we witnessed a double-digit growth in membership, located to a new decent office, held a number of oath events, organized conferences, and various capacity building initiatives.

It's important to note that the Institution got clean audit reports and all outstanding obligations were settled. The Secretariat is staffed with competent individuals who have driven IER to great heights and there is no doubt they will continue doing a great job.

We call upon all members to join hands in the quest to build our Esteemed Institution.



## 4. A word from the Director General, Rwanda Housing Authority



Dear members and partners of the Institution of Engineers Rwanda.

It is with great pleasure that I congratulate the Institution of Engineers Rwanda for this inaugural magazine that will periodically highlight the milestones within this noble sector that is the Engineering Industry.

This publication is a testament to the invaluable contribution of the Institution of Engineers Rwanda (IER) in ensuring the safety, affordability, and standardization of buildings within our beloved nation.

It is a widely held view that housing is stability, it is dignity, and it is an absolutely necessary and critical infrastructure.

To this end, engineers are indispensable for housing to be all above pivotal, particularly in the context of our Government buildings and the provision of affordable and durable housing to Rwandans.

Without the dedicated efforts of IER, the task of supervising and ensuring standardized construction in Rwandan cities and public buildings would undoubtedly be a formidable challenge.

In the grand scheme of things, our work is cut out for us in the construction industry. For instance, in the National Strategy for Transformation (NST1), which is our country's development blueprint, the target is to have 80 per cent of Rwandan households living in planned settlements by the end of 2024.

The IER's unwavering commitment to this cause has been nothing short of remarkable, and we count on you even more during the subsequent NST2 that will kick off in 2025.

As we explore the achievements of IER through this publication, we are reminded of the aggressive pursuit of excellence within the built industry. Their dedication has left an indelible mark on the landscape of our nation, elevating the standards of construction and engineering to new heights.

In this magazine, we celebrate the achievements of this professional body and the significant role engineers play in our nation's development. We invite you to immerse yourselves in the stories of innovation, dedication, and progress that have defined the IER's journey in the last few years.

Together, we commit to build a safer, more affordable, and standardized future that all Rwandans deserve. I extend my deepest appreciation to IER for their tireless efforts and to you, our valued members, beneficiaries, and development partners, for your support and commitment to the engineering industry in Rwanda.

To conclude, I wish to reiterate that for the country and its people to have dignified places of abode and work, the role of engineers in general and that of the Institution of Engineers Rwanda in particular cannot be overstated.

**Alphonse RUKABURANDEKWE**  
Director General, Rwanda Housing Authority.

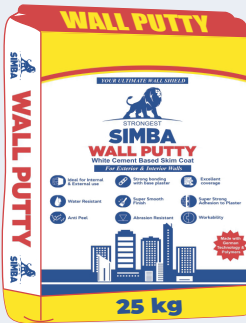
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## 5. A Word from the Chairman



Dear Readers and Partners,

I am delighted to announce the launch of the Engineering Magazine, a publication brought to you by the Institution of Engineers Rwanda (IER). I extend a warm welcome to all of you as we embark on this exciting journey.

The Engineering Magazine signifies our commitment to sharing knowledge, innovation, and experiences within the engineering community. It serves as a platform where we celebrate the remarkable achievements in our profession, highlight the transformative power of engineering, and explore the potential of our dynamic sector.

As we take this step forward, we invite contributors from diverse backgrounds to support the noble mission of this Engineering Magazine. Your insights and expertise are invaluable as we aim to create a publication that enriches and inspires our community.

We are particularly thankful for the enduring partnerships that have been established between IER and various organizations, government institutions, and stakeholders within the engineering sector. These collaborations have been instrumental in advancing our shared vision for the growth and excellence of the engineering profession in Rwanda.

Our heartfelt appreciation goes to our local and international development partners who have consistently demonstrated unwavering commitment and support. Your collaboration has played a significant role in achieving IER's strategic goals, especially in enhancing the skills of our engineering workforce, contributing to economic infrastructure, and promoting ICT development as outlined in Rwanda's National Strategy for Transformation (NST1).

I'd like to take this opportunity to express my sincere gratitude to the dedicated members of the Governing Council. They have diligently fulfilled their roles and responsibilities, particularly in providing steadfast support to the Executive Secretariat in its daily operations.

To our valued stakeholders, I extend my sincere appreciation on behalf of the Governing Council, the Executive Secretariat, and the entire IER team. It is through your continued collaboration that we can successfully fulfill our critical mission, shaping the future of engineering in Rwanda and beyond.

Together, we can achieve great things. With your ongoing support and active participation, the Engineering Magazine promises to be a valuable source of knowledge, inspiration, and innovation for our engineering community.

Warm regards,

**Eng. Gentil Kangaho**  
**President and Chairman of the Governing Council**  
**Institution of Engineers Rwanda (IER)**

## 6. IER Executive Secretary on milestones of engineering in Rwanda, future plans



The engineering sector in Rwanda has grown in leaps and bounds. Currently, the Institution of Engineers Rwanda (IER) counts over 3,000 members with just 12 years of existence; an unprecedented growth compared to peer institutions both in the region and beyond. The plan is to have 10,000 members by 2028 as prescribed in the body's five-year plan.

To get a comprehensive picture on the state of the industry and future plans, we interviewed Steven Sabiti, the Executive Secretary of IER for these insights.

***Take us through the journey of IER for the last 12 years since it was established.***

The Institution of Engineers Rwanda (IER) was established in 2012 by the law No 29/06/2012 and its mandate is to regulate the profession of engineering, build capacity of members and to advocate for and on behalf of engineers.

Over the last 12 years, the Institution has grown tremendously. After the establishment of the legal and regulatory frameworks, various governance structures and policies were put in place, and strategic documents were developed to guide the institution to what it is today.

The journey has been a bit complex because the concept of engineering professionalism is not yet very well appreciated in our society, so, it's been a hustle for the public to understand that engineering services are supposed to be offered by registered professionals.

Many still do not even understand who is an engineer. They think that it is whoever studied engineering at university but it is very different. After graduating in an engineering programme, one has to register with the institution to be truly qualified and allowed to practice.

