**SOME OF THE CHALLENGES IN ENGINEERING PRACTICE**

**AND UNIVERSITY EDUCATION IN SIERRA LEONE**

**By**

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**1. Introduction**

Mr. Chairman and learned colleagues, engineering practice especially in the consulting and construction industry everywhere faces problems and challenges. However, in Sierra Leone in particular, these difficulties and challenges are present alongside a general situation of current socio-economic decline, resource shortages, institutional weaknesses and a general inability to deal with key issues. The problems in Sierra Leone have become greater in extent and severity recently, exacerbated by the Ebola crisis for over a year and which was responsible for growth to plummet from about 11.3 % in June 2014 to negative growth of about minus 1.0% in 2015.

Challenges in engineering practice in Sierra Leone include issues of regulation and standards, provision of a literate and skilled middle level manpower base, participation of local engineers in internationally funded projects and challenges faced by the construction industry.

Regarding engineering education, although rapid progress has been made in general in the post-war years due to the formulation and implementation of new policies, tertiary education in general and engineering education in particular is still plagued with multiple challenges. These include quality education and inadequate financial, human and material resources.

**2. Engineering Education in Sierra Leone**

Engineering education in Sierra Leone is for now provided mainly at the Faculty of Engineering and Architecture, Fourah Bay College (FBC). Polytechnics such as the Eastern Polytechnic and the Milton Margai College of Education and Technology offer Diploma courses in Engineering; students with Diplomas from these polytechnics gain admission to engineering degree courses at FBC if they satisfy certain requirements.

Fourah Bay College (FBC) was founded on 18th February 1827 by the Church Missionary Society essentially for the training of teachers and missionaries to serve in the promotion of education and the spread of Christianity in West Africa. In 1876 it became a degree granting institution with an affiliation to the University of Durham in England, and since then has maintained a reputable tradition of higher education in Africa.

Student enrolment at FBC in 1998/99 session was about 2,000 in four faculties and five institutes. Currently, student enrolment is in the region of 6,000. The Faculties and Institutes at FBC are:  Faculty of Arts, Faculty of Engineering and Architecture, Faculty of Pure and Applied Sciences, Faculty of Social Sciences and Law, Institute of Adult Education and Extra-Mural Studies, Institute of African Studies, Institute of Marine Biology and Oceanography, Institute of Population Studies, Institute of Library and Archive Studies and Mass Communications.

 It was in 1958/59 that a department of Engineering Technology was started at FBC and an engineering building and workshop erected and equipped; a three year diploma course was instituted on a sandwich basis, the second year being devoted to practical experience. Students awarded the diploma with sufficiently high marks were admissible with certain exceptions, to the B.Sc degree course in Applied Science at Newcastle since the College was still affiliated with Durham University. It was from the 1965/66 session that courses leading to a degree in Civil, Mechanical and Electrical Engineering were started at FBC.

At the Faculty, the process of revision of curricula, programs and structure of all Departments in the Faculty was concluded with a validation workshop in August 2014. The revised curricula and programs were presented to the University Curriculum Review Committee and were approved to commence in the 2015/16 academic year.

Starting 2015/16 Academic year, the Faculty will relinquish the four year B. Eng General degree and run a straight five - year Honours Degree program in the following Departments and Engineering disciplines:

1. Civil Engineering
2. Electrical & Electronic Engineering
3. Mechanical & Maintenance Engineering
4. Mining Engineering

Generally each program will comprise:

* Basic Engineering Courses: These are courses taken in year one taken by all students entering the Faculty at this level. They are general foundation courses for all engineering disciplines. These courses also include science courses such as Physics and Chemistry as well as Mathematics, which are run by the Faculty of Pure and Applied Sciences. Civil Engineering students also offer courses in Geology from the Geology Department at some point.
* Year two also comprises of Basic Engineering Courses and Mathematics; however, at this level, students begin to offer courses specific to their desired Departmental disciplines together with the Mathematics and Computer Aided Design Courses which are to be taken by all students at year two.
* Core Engineering Courses: These are courses taken from year three to year five. The courses taken at these levels are professional engineering courses and are mainly offered at the various Departments in the Faculty.
* Faculty courses: These are mandatory and are to be taken by all students in all the disciplines; these include courses such as Technical Writing and Professional Communication, Computer Aided Design, Engineering Entrepreneurship and Innovation as well as professional Ethics.

