



## INTERNATIONAL ENGINEERS DAY



**ENGINEERING:** Engineering demography is slanted in favour of men, where in every seven engineers, only one is female

# ERB: Nurturing engineers and cultivating STEM interest

By Maliki Muunguja

**Morogoro.** In quest of having an engineering profession custodian, the Tanzania Government had to establish the Engineers Registration Board (ERB) in 1968 under the Engineers Registration Act Cap 63.

The country's economic policy shift from socialism to free market strongly heralded the initial amendment of the law in 1977.

In 2007, the law was amended again to incorporate technicians into the field.

Five years later, minor adjustments of the regulations and directives were also done and more amendments will continue even this year to resonate with the ever-changing profession.

The ERB Registrar, Eng. Bernard Kavishe says that as the caretaker, they are legally tasked with the regulation of professional engineering practice, which is done through registering engineering practitioners, life time learning and oversight of their professional conduct and ethics.

Registration applies a rigorous process which benchmarks individuals against academic qualifications, hand on experience and integrity criteria.

"Engineering is not only about academic qualifications only, but also it is about practical experience and integrity," Eng. Kavishe elaborated.

Without the best regulation, engineering activities will carry an intolerable risk to the public as it will impact safety, public health, environment as well as public spending. And it is against this backdrop, the Board finally came into existence for regulation.

"Our Government splashes more funds to complete its strategic projects from which our engineers are an integral part of the initiatives."

"Apart from regulatory duties, the ERB is rested with nurturing professional development. Fresh graduates need intensive mentorship and coaching to solicit necessary accreditations of their engineering career," elucidated the Registrar.

As engineers and ethos are inextricably intertwined, the Board, according to the Registrar, monitors practitioners' ethical adherence to ensure that they still remain compliant with and relevant to the



The President of Tanzania, Dr Samia Suluhu Hassan, flips through a science book with girls by her side when she visited one of the schools in Zanzibar, indicating the Tanzania Government's evident support to girls in STEM. Small picture: RACHEL Plus, a facility that is installed to connect more around 20 screens for students to read through, thanks to ERB's intervention.

industry.

Engineering demography is slanted in favour of men, for every one male there are seven of them, 1:7 ratio, completely unacceptable by all contemporary standards, these figures are a call for action to reverse the trend, and bring equality to the profession, clarified Eng. Kavishe.

By December 2024, the Board had registered 42,000 engineers in various categories countrywide, around 6,000 being the female engineers.

"This situation informs us of where we need to prioritise," he admitted.

On the other hand, the age distribution is as well as skewed; with 70 percent of the registered engineers being young people, reflecting the fast-growing middle class which produces a knock-on effect on the growth of tertiary education as well.

### ERB at the wheel

The Board has continued to tick every performance box through partnerships with like-minded partners in making sure that the engineering seeds they sow produce fresh yields in the near future.

In that regard, the ERB runs more than three programmes, each with

specific objectives aimed at endorsing future engineers through their peculiar structure.

Here is the summary of each of their programmes:

### Planting a seed for future engineers

For the past couple of years, ERB partnered with the IET-Women Chapter to roll out a special campaign for future female engineers, starting with girls at lower level of education.

This programme was designed to cultivate young girls' interest in Science, Technology, Engineering and Mathematics (STEM) at primary and secondary schools.

"It has been observed that most of the young girls opt out of the science subject in Form 2, and they lose interest in Mathematics, these subjects are the bedrock of engineering. This decision ends their STEM based disciplines," he substantiated.

### STEM Support Programme (SSP)

In a period of four years under the President Samia's leadership, there has been a huge investment in education through various initiatives as more than 800 new primary and secondary schools have been constructed, including 26 new science girls' schools each with an installed capacity to accommodate over 1,000 students.

This investment, complemented by incentives like free education, has ballooned school enrolments.



Minister for Works, Hon. Abdallah Ulega (MP).

This growth has put tremendous pressure on teachers, books and labs. The ERB, having spotted this opportunity, turned up to bring onboard the SPP initiative as a direct intervention to the challenges, which called for upscaling of the initial campaign of Planting a Seed of Future Engineers.

The SSP programme came into effect in July 2024 as the secondary to support government investment in education, as it takes a village to educate a child. With this, underserved schools are provided with qualified teachers, books and e-books and laboratories as well as continued sensitisation of young girls into the STEM field without leaving boys behind.

"After recruiting 20 volunteer teachers from the interview, we had to pilot the programme. We dispatched 20 teachers to three different secondary schools in Kagera Region. 12 teachers were deployed to Kagera River Secondary School and Kyerwa Secondary School (six each) and eight to Lt. Gen Silas Mayunga Secondary School," explained Eng. Kavishe.