It has been a journey of awareness to understand that Engineering is a complex discipline that must be performed by people who are properly regulated. However, over the years, we have seen a mindset change.

On the other hand, it was not easy on the financial and staffing side of running the institution but nevertheless, we thrived and here we are.

***Rwanda is known for making significant strides across sectors in the past three decades, especially, in infrastructure development. What was the role of Rwandan engineers in this journey?***

Engineers have played a very critical role in infrastructure development of this country. When, for instance when local companies builds an asphalt road, the cost reduces by a half, due to employing local engineers.

Secondly, in all ongoing construction projects in the country, you will find a number of locals working alongside the foreigners. Their role has been very fundamental in development of infrastructure.

***Have your members benefited from these international firms contracted on some infrastructure projects in Rwanda?***

When we look at local engineers who are heading private and public entities, there is an knowledgeable aspect of knowledge transfer from foreign firms that have worked here over the years.

We have local engineers who are heading some of projects of roads, housing, and other infrastructure assets. Growing the profession to the level of having indigenous engineers leading the projects by themselves without foreigners is very commendable.

***The institution has registered noticeable growth across different metrics. What did you do differently in the last three years?***

I will attribute the change to three aspects;

firstly, when I joined the institution in 2019, we mapped out a number of stakeholders in public and private entities and engaged them on the need to employ registered and compliant engineers, and this greatly increased the number of members in the institution.

Secondly, we ran awareness campaigns to educate the general public about the mandate of the Institution while also building our internal capabilities of systems that digitized the registration process.

Additionally, we redefined the staffing structure, terms of duties, and increased the number of staff. We also organized oath events on a quarterly basis which boosted the enrollment of new members.

***The world is increasingly becoming a global village, how does IER collaborate with foreign like-minded professionals?***

Currently, we are affiliated with some international engineering entities including the World Federation of Engineering Organization (WFEO), Federation of African Engineering Organization, East African Engineering Organization, and we have a partnership with China Science Technology College, among others.

We have also assented to the Mutual Recognition Agreement for the East African Community to allow labour mobility where Rwandan engineers can be easily registered to practice in different member-states of the EAC and vice-versa.

In addition, we have been discussing about having a master database of engineers at African level for preferential treatment of African professionals in some projects before going beyond the



continent, along with meetings specific on the role of engineers in implementing the African Continental Free Trade Agreement (AfCFTA) to which different African countries assented, including Rwanda.

***What have you been doing to address the apparent disconnect between knowledge acquired in tertiary institutions and skills required on the market in the field of engineering?***

There is a very big gap between academia and industry, and this is informed by a survey that we conducted. We are strategizing on how to bridge that gap with a focus on graduate engineers and there have been a number of initiatives in that regard.

For instance, with the support of the Royal Academy of Engineers, we started a six-month internship programme where we identified and placed interns in different companies and followed up on them throughout their journey.

Through this internship programme, these engineering graduates are able to acquire firsthand knowledge and get the feel of the industry.

The good news is that over 70 percent of these graduates who undergo that programme end up being employed by the institutions where they are placed, which means they gained the knowledge required for employment.

Going forward we are trying to advocate for the outcome of engineering-based education which will allow to produce graduates that possess required skills on the market, through a partnership with Malaysia for best practices.

We also want to accredit engineering programmes that will equip engineers with market-ready skills as well as collaborate with universities to have practicing engineers as guest lecturers for training purpose.

These are some key elements in the pipeline and we will continue working to bridge that gap.

***One of your mandate is to lobby on behalf of your members on policy matters. Have you been doing this and what impact have your registered?***

We sit in different forums and discuss the importance of engineering and how these services should be incorporated in national development strategies. The most recent achievement is when we successfully lobbied for the recognition of technologists and technicians.

The TVET policy state the target of having 60 percent of STEM students enrolled in technical and vocational studies but when you look at the building code, there was no scope of work that is specific for the students graduating from these disciplines. We engaged stakeholders and ended up having a ministerial instruction that is defining the scope for technologists and technicians.

We also played a role in defining professional services in the new procurement law. We have influenced policies in formal and informal ways through submitting inspection reports and challenges to be addressed to make sure we build an efficient environment.

What I also want to add is that the government has been a good listener and properly understands the role and mandate of the Institution, which has somewhat made our work a little easier on the lobby side.

**How does the participation of women stand in the field of engineering?**

I would say that things do not look good currently. We are now at 10 percent membership of women and we are very concerned.

However, we undertook a couple of initiatives to increase the number of registered women engineers, including conducting a study to understand the underlying issues for the gap between women who graduate from engineering and those who end up practicing it.

Some reasons include a stiff working environment, stereotypes, which are mostly coming from a place of misinformation. We have embarked on countering that by conducting awareness and workshops at different levels, even in secondary schools to have a different mindset and narrative through establishing engineering clubs and students engineering chapter in universities. We shall use such platforms to demystify these myths in these students, especially

the girls to ensure that they grow to love the profession.

**As the head of IER, give us a snapshot of engineering profession in the next five years**

We have a five-year strategy which will start in 2024 to 2029 with a focus on professional development and capacity building.

We want to have a pool of engineers who will play a significant role in implementing the infrastructure policy framework.

We want to actively work on advocacy and policy influence so that the engineering discipline is embedded in every strategic documents namely informing aspects of the next National Strategy for Transformation.

We also want to do a lot of research and knowledge sharing through conferences, and end-to-end solutions like tackling settlement in high-risk zones in the country, as well as enhance industrial partnership so that we support economic growth and industrial development.

Lastly, we want to focus on ethical and professional standards to ensure that all engineering assets comply with the national and international standards, and promote accountability within our members.

## 7. IER Strategic Direction



### Mandate

- Regulation and Certification
- Capacity Building
- Advocacy

### Vision

To become a centre of excellence and best practices in advancing and promoting Engineering profession in Rwanda.

### Mission

To advance, promote and develop the engineering profession in Rwanda, through enhanced awareness of the engineering profession, regulation and capacity building of its members.