 All engineering students are required to undertake a mandatory supervised industrial work experience scheme in the second semester of their fourth year. During this period the students are supervised by both lecturers and industry – based supervisors. At the end of the program, students present an Industrial Technical report for examination. Most students develop their Final year projects for Dissertation presentation from these supervised attachments based on work they are engaged in whilst on attachment.

***MINING ENGINEERING***

 A new program in Mining Engineering commenced in the Faculty in the 2010/11 academic year. It is currently being run as a Unit within the Mechanical and Maintenance Engineering Department and supervised by the Head of that Department with the Dean providing oversight responsibilities for now, until it becomes a full Department of Mining Engineering after producing the first set of graduates; This first set of locally trained engineers with Honours Degree in Engineering ( Mining option) will graduate this year ; the University of Mines and Technology (UMaT) in Tarkwa, Ghana was our key affiliate in developing this program and they are serving as external supervisors for this program.

***ARCHITECTURE***

In addition to the four Engineering Degree programmes currently being run, it is hoped that the Architecture program will also commence in the 2015/16 Academic year. The Curriculum outline for this program had been prepared and approved by University Senate since 2004 when the Faculty was renamed *Faculty of Engineering and Architecture.* This curriculum will form the basis for the program once it commences. The Architecture program will be run by a separate Department of Architecture in the Faculty with some courses serviced by allied Departments in the College. The program will be a five year program leading to the Degree of B. Arch. The delay in commencement of this program is basically due to the lack of funding and the necessary infrastructure specifically for Architecture.

**3.Some Challenges in Engineering Education**

The major challenges are:

1. Increased student numbers and lack of adequate resources and facilities for quality delivery and enhanced pedagogy – There is limited access to resources for teaching, learning and research. The needs of expanding enrolment and new programmes have not been matched by a corresponding increase or improvement of infrastructure and facilities. Facilities which existed when student population was about 1000 in the 1970’s are still being used in 2015 by a student population of about 6,000 without any tangible improvement or expansion. In the 2009/10 academic year, total student population was 4,275 at FBC; this translates to a crude estimate of overall growth rate of about 7% for the college. With full time enrolment now 6,000, all facilities are overstretched; there is a very high demand for engineering now because of the demand in the job market especially in the mining and civil engineering industries. Table 1 gives enrolment of engineering students from 2009/10 to 2014/15 academic year disaggregated by gender, whilst Table 2 shows the 2014/15 Registered Students by Department.

**Table 1: Registered Engineering Students for past six years**

|  |  |  |  |
| --- | --- | --- | --- |
| **Academic Year** | **Male** | **Female** | **Total** |
| 2009/10 | 250 | 23 | 273 |
| 2010/11 | 269 | 22 | 291 |
| 2011/12 | 204 | 28 | 232 |
| 2012/13 | 187 | 23 | 210 |
| 2013/14 | 212 | 21 | 233 |
| 2014/15 | 394 | 73 | 467\* |
|  |  |  |  |

* *High because students were allowed to register provisionally without paying fees, by a directive from the Ministry of Education, Science and Technology (MEST) - reason being financial constraints on parents and sponsors due to the impact of EVD on the economy..*

**Table 2: Registered Engineering Students for 2014/15 by Department**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Civil** | **Mechanical** | **Electrical** | **Mining** | **Grand Total** |
| **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** | **Male** | **Female** |
| 1 | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | 113 | 26 |
| 2 | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | 76 | 14 |
| 3 | 43 | 3 | 14 | 3 | 24 | 1 | 8 | 1 | 89 | 8 |
| 4 | 29 | 2 | 8 | 3 | 20 | 1 | 12 | 13 | 69 | 19 |
| 5 | 13 | 2 | 7 | 2 | 7 | 0 | 20 | 2 | 47 | 6 |
| Total | 85 | 7 | 29 | 8 | 51 | 2 | 40 | 16 | 394 | 73 |

Note the rapid increase in demand for engineering especially for mining since the new mining programme got fully on course in 2010/11; an increase of about 42%. Even if demand levels off at this point, the facilities are already overstretched, classrooms are seriously overcrowded. Note also the class numbers especially for years 1 and 2; even the engineering drawing room which is the largest classroom in the Faculty cannot comfortably accommodate year 1 students for lectures and engineering drawing.

