Royal Academy of Engineering

ECORYS Answering tomorrow's challenges today

TOOLBOX: Continuous professional development

The challenge

A key challenge in sub-Saharan Africa (SSA) is the **limited capacity of professional engineers**. This is partly due to a lack of opportunities to attend continuous professional development (CPD) events and share best practice with other industry professionals. There are also limited guiding principles regarding essential knowledge and professional conduct. As a result, professional engineers often lack the necessary skills to conduct their roles effectively. This, in turn, **diminishes the prestige of the profession**, and increases the likelihood that foreign organisations (who fund a large portion of engineering projects in SSA) will hire external professionals rather than local engineers.

Initiatives

Professional engineering institutions (PEIs) in SSA have been active in improving CPD. They have introduced professional registration renewal requirements, hosted seminars and training events, published regulatory manuals, and facilitated professional development within academia.

Professional registration renewal requirements

PEIs require engineers to complete activities, such as attending conferences or leading presentations, to receive credits to renew their registration

Outcomes: engineers stay up to date with current trends and knowledge within the sector, while developing their skills and experience

PEIs: Engineers Board of Kenya, Engineers Council of Zimbabwe, Sierra Leone Institution of Engineers, Engineering Council of South Africa

Training events and seminars

PEIs host accredited training events and seminars in partnership with external organisations

Outcomes: engineers gain technical knowledge, build professional networks, and understand how their skills can be applied to current affairs

PEIs: Sierra Leone Institution of Engineers, Institution of Engineers Rwanda

Practice manuals for engineers

PEIs publish practice manuals to serve as a framework for regulating the professional conduct of engineers

Outcomes: enhanced consistency in engineering methods and practices, and increased accountability

PEIs: Engineers Board of Kenya

Practical experience for lecturers

PEIs work with lecturers to help them secure work experience within the engineering industry

Outcomes: academic teaching is more relevant and graduates are better prepared for industry

PEIs: Engineering Council of Zimbabwe

Case study: The CPD Programme of the Engineers Board of Kenya (EBK)

As part of EBK's CPD Programme, engineers must obtain 50 credits per year to renew their professional licence. They can do this by **publishing articles, attending webinars, and taking industrial tours**. After the first year, more than 80% of programme participants felt that **the scheme had improved their performance** within their current role, and less than 2% reported 'no benefit' from the programme. As a result, a number of courses have been established and expanded, meaning that professionals have far **more CPD opportunities than before**. To make the programme sustainable, members have to pay to take part in the training events.

Success factors and achievements

For each category of interventions, the table below identifies the implementation challenges and the success factors for these interventions. The table also highlights some of the strongest achievements.

Interventions	Challenges	Success factors	Examples and achievements
Professional registration renewal requirements 	→ Ensuring that the requirements are attainable (many engineers work long hours, so requirements cannot be unnecessarily demanding) → Finding qualified staff to lead CPD activities → Continuously updating activities, and assessing renewal applications	→ Learning from renewal requirements that have already been implemented and are viewed as successful → Allowing professionals to gain credits for a wide range of activities → Gaining feedback from professionals on the renewal process and requirements → Raising awareness of the benefits of the system, so that it is viewed as an opportunity rather than a bureaucratic 'box-ticking' exercise	→ **South Africa – Engineering Council of South Africa (ECSA):** CPD programme Practitioners must renew their licences every five years by collecting credits in at least two of the three CPD categories: (i) **Development activities**: workshops, conferences and training events; (ii) **Work-based activities**: performing work within the industry and mentoring engineering candidates; (iii) **Individual activities**: volunteer work or any other activities relating to engineering, such as lecturing. → **Sierra Leone – Sierra Leone Institution of Engineers (SLIE):** CPD Programme This programme is **modelled on ECSA's scheme**. SLIE members are required to renew their registration every four years, providing proof of their CPD activities during this period. → **Kenya – Engineers Board of Kenya (EBK): CPD Programme** See case study box above
Training events and seminars 	→ PEIs must reach a significant number of people with their advertisements and promotional material to ensure good turnout, but often lack a large audience or strong social media presence	→ Building partnerships with private-sector firms (which in some cases provide the training) → Collecting feedback from attendees → Hosting training events and seminars online, not just because of COVID-19 but to allow for a wider audience and make new links with different stakeholders	→ **Sierra Leone – Sierra Leone Institution of Engineers (SLIE):** Webinars and wider industry partnerships SLIE has partnered with Engineers for Change Sierra Leone to deliver **CPD training** during their biennial conferences. Since the onset of the COVID-19 pandemic, SLIE has also offered **webinars on a variety of topics**, such as how engineers can help in the pandemic response. Many of these webinars are free for members, and they offer a space for networking with professionals from Sierra Leone and abroad.

Interventions	Challenges	Success factors	Examples and achievements
Training events and seminars 		→ Ensuring that the topics presented are up to date, so that professionals are aware of current affairs and how they relate to their roles	→ **Rwanda – Institution of Engineers Rwanda (IER): CPD for Green Building Codes** In 2019, IER published the *Rwanda Green Building Minimum Compliance System*. The document aimed to **develop performance-oriented green building indicators**, designed to promote energy and water efficiency, and environmental protection. IER **led training events** for engineering professionals on how to comply with these standards, and on sharing technical knowledge for green building. The training provided professionals with the skills and knowledge to perform better within their roles. Feedback from the sessions was extremely positive, and participants stated that they **felt comfortable complying** with the new standards.
Practice manual for engineers 	→ Maintaining a practice manual is a continuous process which requires substantial levels of capacity from a wide range of stakeholders	→ Gaining insights from a variety of industry stakeholders → Ensuring that the manual is clear and concise	→ **Kenya – Engineers Board Kenya (EBK): Practice manual for engineers** In 2019, EBK published a practice manual to act as a **guiding framework for regulating the professional conduct of engineers** in Kenya. The manual is produced by EBK staff from a variety of professional backgrounds and outlines the basic concepts and standard procedures of providing professional engineering services. It aims to enhance consistency in engineering methods and practices, and promote accountability in the delivery of quality engineering services.
Practical experience for lecturers 	→ The range of roles which lecturers are qualified for within industry is limited because of their lack of experience	→ Facilitating stronger ties between academia and industry	→ **Zimbabwe – Engineering Council of Zimbabwe (ECZ): Lecturer Programme** Since 2014, ECZ has been helping engineering lecturers with little practical experience by offering **six-month industry placements** through the University of Zimbabwe. These placements have allowed participants to gain key practical and methodological knowledge of engineering to enhance their teaching. ECZ has been working on this programme in partnership with the Royal Academy of Engineering.