### Core Values

- Integrity
- Professionalism
- Innovation
- Accountability
- Passion
- Social Responsibility



## 8. International Affiliation



WFEO / FMOI

World Federation of  
Engineering  
Organizations



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

Federation of  
Engineering Institutions  
of Asia and the Pacific



Federation of  
African Engineering  
Organization



Eastern African  
Federation of  
Engineering  
Organizations (EAFEO)

## 9. Partners & Stakeholders



MININFRA



Rwanda Housing Authority



Rwanda Utilities Regulatory Authority

**skat** Swiss Resource Centre and  
Consultancies for Development

Swiss Resource Centre and  
Consultancies for Development



Rwanda Transport  
Development Agency



Egyptian Syndicate of  
Engineers



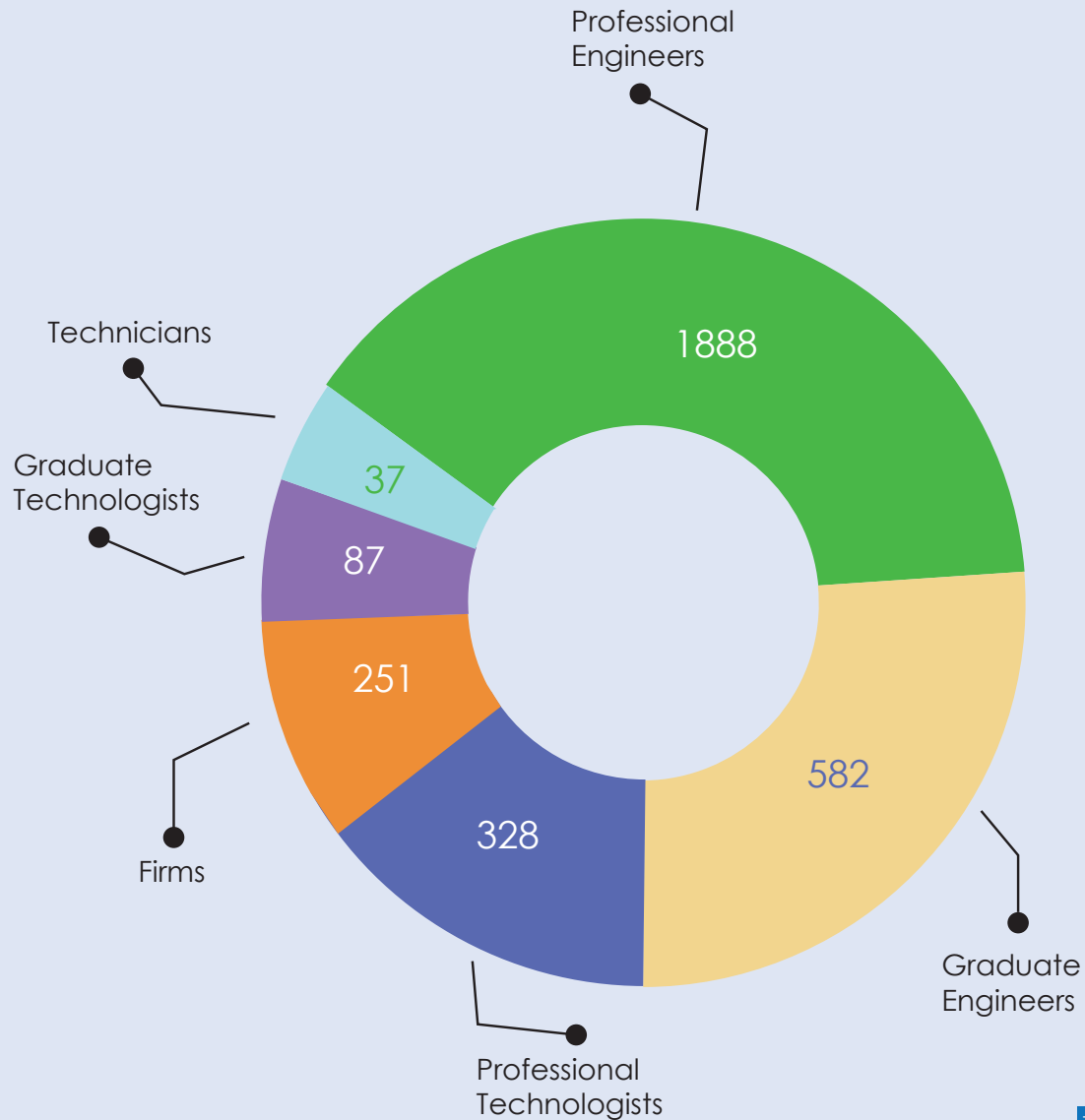
Royal Academy of  
Engineering



Rwanda Standards Board

## 10. IER Membership

Through extensive awareness campaigns, IER membership has grown from approximately 1,051 members at the end of year 2019 and presently all the registered members number has grown to 3173. This is composed of professional engineers, graduate engineers, technologists, technicians as well as consulting firms



# 11. Harnessing professionalism and ethical standards among engineers



The engineering landscape is experiencing rapid advancements and evolving challenges that require optimal professionals to build sustainable societies through their different works.

The Institution of Engineers Rwanda (IER) regularly welcomes new members to ensure that professional standards are upheld across various fields as they play an active role in the fast-paced development of the country.



According to the law No 29/2012 that governs the engineering body, one only becomes an engineer once they have been admitted by IER and only then they are legally allowed to practice in Rwanda.

The institution has a mandate to ensure all members are aware and comply with requirements, and are compelled to sign against a code of ethics to which they are obligated to conform to while undertaking their duties.

The IER in turn supports practitioners through advocacy for and on behalf of the practitioners, including but not limited to nominating and lobbying for members' representation on leadership of both local and international engineering bodies.

The IER has various membership grades such as student, graduate, associate, corporate, and fellow. Members are required to abide by a code of ethics



and conduct themselves in a manner that upholds the integrity of the profession while paying a fee to provide a steady stream of income that can be used to support the body's activities.

IER already has more than 3,000 registered members and it seeks to increase this number threefold to 10,000 by 2028 as envisaged in the institution's strategic plan 2024-2028.