The Civil Engineering (CE) building for example which is the main building used for lectures for civil and mining students and where the offices of lecturers including the Head of the Civil Engineering Department are housed, is currently out of use because of severely damaged roof which has compromised the structure as a result of pouring rain onto the suspended slab. The roof is too flat for current conditions and is now totally beyond repairs. Total rehabilitation of this building and others is awaiting the BADEA program which is not expected to physically commence before early 2017. Meanwhile, there is a desperate need for classroom space especially larger classroom spaces to lecture students to prevent overcrowding in classrooms. The largest classroom at the civil engineering building can only comfortably accommodate a maximum of 20 students; currently there is serious overcrowding of classrooms especial for civil engineering classes. Some of you might have read or heard from social media and other sources that students stand or sit on window ledges for lectures; well this is unfortunately true because of the overcrowding. Lecturers (especially civil and mining engineering lecturers) do not now have offices where they can see students with individual problems; after lectures, most lecturers simply disappear.

Temporary roofing of the CE building using the existing trusses and timber purlins with roofing sheets will at least make the building functional for the 2015/16 session and will prevent further damage by the rains next year. This mini project which is a short term project has been estimated to cost about 14, 000 pounds.

A classroom floor that will accommodate 200 engineering students which can be constructed on top of an open classroom block that is now being constructed by FBC is estimated to cost approximately 35,000 pounds.

Laboratory equipment at the Civil engineering Department is obsolete and mostly dysfunctional; these are the same equipment I personally used during my undergraduate studies at FBC in the late 1970’s. Currently, we have an arrangement with the Sierra Leone Roads Authority where civil engineering students are taken in batches to do some basic laboratory work.

1. Inadequate Computer Facilities - There is no dedicated computer laboratory for students’ use in the Faculty; training students using computer software is a serious challenge. Students do not have individual desktop computers in class; at the electrical engineering department there are about 12 computers, but these are not enough and students with personal laptops are usually requested to take along their laptops to class. There are also 10 computers in the Faculty library for use by other students and lecturers. Students in engineering generally must be equipped with software tools to enhance their productivity on employment. These skills must complement their knowledge gained from their courses or programmes. Some of the tools include packages such as: Microsoft Word, Excel, PowerPoint, Access, Matlab, Polymath, AutoCAD and Electronic Workbench.

At this point, I wish to publicly appreciate the generous contribution to engineering education at FBC by the then “*Rokel* *Technical* *Advisory Pane*l” (RoTAP), now “*Engineers for Change; Sierra Leone”;* they have supported the engineering Faculty for the past two to three years by donating a geotechnical design software program and high end computer for use by mining engineering students; they paid for the manufacture of desks and chairs for lecture rooms and have sent numerous journals and text books for the Faculty library. Special thanks to engineers Laurence Pratt, Trudy Morgan and Modupeh Williams for the untiring efforts to source these funds, and to all those who generously donated towards those projects; you have all contributed to changing the lives of many students. The first batch of locally trained engineers with degree of Bachelor of Engineering with Honours degrees (Mining option) will graduate this year and I am pleased to say that they benefitted from training using the rock science geotechnical software that was donated by RoTAP.

Civil engineering students are still using drawing boards for engineering drawing; however, the revised curriculum which is scheduled for commencement next session (2015/16 academic year) provides for the use of AutoCAD and other computer aided design software programs; this is therefore a short term challenge because full implementation of this revised curricula next session is contingent on provision of the funds. The University as a whole is faced with budgetary constraints. The 2016 budget of FBC for example to fund proposed programmes in the college for 2015/16 academic year is about 59 Billion Leones against a projected income of 36 Billion Leones for the college. The Budget therefore has to be severely slashed and Heads of Departments have the painful task of trying to prioritise their needs. The Ministry of Education has not approved the increase in students’ fees which the University has been proposing for over three years now; and without increase in fees, running programmes effectively and efficiently in the university will never be sustainable.