He added: "the SSP pays their monthly allowances, health insurance and fare. This was made possible through the support of many stakeholders including the Royal Norwegian Embassy and e3eMpower to mention a few. The recruitment complies with the MoEST guideline for volunteer

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ENG. KAVISHE | ERB REGISTRAR



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teachers issued in June 2024, the guideline came timely and it is in fact a clear invitation to complement the government investment in education.”

Later, the programme received new partners including Royal Norwegian Embassy, e3eMpower, Ministry of Works, Ministry of Education, Science and Technology, the President’s Office (Regional Administration and Local Government), Tanzania Institute of Education (TIE), IET-Women Chapter and MEWATA.

“Under a steering committee, the SSP runs a yearly charity race dubbed the ERB Marathon to continue the rally for young girls’ increased interest in STEM,” added Eng. Kavishe.

### E-Library

Building on the SSP flagship, ERB expects to roll out a sub-programme called E-Library, leveraging technology to improve accessibility to books in an effective and efficient manner. The programme is a result of a series of visits made by ERB at different secondary schools while collecting data for the STEM courses.

Inspired by the mushrooming of schools including 26 of the newly established girls’ science schools (famously Mama Samia Schools) and 60 others in the Board’s database, the programme, upon its commencement, will accelerate a 50/50 gender goal by 2030.

According to the Registrar, each school will receive hardware (Rachel Plus) for a 20-seater e-library and one ICT teacher with an allowance package for a period of two years.

Target schools expect to have fully installed civil and electrical infrastructure, secure furnished room and electrical access.

“The library will also double as a computer lab, enabling students to sit for NECTA ICT exams,” he said.

Depending on the availability of funds and financial preferences, the project may opt to start with the 26 new girls’ science schools and finish with the remaining 60.

“Among those 26 target schools, we will start installing 20 screens to Dar es Salaam Girls Secondary School (Dar es Salaam), Kagera River Secondary School (Kagera), Old Moshi Secondary School (Kilimanjaro) and one of the schools in Dodoma. The locations are strategic for training and demonstration for promotion of the initiative,” revealed Eng. Kavishe.

### Structured Engineering Apprenticeship Programme (SEAP)

The SEAP initiative came to orient fresh graduates from the campuses towards industry life. For over 22 years, SEAP has been a lifeline to prospective engineers as it boasts an impressive track record of mentoring more than 12,000 young engineers to date.

“Universities provide an academic base, competent engineers need to be exposed to industry, soft



Engineers Registration Board (ERB) Registrar, Eng. Benard Kavishe in a group photo with one of the primary schools he visited for STEM campaign.



Permanent Secretary for the Ministry of Works, Amb. Eng. Aisha Amour.

skills and positive attitudes, the apprenticeship like SEAP complete the loop,” he reminded.

The graduates are attached to the industry under the tutelage of high-profile coaches and mentors. After the three years of apprenticeship, and upon completion of their reports, they will face a panel of engineering jurors for detailed assessment, a hurdle which the majority of them overcome.

In the panel, each candidate has three professional engineers to assess. If at least two of the three approve the candidate’s report he/she will be registered. If two of the three disapprove of the candidate’s report, then he/she will not be eligible for registration and will have to rewrite the report.

### Youth Engineers Acceleration Programme (YEAP)

This programme is designed to specifically hone engineering startups into fully grown businesses under the watch of the successful enterprises, within a very short period of time.

With such industry placement, the startups are assured of business formalities, professionalism and entrepreneurship in engineering and consulting works, soft skills for matching legal and regulatory demands as well as trending technological advancement.

“Through those engineering mentors, the Government will channel different jobs to them to help the incubated startups to sustainably prosper in a practical manner. We want to help these startups accelerate their businesses at their infancy stage,” he explained.

This is a programme on paperwork waiting for funds allocation to be implemented under the ERB.

### School of Professional Engineering (SOPEL)

Looking at the engineering dynamism, the school is here to inculcate fresh graduates with industry experience, new trends and more professional prowess which are never taught in the class.

“The school is already piloted, and has delivered a course in the new trends like green infrastructure and road safety courses, new specialties that will soon be integrated into the universities curricula and standards,” he elucidated.

He said that there are a bunch of on-site experienced engineers taking on the country’s mega projects, who will use SOPEL as a platform

to share their knowledge shaped by experience to the younger generation.

“Inside the school, the candidates will also be acquainted with soft skills such as negotiation, communication and report writing skills. The modality of the school sessions is distant learning for the largest part,” he clarified while elaborating that 60 percent of the school sessions are on-site with 30 percent being distant learning.

### ERB as the entity

The Board has expanded to occupying new offices in Morogoro after their two offices in Dar es Salaam (Coastal Zonal Offices), Morogoro (Highland Regions Offices) and the other one in Dodoma Capital (head offices). The Board has around 70 staff.