The strategic plan is a roadmap for the Institution that is hinged on key strategic pillars focusing on professional development, advocacy, knowledge sharing, industry collaboration, and ethical standards.

Eng. Gentil KANGAHO, the President and Chairman of Institution of Engineers Rwanda, noted that members should commit to the country's development and drive the innovations in the profession. "Our expertise, knowledge, and passion have the power to revolutionize the infrastructure landscape of our beloved

country. We are the ones who design, build, and maintain the physical backbone of society."

"From roads that connect communities and facilitate commerce, to sustainable energy systems that power industries and homes, we have the capacity to reshape the very foundations of Rwanda's development," he said, stressing the importance of having members who meet the requirements.

The strategic plan will see an increase in the number of registered engineers, especially women and youth representation from the current 10 percent to 20 percent, partner with universities and colleges to promote engineering as a career choice and offer discounted membership rates to recent graduates.

The Institution notes that engineers play a crucial role in driving innovation, designing resilient infrastructure, and implementing sustainable practices, hence, the immense potential to address pressing issues facing humanity.



## 12. What do you need to become a member of IER



For one to become a member of IER, they must undergo this process and present the required documents as follows.

1. Application through the Membership Digital Portal
2. Validation of administrative documents by an Admission officer
3. Assessment of the technical documents by the Membership Committee committee
4. Assessment of the Registrar
  - i. Set for an interview to the applicants of professional engineers
  - ii. Approvals to the applicants' technologists, graduate engineers and technicians
  - iii. Rejections of non qualified applicants
5. Schedule of interviews to professional engineers by admission officer
6. Payment of the membership fees
7. Oath-taking of Professional Engineers and Professional Technologists
8. Award of Practicing License

For more details, visit IER website link below:

Membership applications are submitted through IER Membership Digital Portal portal via a link <https://member.engineerswanda.rw/>

### Membership Digital Portal

Welcome to IER Digital Portal,

In order to provide seamless services to our esteemed members, a new Membership Digital Portal (MDP) has been established. New applicants wishing to join the institution MUST apply through the online portal. Existing Members who wish to renew their practicing certificate MUST apply through the same portal. N.B: In case of any challenge, please contact telephone [0789904228](tel:0789904228), email: [admissions@engineerswanda.rw](mailto:admissions@engineerswanda.rw).

#### IER Membership Classes

Honorary Membership Class	+	Corporate-Membership Class	+
Fellow-Membership Class	+	Graduate Engineer Class Of Membership	+
Technician Class Of Membership	+	Technologist Class Of Membership	+

### Members Access



LOGIN

REGISTER NOW

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# 13. Certification of Electrical Practitioners



While electrical engineering is central to the country's development, most specifically in helping the country in achieving the target of universal electrification by 2024, ensuring that there is an ecosystem of professional and skilled engineers in this engineering component is paramount.

With this objective in mind, the Institution of Engineers Rwanda (IER) and Rwanda Utility Regulatory Agency (RURA) signed a Memorandum of Understanding to facilitate the assessment of electrical practitioners so as to identify the skilled personnel to carry out the electrical design, installation and related works to ensure operational health and safety of the general public.

Since 2012, this exercise has been conducted on annual basis where electrical practitioners are assessed and categorized according to their qualification and knowledge in this service.

Depending on the complexity of the structures to be installed and the level of voltage of operation, the following categories were set; A, B, C, Z in addition to the Category D for special services, namely solar systems, switchgear, HVAC and generator installations.

The provided electrical installation permit aims at identifying engineers with the capacity to safely make installations in a manner that would not jeopardize people's lives and abuse of electricity in any way.

Under the MoU, IER also identifies the electrical engineering professionals who are capable of assessing their peers and the selection is based on academic qualification, training and proven experience in the field.

IER has had a positive impact on the development of professionalism and the growth of the engineering sector, namely this joint cooperation.

"RURA takes pride in collaborating with IER to enhance capacity through training and the recruitment of skilled professionals. Many of the regulations governing engineering activities under RURA find their basis in the expertise of the Institution of Engineers."

As Rwanda remains committed to sustainability in various renewable energy initiatives, engineers are actively involved in harnessing the country's renewable energy potential, including solar, hydro, and geothermal power, to meet the growing energy demands while reducing reliance on fossil fuels.

However, the institution is emphasizing on training since it was shown that many practitioners remain the same in know-how while the technology continues to evolve, which leads to poor service delivery and to ensure the best service is given in different sites, the certified practitioners will be regularly inspected and advised on different best practice as per the current technology and regulations.





# 14. Capacity Building Initiatives



## Why Rwandan Engineers have chosen the path of continuous learning

The field of engineering is continually evolving with the introduction of new materials, technologies, and design methodologies. Staying updated ensures that engineers use the best and most recent practices in their work is not an option, it's an absolute necessity.

Being knowledgeable about the latest safety standards and practices is crucial because engineering, especially civil engineering projects, directly impact public safety, from bridges to buildings, an engineer's design can be a matter of life and death.



*Demonstration during the Geotechnical Seminar at Marriott Hotel; Kigali, Rwanda*

When the Institution of Engineering Rwanda (IER) was conceptualized in 2008 and established by the law 29/06/2012, it had among its key roles to build professionalism by promoting capacity building among its members.

IER's committee of professional development and research conducts Continuous Professional Development (CPDs) annually to enable members to attain certifications as well as enhancement of skills and knowledge for the engineering professionals in the respective disciplines.





*Geotechnical Seminar at Marriott Hotel; Kigali, Rwanda*

As the global emphasis on sustainability grows, civil engineers need to be at the forefront of implementing eco-friendly designs and construction practices, and ensure that their work is compliant with the construction codes and regulations that are regularly updated by governments and standards organisations.

Experts say that CPDs ensures that engineers maintain and enhance their competence in line with the ethical duty to provide services competently while engaging with peers in the industry to share knowledge and learn from others' experiences.