1. Cost of running engineering programmes versus available University funding – The funding mechanism of the University of Sierra Leone by the Government of Sierra Leone originally by subvention and now by fee subsidy, is not sustainable. For sustainability, Universities must be able to meet the bulk of its operating costs including reasonable conditions of service, from fees paid by students; this is the key element in business models of all universities and the reason why all universities reach out to attract students ( good students of course). As it is now, the University is not charging economic fees for running its programs because Government has not approved this; this is affecting development of the University. Recently, the University Faculties were tasked to establish the cost of running individual programs. The exercise revealed that it should cost about of $2,500 per year to train an engineering student locally; even this, I personally consider to be very conservative. Currently, fees paid by engineering students is just about $1,000 per year and this trend is the same for other programs including training of doctors at COMAHS where the current fees charged to train our doctors per year is a little less than $2,000 per year. The huge funding gap to run programmes effectively cannot be bridged by subvention or even worse now, by fee subsidy; fee subsidy is contingent upon number of students admitted and how can the college admit more students when the facilities are inadequate? Without adequate facilities for research and development in engineering, funds cannot be attracted from research grants. Facilities for quality delivery of engineering programmes are a major challenge. Furthermore, the local and international visibility of the University will remain blurred and it will be difficult for Fourah Bay College to regain its glorious past when it was known as, “The Athens of West Africa”.
2. Challenges of internalization of the Quality Assurance (QA) processes and mechanisms – A number of the graduates of engineering would seek further studies abroad and will need to present degrees that are recognized internationally to qualify for acceptance into graduate programmes in those countries. Thus, while operating within the context of national boundaries, priority must be given to relevance and academic stewardship in the interest of the students that are trained, in order for them to be competitive in the international arena. This situation has now been compounded by the publication of university rating and ranking tables. Some of these ratings and ranking tables are quite comprehensive and based on a wide range of performance indicators including publications, international visibility, funding capacity, staff mix, graduation rate and facilities available to students and staff. The USL in which the Faculty of engineering exists has not been spared in this ranking race; students’ choices of which university they apply to, will soon be influenced largely by their ranking provided of course funding is not an inhibiting challenge. In the World ranking web (webometrics ranking) of 23,868 universities worldwide, USL currently is ranked 20,896. University of Makeni is ranked higher at 20,657, whilst University of Njala is ranked 21,631. This is an indication of the tremendous challenges facing universities in Sierra Leone in general in terms of delivery of quality higher education.
3. Practical Qualification and experience of Engineering Lecturers – Engineering faculties are quite different from the faculties of most professional schools since they generally have little experience or ongoing activity in professional practice. The strong research focus of many engineering schools has led to a cadre of strong engineering scientists, quite capable of generating new knowledge but relatively inexperienced in applying this knowledge in professional practice. Furthermore, engineering faculty members are judged and rewarded by criteria appropriate to the science faculty, e.g., publication and “grantsmanship”. This situation is typical also in Sierra Leone where professional practice is not only absent in promotion and reward criteria, but it is frequently even discouraged. The faculty reward system recognizes teaching, research, and service to the profession, but it gives little recognition for developing a marketable product or process or designing an enduring piece of the nation’s infrastructure. Ironically, it would be hard to imagine a medical school faculty comprised only of biological scientists rather than practicing physicians or a music school faculty comprised only of musicologists rather than performing artists. Yet such detachment from professional practice and experience is the norm in engineering education in Sierra Leone. A proposal for internship of lecturers in engineering who have had no industrial experience for example in consulting engineering firms or industries has been discussed but is yet to be warmly embraced by the authorities.
4. **Engineering Practice in Sierra Leone**

The practice of engineering in Sierra Leone is by law regulated by the Professional Engineers Registration Council (PERC); however, PERC has serious challenges implementing this mandate. *The Professional Engineers* Act No. 3 of Parliament of 1990 mandates PERC to register and license all engineers wishing to practice engineering in Sierra Leone and to also regulate and control that practice in the country. Only engineers who have gone through the SLIE screening and assessment process and fulfilled all the requirements for acceptance into the rank of Corporate Member of SLIE, or a member of any other recognized professional engineering society can be registered automatically by PERC; otherwise they will have to undergo separate screening/examination by PERC for registration as a practicing professional engineer in Sierra Leone with a professional practicing certificate. Registration and achievement of at least Corporate Membership status with the SLIE is therefore a prerequisite for obtaining license to practice engineering in Sierra Leone. It is illegal to use the titles of *Professional Engineer* or *Engineer* unless registered under this Act. It is also illegal to practice as a Professional Engineer in Sierra Leone without a current Practicing Certificate issued by PERC.