*Training on Slope Stabilization Solutions for the Rwandan Civil & Infrastructure Sector at Hotel Villa Portofino, on 01<sup>st</sup> December 2023*

The Institution of Engineers Rwanda is the cornerstone of the built industry, playing a pivotal role in the country's development. "IER's unwavering commitment to nurturing engineers into seasoned professionals has been instrumental in propelling our nation towards urbanization and the progress of our cities."

"It is noteworthy that IER's efforts align seamlessly with the Sustainable Development Goals (SDGs), encompassing critical aspects such as the sustainability and resilience of our cities, climate action, innovation, and infrastructure development, as well as the promotion of clean water and sanitation among other vital objectives," mentioned IER Executive Secretary.

As an umbrella body of engineers in Rwanda, IER officials committed to fostering a culture of continuous learning and professional growth by providing diverse and accessible training programs, conferences, and workshops to ensure members remain competent and competitive in the rapidly evolving engineering landscape.

It highlighted that it will leverage membership organizations and partner with international engineering organizations to offer CPD courses that are accredited internationally for the best practices and standards of the profession in the country.



*IER team visiting ongoing works at Amahoro stadium renovation works*

Rwanda's latest sports project is the renovation of the Amahoro stadium, This is a mega project which will increase its

seating capacity from 25,000-seater to a 45,000-seater. It was therefore imperative to have engineering professionals learn more about ongoing renovations.



# 15. Equipping Young Engineers with Valuable Industry specific skills



In the fast-moving industry of engineering in Rwanda, the market can only open up to the skilled and competent engineers to meet the current pace of development.

However, reality on the ground point at a challenge of quality mismatch whereby university graduates, even those with excellent academic performance, struggle when it comes to translating the theoretical knowledge into practical work.

In turn, this mismatch and limited exposure has resulted in low skill development and proves to be a barrier to employment while on the other hand, employers decry skilled labour.

To address this challenge, the Institution of Engineers Rwanda (IER) in partnership with the Royal Academy of Engineers from the United Kingdom, initiated an internship project with a focus to bridge the gap between the theoretical knowledge and market-relevant practical skills that graduates need.

The programme which was initiated in 2017 through the Africa Catalyst Project, put emphasis on provision of a structured guidance and training of graduate engineers under the supervision of senior engineers known as "mentorship" for better exposure to engineering practice.



It provided successful applicants with stipend and deployed them in various institutions where they gain practical skills to supplement the largely theoretical knowledge acquired in colleges.

Steven Sabiti, the Executive Secretary of IER, noted that despite the general challenge of job shortage, graduates who underwent the internship programme reported that it increased their chances of being employable because it not only allowed them to acquire the hard skills but also interpersonal soft skills.

In fact, at least 77 per cent of these interns were eventually hired by the companies where they were placed, a major achievement of the project, according to Sabiti.

In respect to the positive feedback from employers, Sabiti emphasized the need to sustain the initiative so that the young engineers can continue getting such opportunities as well as for employers to collaborate and create an enabling environment right skills acquisition.

The Institution firmly believes that with a well-structured and funded internship initiative, the engineering industry will continue to contribute significantly to the development of Rwanda. According to Eng. Cecile UWAMARIYA, who coordinated the project, this was a timely intervention.

"This programme supported and developed career skills for 210 young graduate engineers needed in the industry. With structured guidance and training under the supervision of senior engineers, this programme needs to be sustainable and supported from all levels."

The same sentiments are shared by Didier Karanganwa, a graduate of Civil Engineering from the College of Science and Technology at the University of Rwanda, who is one of the beneficiaries. He said that it opened enormous opportunities for him.

"When I applied to be part of the programme, the process was very competitive. I was only hoping to get a placement in a company where I would get practical skills to complement the knowledge I had acquired at university. Luckily for me, three months into my six-month industrial attachment, my employer liked my services so I was hired and I am now a full-time employee at NPD Cotraco, one of the leading civil engineering and construction companies in the country.

One of the most important elements of the project, according to Karanganwa, was that every intern was assigned a mentor, who guided and helped them establish the link between the theory they learn in school and the practical knowledge they get in the field.



## 16. Geotechnical solutions for Sustainable Infrastructure Development in Rwanda



The Institution of Engineers Rwanda (IER) in collaboration with Pietrucha Group from Poland, in March 2023 held a geotechnical seminar to explore opportunities in the geotechnical space for sustainable infrastructure development in Rwanda.

Pietrucha is a well-established Polish family company with over 60 years of experience specializing in geotechnical solutions for civil engineering, which are used in road and rail construction, flood protection and water retention projects as well as embankment reinforcement.

The seminar attracted at least 100 participants, including experts, practitioners, and representatives from government agencies responsible for sustainable development in the civil engineering sector and infrastructure investments.

The purpose of the seminar was to explore resilient, sustainable, and cost-effective geotechnical solutions for civil engineering projects in Rwanda while minimizing environmental impact.

The knowledge sharing sessions were under three thematic areas; one that looked at sustainable and resilient infrastructure with examples of how vinyl sheet piles have revolutionized the approach to civil and water engineering in order to build long-lasting structures that would be in harmony with the nature.

The second part dived into the costs-effective and eco-friendly infrastructure with a focus on financial and environmental benefits resulting from the application of geo-grids as the most efficient way to stabilize the aggregate.

The closing session of the seminar was dedicated to problem-based analysis of selected projects pending or planned to be carried out in the country.

In his remarks, the former Minister of Infrastructure, Ernest Nsabimana emphasized the shift from conventional to innovative geotechnical solutions in civil engineering, promoting resilience, sustainability, and cost-efficiency in infrastructure development.

On the other hand, the Ambassador Krzysztof Buzalski of Poland to Rwanda underscored the pivotal role of infrastructure in fostering economic growth and productivity, adding that there are potential collaborations between Polish and Rwandan institutions to be explored, particularly in enhancing the technical education of young engineers from Rwanda through Polish universities.

The engineering profession in Rwanda is at the centre of the evolving infrastructure and real estate industry with sustainability efforts and approaches at the core of activities across the country to promote resilience against climate change and other environmental shocks.



# 17. Empowerment of women engineering professionals



## How IER plans to significantly increase the number of women engineers

For so many years, women have had to break through the glass ceiling across many fields, and engineering has not been any different, to change the narrative in male-dominated fields.

In pursuit of an engineering career, many female students abandon the path along the way, despite significant progress made in the recent years to encourage women and girls in to pursue STEM (Science, Technology, Engineering, and Mathematics) subjects.

To understand the gap depth in contrast with positive strides made within the engineering profession, the Institution of Engineers Rwanda (IER) in collaboration with Africa Catalyst carried out a survey to understand challenges facing Rwandan women engineers in practice.

The results indicated that there is inequality in recruitment process based on gender, and during practice, 46 percent of the respondents believe that one's gender can limit them from getting a raise, promotion or key assignment at workplace, among other career growth impediments.



It also indicated that 53 percent did not take any action after encountering a sexual harassment case due to different factors, and 28 percent believe there are biases in performance support and performance review in organizations.

To consolidate efforts of addressing these issues and change the narrative, IER established a "Women in Engineering Rwanda Chapter" with the purpose of raising awareness to encourage women to join the profession and initiate a network of stakeholders committed to promoting gender diversity and supporting career

development of women in the field.

Currently, there are just 210 women engineers registered out of 2,544 members, making them less than 10 percent, a far cry from the 30 percent threshold women participation across sectors.

"We urge employers to counter any discrimination and harassment against women. The women engineers should join the engineers' chapter to be able to comply with the code of ethics, and get access to capacity building programmes and other benefits.



To continue inspiring young girls in STEM on their journey of an engineering career, Steven Sabiti, the Executive Secretary of IER, said that the institution plans to create engineering clubs in secondary schools and also work with universities to create engineering student chapters to change mindsets and narrative that it is a male profession.

"We shall use such platforms to demystify these myths in these students, especially

the girls to ensure that they grow to love the profession and we are positive this will have a significant impact on the numbers," he said.

As one of its obligations to create an inclusive engineering workforce, IER calls on policymakers, educators, and industry leaders to sustain efforts of creating a more inclusive and supportive work environment for women in engineering by taking actionable steps.



These include having a clear policy on discrimination, creating awareness around biases and eliminate them, encouraging

women in leadership positions, putting in place childcare facilities at workplace to enhance work-life balance, among others.



Visiting Mpazi Informal Settlement Upgrading Project



## 18. The Quest to ensure safety and Quality of engineering Assets



A doctor can make a mistake that may lead to a death of a person, but an engineer's single mistake might kill hundreds of people at once. While every human life matters, the threshold for an engineer's mistake is reasonably higher.

The Institution of Engineers Rwanda (IER) aims to promote and develop engineering services and best practices for sustainable development of the country, with a mandate to ensure that engineering professionals meet the national and international standards of work.

Article 12 of the law establishing the Institution gives it powers to ensure that clients of their respective members rightfully maintain trust towards the engineering profession through monitoring the practice and professional conduct of its members and to make sure that the practice of engineering is done by authorized and regulated practitioners.

In this regard, in November 2022, the Institution in collaboration with Rwanda Housing Authority and the Ministry of Infrastructure, conducted a joint inspection of infrastructure facilities in three districts, namely Rwamagana, Kamonyi, Bugesera to assess the progress of urbanization, compliance with building regulations, and challenges to drive informative recommendations.

The inspection sought to find out the progress of urbanization in terms of buildings, infrastructure and utilities, compliance with urbanization and building regulations and professionalism through engagement of professionals in construction industry.

The results established that building inspection is done but at a small scale and not on a regular basis, which results in violations of building regulations, and many commercial buildings were found to have been occupied without final inspection and occupation permit.

Such practices contravene building regulations which many cause safety and stability issues for occupants and other users. Eng. Gentil KANGAHO, the President and Chairman of Institution of Engineers Rwanda, stressed the importance of facilities' owners to hire and work with registered engineers who can exhibit professionalism and be held accountable in case they don't.

"Safety should be number one and quality should be number two because at the end of the day this is what will give the output of fit-for-purpose and value-for-money and this is what will contribute to the national development being advocated for and being taken forward," he noted.

The inspection report further highlighted that construction activities and urban development should be incorporated in district's performance (imihigo) to help district authorities to monitor extensively land use issues.

Under IER strategic plan for 2024-2028, the Institution shall endeavor to develop a risk-based approach to inspection that focuses on projects with the highest potential for safety or environmental risks, and work with stakeholders to promote a culture of compliance by majorly working with the government to develop a national registry of engineering professionals who are qualified to conduct inspections.



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# 19. Innovations in the Construction Sector



## Optimism as construction permits go online

Construction activities in the City of Kigali have been increasing, attracting a variety of individuals, foreign investors and the private sector. Despite the rise, concerned parties have been complaining about the construction permit process affecting their projects.

Fortunately, with the establishment of an online based Building Permit Management Information System, building permits can be obtained online by anyone who wants to build a property.

The Ombudsman's Office's 2021/2022 report highlights the inability to access the online system to apply for building permits as one of the root causes for corruption in the construction industry.

Construction permit providers would delay the granting of permits in order to trap owners into bribery.

Thanks to the Office of the Ombudsman for recommending the Ministry of Infrastructure and the Rwanda Housing Authority to review and advance the BPMIS to allow contractors and building owners to be fully aware of the construction activities.

The system is more user-friendly for all users as it can be accessed in different languages, including Kinyarwanda. In addition, the system changed from BPMIS to [kubaka.gov.rw](http://kubaka.gov.rw).

Some Kigali city residents who have recently been granted construction permits expressed optimism that they are very happy to have all the information about the issuance of construction permits.

The system was said to make it easier for residents to obtain construction permits, as there are no longer difficulties in getting information about the process of getting all the requests.

One of the residents said: "Previously, it was difficult to accurately understand all requirements for obtaining a construction permit. Fortunately, with the new system I had access to all information, which simplified the process of applying for a construction permit. The whole process took only 20 days to get the permit."

The City of Kigali is growing at an unprecedented rate. Residential and commercial complexes are springing up in different neighborhoods, and these buildings reflect a thriving metropolis.

The government has taken various initiatives to streamline the process of obtaining building permits and avoid complications that were previously considered a threat to doing business.