The engineering industry in Sierra Leone is comprised of: Consulting engineering, construction, mining, telecommunications, water and utility companies, technical Agencies of Government such as the Roads Authority, Transport and Safety Authorities as well as small to medium size manufacturing industries.

**5. Some Challenges in Engineering Practice**

i. Registration and regulation of engineering practice in Sierra Leone – Although there has been marked increase in the number of registered engineers with the Professional Institution from 699 in 2012 to 904 currently, less than 50% are paid up and less than 20% are actually active in programs of the SLIE. The breakdown of the category of membership is as follows:

Fellows 54

Corporate 436

Graduates 364

Associates 48

It has become clear that the PERC ACT of 1990 to regulate engineering practice in Sierra Leone is obsolete and ineffective in terms of enforcement and taking action against defaulters; it is difficult to implement without appropriate regulations; it does not adequately provide PERC with the mandate to address all of today’s challenges in engineering malpractice. Multi storey private buildings for example being constructed with no structural design and drawings from registered structural engineers. Furthermore, the difficulties of regulating engineering practices in poor economies such as ours where the needs of people transcend the fuss and bother of quality and standards have become evident. The emerging issues of compliance for quality, standards, safety and economy have posed enormous challenges for PERC. It is this realization that has caused PERC to propose a revision to the ACT and to provide regulations which will give it the mandate to enforce the provisions of the ACT. A proposed revision to the ACT has been presented to our line Ministry, the Ministry of Works, Housing and Infrastructure for over five months now without approval to take it to Parliament for ratification. Without the proposed revision and development of regulations from it, it would be difficult to achieve the objectives of the ACT in terms of enforcement. With the high rate of housing and other infrastructural development and the emerging issues in the mining sector where all categories of workers including technicians, mechanics and engineers are brought into the country, blatantly disregarding the requirements of registration and compliance, the practice of engineering in Sierra Leone is faced with enormous challenges.