In May of this year (2023), media practitioners operating in Rwanda have participated in a training designed to educate them about the Kigali City Master Plan, its implementation and other services such as land ownership requirements and construction permits.

New procedures are in place to coordinate the construction permit application process, according to Kigali city officials. Now, applicants need less than 30 days to obtain a construction permit ( between 15 and 25 days.)





## 20. Conferences and Public Outreach



During its 2023 Engineering Convention and Annual General Assembly, held on Friday, June 30, the Institution of Engineers Rwanda called on more practitioners to register and get certified.

Held under the theme “Climate Resilient Infrastructure,” the event attracted

numerous IER members and engineering experts from Rwanda and beyond. Minister of Infrastructure, Dr. Ernest NSABIMANA, and Minister of State, Eng. Patricie UWASE, were among the attendees, emphasizing the importance of professional standards and the construction of infrastructure capable of withstanding climate challenges.



*Former Minister of Infrastructure, Dr Ernest Nsabimana shares comments with the audience during the Engineering Convention.*

Officials who spoke during the event called on the engineers to uphold professional standards in order to contribute to the country’s development, and especially by building infrastructure that can withstand extreme weather events.

“Climate resilient infrastructure refers to the design, construction, and operation

of infrastructure systems that are robust enough to withstand the impacts of climate change,” Nsabimana said.

“By incorporating flood-resistant structures and implementing sustainable drainage systems, we can prevent or reduce the damage caused by floods and storms.”



*Panelists discuss on how to strengthening the Institution's commitment to upholding professional standards in various fields of engineering across the country.*

As he stressed the need to tackle fraudulent and unethical behavior that holds back the engineering fraternity, the minister promised government support to the Institution in ensuring that all practicing engineers are certified.

"We have started various initiatives ranging from reviewing the governing regulatory framework, enhancing capacities, supporting joint inspections, establishing a professional scale of fees, enhancing local content in national strategic projects, among others," he said.

"We will progressively continue to collaborate until our profession gets to a level everybody will be proud of."

During the convention, the experts deliberated on ways to enhance current practices in order to be in a better position for the future of the engineering profession. For example, it was noted that there is a need to increase the maintenance of projects from once a year to two to three times a year.

Eng. Gentil KANGAHO, the President and Chairman of the Institution of Engineers Rwanda, urged the participants to commit to the country's development and drive the innovations in the profession.

"Our expertise, knowledge, and passion has the power to revolutionize the infrastructure landscape of our beloved country. We are the ones who design, build, and maintain the physical backbone of society," Kangaho said.

"From roads that connect communities and facilitate commerce, to sustainable energy systems that power industries and homes, we have the capacity to reshape the very foundations of Rwanda's development."

Steven Sabiti, IER's Executive Secretary and CEO said: "As Engineering Professionals, we play a crucial role in driving innovation, designing resilient infrastructure, and implementing sustainable practices. Our profession holds immense potential to address pressing issues facing humanity."



*Steven Sabiti, IER's Executive Secretary and Chief Executive Officer addresses members of the institution during the Engineering Convention held on Friday, June 30<sup>th</sup>, 2023*

The President of the Federation of Africa Engineering Organisations, Eng. Papias KAZAWADI DEDEKI, called on the engineers to seize opportunities offered by Rwanda, especially in sectors such as sustainable housing, renewable energy, smart agriculture and urban planning.

“By understanding these opportunities for our members, I believe through the establishment of a coordinated framework we can play significant roles by providing

technical expertise and research, policy advocacy, professional development and capacity building, knowledge sharing and collaboration,” he said.

According to the law, one becomes an engineer once admitted by IER, and is then allowed to practice in Rwanda.

The Institution of Engineers Rwanda already has more than 3000 registered members.





Former Minister of Infrastructure, Dr Ernest NSABIMANA, and Minister of State, Eng. Patricie UWASE follow a panel discussion at the Engineering Convention.



IER Stakeholders graced The Engineering Convention at Kigali Convention Centre on Friday, June 30<sup>th</sup>, 2023





Former Minister of Infrastructure, Dr Ernest NSABIMANA, and Minister of State, Eng. Patricie UWASE and the IER officials pose for a group photo at the event on Friday, June 30<sup>th</sup>, 2023



Eng. Gentil KANGAHO, President and Chairman of the Governing Council:  
"As engineers, we have a pivotal role to play in enhancing engineering and driving the implementation of the Rwandan Vision 2050."

# 21. Ten things about Engineering in Rwanda



Rwanda, a country known for its remarkable transformation and rapid development, has been making significant strides in the field of engineering. With a vision to become a knowledge-based economy, Rwanda has placed great emphasis on engineering and technology. Here are ten key things you need to know about engineering in Rwanda:

**1. Engineering as a National Priority:** Rwanda has recognized engineering as a critical sector for its socio-economic development. The government has

placed engineering and technology at the heart of its national agenda, with strategic initiatives and policies to promote the growth of the sector.

**2. Fostering Innovation:** Rwanda has created an environment conducive to innovation and technological advancements. The country has established innovation hubs, incubation centers, and research institutes that provide support and resources for engineers and entrepreneurs to develop groundbreaking solutions.



**3. Strong Infrastructure Development:**

Rwanda has prioritized infrastructure development to support its growing economy. The country has invested in building roads, bridges, airports, and energy projects. Engineers play a crucial role in designing and implementing these infrastructure projects.

**4. Renewable Energy Initiatives:**

Rwanda is committed to sustainability and has embarked on various renewable energy initiatives. Engineers are actively involved in harnessing the country's renewable energy potential, including solar, hydro, and geothermal power, to meet the growing energy demands while reducing reliance on fossil fuels.

**5. Technological Leapfrogging:**

Rwanda has embraced the concept of technological leapfrogging, utilizing advanced technologies to accelerate development. Engineers are at the forefront of implementing innovative solutions in sectors such as e-governance, digital education, healthcare technologies, and smart cities.

**6. Engineering Education:**

Rwanda has made significant investments in engineering education and vocational training. The country has established world-class engineering schools and institutes that offer specialized programs in various disciplines, producing highly skilled engineers to support the nation's development agenda.

**7. Collaboration and Partnerships:**

Rwanda actively collaborates with international partners and organizations to foster knowledge exchange and capacity building in engineering. Partnerships with countries like China, the United States, and

European nations have contributed to technology transfer and skills development.

**8. Robotics and Automation:**

Rwanda is emerging as a hub for robotics and automation in Africa. The government has embraced the potential of robotics in sectors such as agriculture, healthcare, and manufacturing. Engineers are instrumental in designing and deploying robotic systems to increase productivity and efficiency.

**9. Entrepreneurship and Startups:**

Rwanda encourages entrepreneurship and supports the growth of startups in the engineering and technology sectors. Various initiatives, including funding programs and incubation centers, promote innovation and provide a platform for engineers to launch their own ventures and contribute to economic growth.

**10. Role in Sustainable Development:**

Engineers in Rwanda are actively involved in sustainable development projects. From designing eco-friendly buildings to implementing water and sanitation solutions in rural areas, engineering plays a vital role in improving the quality of life for Rwandans while preserving the environment. Engineering in Rwanda is experiencing remarkable growth and plays a pivotal role in the country's development journey. With a focus on innovation, infrastructure, renewable energy, and technological leapfrogging, Rwanda is positioning itself as a regional leader in engineering and technology. The government's commitment to engineering education, collaboration, and sustainable development further strengthens the foundation for continued progress in the sector.

## 22. IER Community visits Murambi Genocide Memorial



To mark the 29th commemoration of the 1994 Genocide Against the Tutsi, the Institution of Engineers Rwanda (IER) visited and paid tribute to victims laid to rest at Murambi Genocide Memorial site in Nyamagabe District.

They were taken through the shattering history that marked the death of over 50,000 Tutsi who sought refuge at the then technical school, now transformed into a memorial site, killed by Interahamwe militias together with soldiers.

Just like in some parts of southern Rwanda, mass killings of the Tutsi didn't start until April 21 in the then Gikongoro prefecture. When the Genocide started, the Tutsi in the former communes of Mudasomwa, Kinyamakara, Musebeya, Muko, and others sought refuge at the Murambi Technical School, which was under construction when a Catholic bishop from a nearby church denied them refuge.

The school, which is set at the hilltop, gave a strategic advantage to the militia and

the then government army to easily access the surrounding hills and kill all the Tutsi without anyone escaping.

When they arrived in Murambi, Interahamwe immediately cut off all water pipes supplying Murambi so that the refugees would be dehydrated and therefore weakened before they could be attacked and killed. The Tutsi decided to slaughter their cows after realizing that they were starving to death and fed on the blood to quench the thirst but only for a few days.

According to witness accounts, the refugees momentarily managed to protect themselves from swarms of killers for a couple of days, until April 21, at 3 am, when gendarmes (the equivalent of today's police) started hurling grenades and shooting at them.

Interahamwe and other militia then attacked the school with an array of

weapons including machetes, spears, and axes and embarked on an exercise to finish off those who were not killed by bullets and grenades.

This memorial is home to at least 10,000 bodies, with at least 850 preserved corpses laying on display on wooden tables, with their belongings like clothes as evidence of Genocide that took place in the area.

As they laid wreath at the memorial site, the visit served as reminder for members of the engineering fraternity for the need to be resilient and work tirelessly for a better and more inclusive society.

The IER team left the memorial with a renewed commitment to their mission and a profound sense of the importance of engineering and innovation in building a more sustainable and peaceful future for Rwanda, while reflecting on the past to preserve the country's history.





## 23. Opportunities for engineering professionals



These ambitious projects have not only reshaped Rwanda's infrastructure but have also provided a wealth of opportunities for local engineers. As these initiatives continue to evolve, Rwandan engineers are well-positioned to secure jobs and contribute their expertise, playing a vital role in the successful implementation of these transformative endeavors.

Rwanda's corporate governance initiatives within the construction sector are making

waves. As the nation's urban landscape undergoes a dynamic transformation, Rwanda is on the path to achieving sustainable development while providing local engineers with a platform to thrive and contribute to a brighter future. These transformative initiatives are not only reshaping Rwanda but also inspiring the world with their vision and dedication to sustainable growth.

## 24. Stakeholder Collaboration



Notable collaborations were forged with the Royal Academy of Engineering, SKAT, RHA, and the Jordan Association of Engineers. These partnerships enabled impactful cooperation in our focus areas of capacity building, event hosting, and developing new initiatives.

For example, our partnership with SKAT was instrumental in celebrating World Engineering Day and conducting an educational site visit.

Our collaboration with RHA provided valuable training sessions for members. And our relationship with the Jordan Association of Engineers will allow knowledge exchange on best practices. By uniting with respected partners, we increased our reach and amplified impact. These strategic alliances provide a strong foundation to build up ongoing forward. We look forward to cultivating these partnerships through future programs that develop talent, connect global perspectives, and advance solutions together.



*IER signed an MoU with the Jordan Engineers Association*

## 25. IER to host the Global Engineering Conference, 2024

The Institution of Engineers Rwanda (IER) will be hosting the Global Engineering Conference (GECO), and WFEO Executive Council Meeting. These meetings will be held in Kigali, Rwanda for the first time at the Kigali Convention Center, from 14th to the 18th of October 2024

The Conference will attract Local and international delegates from Africa, Europe, America, Asia and beyond. It will be organized globally in collaboration

with the FAEO and the WFEO, where engineers on the Globe will be linked to the conference through the continental Engineering Organization (FAEO) and the World Federation of Engineering Organization (WFEO).

This is one of the best opportunities for Engineers across the Globe coming together to share knowledge, skills and experience while addressing high pressing engineering capacity building issues in Africa.

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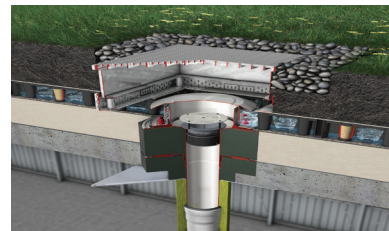


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