1. Shortage of skills at the technician and technologist level to support engineering practice – There is an urgent need for a strategy to develop skills to take advantage of the provision of the *Local Content Policy* of the Government; Mining companies for example bring in technicians, equipment mechanics and even welders from overseas to undertake jobs that should otherwise be given to local workers; the argument which is to a large extent credible is that our local technicians lack the required training and skills. There is a shortage of middle level manpower support for engineering practice. Consulting engineering firms in Sierra Leone for example are in desperate need of AutoCAD technicians, Survey Technicians who can use the *Total Station* survey equipment for example to do surveys and geometric design of highways. The polytechnics that are responsible for producing this cadre of personnel have similar challenges as for engineering education i.e ill – equipped laboratories and workshops, poor funding and thus poor teaching infrastructures, paucity of quality staff and poor learning environment.
2. Graduate engineers not readily marketable to national and international companies seeking for engineers - The Government of Dierra Leone (GoSL) realises that the inadequate training of our graduates is compounding the youth (un)employment problem and requires an urgent long term solution. As a “developing nation” GoSL recognises that its focus must be on sectors that contribute to the development of the country. Infrastructure, power and water are key engineering disciplines which play a central role in any country’s development. In Sierra Leone, there are very few (and none in some cases) senior and much less still, graduate engineers who can fill these very necessary gaps. To address this shortfall the Government established the Skills Development Fund for engineering graduates and this was confirmed and ratified in the 2014 budget. Allocations were made to set up th**e Young Engineers’ Corps** (YEC). SLIE and PERC have developed and submitted a proposal to GoSL through Ministry of Finance and Economic Development (MOFED) for managing this activity to demonstrate the urgent need for this development of a Young Engineers’ Corps and chart a way forward for this to be established within the next six months. The proposed concept submitted for the YEC is a one year programme for which graduate engineers from any university in Sierra Leone can apply if necessary and will be trained in aspects of the working world which they otherwise would not have access to. The product of the YEC will be an articulate engineering graduate who understands the purpose and expectations of the working place and has already started the process of taking the theory learnt at University and transferring that learning into the working environment. The focus of YEC will be on the practical aspects of the technical studies e.g. surveying, Autocad etc as well as the soft skills which create a well rounded and successful employee. The aim is to fine tune the graduates so that they become more “sellable” to national and international companies looking for engineers. The programme will be a combination of work placements at industries that will participate in the training programme, outsourced training, international interventions for example from **Engineers for Change (EfC**) and continuous assessments, details to be worked out between the employer and a Secretariat that will be set up to manage the training.The training will comprise of **(a) Technical subjects** which will require the development of minimum standards for all core engineering disciplines/subjects (to be agreed); (b) **Soft Skills** – Management skills and the Workability skills – how to function at a high level in the working environment, including: Communication skills, Presentation skills, Report Writing Skills, Problem Solving Skills, Basic Finance, Work Ethics, Team Working, Computer Skills and Project Management Skills.
3. Participation of local engineers in internationally funded engineering projects – This challenge facing the practice of engineering in Sierra Leone is also related to skills shortage in crucial areas of engineering and other service industries. In some instances such as in Consultancy firms, these skills exist but especially for foreign direct investment projects, only few local personnel are engaged by foreign firms and contractors.
4. Challenges facing contractors – Recent discussions with some contractors in Sierra Leone on the challenges they are facing revealed issues which are typical to those of their counterparts in other developing countries; some of these are: uncertainties in supplies and prices of materials, obtaining interim payment , procuring work, access to capital, access to plant and equipment, inappropriate contract conditions, maintaining plant and equipment, meeting contract deadlines, design changes, incomplete contract documents, transporting materials and equipment, materials control on site, providing reliable tenders, communicating with client/representatives, shortages of skilled labour, accounting of financial management, inadequate supervision by client, project planning and site management, company organization, personnel management and providing quality workmanship. Contractors have limited access to funding sources, especially contractors in the small-and-medium bracket. One of the biggest consequences of this is that it prevents them from satisfying the financial requirements (e.g. bid and performance securities) needed to bid for and win major contracts often awarded to their foreign counterparts.
5. Inadequate facilities of the SLIE/PERC – A befitting Secretariat and Resource centre is needed to facilitate professional development of students of engineering and continuing professional development of practicing engineers. Currently, the SLIE and PERC secretariat are located at a Government structure at New England which can accommodate not more that 20 council members for meetings and not more than 8 persons in the resource centre and Library. Clearly, this is not a befitting facility for carrying out the business of regulation of engineering practice effectively. The SLIE/PERC has requested Government for land to build a befitting secretariat. The land which was previously allocated over two years ago has been snatched and usurped by a more favored organization of Government. The SLIE is now negotiating with FBC to lease a piece of land for the construction of a secretariat and resource centre at Mount Aureol. The sources of funding for the SLIE/PERC are the meager fees from members, corporate payments from some engineering businesses and donations of Corporate Social Responsibility (CSR) by organizations such as *Mercury International* *Ltd*. who have donated funds to equip the small resource centre/library at the SLIE headquarters.

**6. Conclusion**

 This presentation of challenges in engineering education and practice in Sierra Leone is by no means exhaustive but include those that need to be addressed in the short to medium term. The actions required to address these challenges are obvious; therefore, I will not attempt to repeat them by way of making recommendations; rather, I wish to make the following concluding remarks:

In spite of the huge challenges in engineering education and practice in Sierra Leone, there are also opportunities. Although the Ebola epidemic for the past year has stalled the growth trajectory of Sierra Leone which has been especially underpinned by the mining sector, there are fresh opportunities for construction work and development of infrastructure. Globalisation in the engineering industry has its advantages if the opportunities can be capitalized upon; Large foreign companies such as mining companies and construction firms must be encouraged to develop training programmes for Sierra Leoneans to ensure transfer of knowledge, technology and expertise.

To support engineering practice and facilitate the development of Sierra Leone as well as create opportunities for employment, Incentives for engineering training and skills development in entrepreneurship and management in public and private sector training institutions as well as within associations and at the firm – level is required. Skills development for the youth through on – the - job training, internships and apprenticeships in established industries and firms is urgently needed.

Engineering education should also be spiritedly pursued, to fully exploit the available possibilities for promoting sound and sustainable development. The enabling environment must be created and the opportunities maximized. The challenges to guarantee quality engineering education seem overwhelming in Sierra Leone; however, they are attainable. Undoubtedly, the major obstacle to sustainable development is the lack of viable engineering education and training. Thus, the quest for the sustainable national development and growth as envisaged by the GoSL is dependent on the extent to which engineering education is revamped and transformed in order to be globally competitive.

**I THANK YOU ALL FOR YOUR ATTENTION!!**