



## Assessment of current status of technical and higher education sector in Liberia

M. M. ZINNAH and M. S. JACKOLLIE

University of Liberia, Capitol Hill, P.O. Box 9020, Monrovia, Liberia

**Corresponding Author:** zinnahmm@ul.edu.lr

### ABSTRACT

Liberia is among the countries with the lowest human development index, ranked at 181 out of 189 countries in the world. Its education sector is a reflection of the political and economic fragility of the country. The sector is generally weak and fragmented. The current status of the education sector reflects years of public neglect and inadequate investment. The delivery of quality higher and technical and vocational education and training (TVET) in Liberia has numerous constraints ranging from over-crowdedness of classrooms to poorly equipped libraries, laboratories and inadequate qualified faculty especially in specialized courses. Available facilities are mismatched with the constant growth in student population. These constraints are a reflection of underfunding of the sector by the Government. Politics shapes society and influences the course of destiny from time to time. It is playing a critical role in influencing the delivering of quality higher education by exerting pressure on the National Commission on Higher education (NCHE) that has an oversight responsibility in higher education sector. Accordingly, the observed proliferation of higher institutions across the country without thorough assessment of required standards such as the academic qualification and experience of the faculty, adequate infrastructure facilities and alignment of proposed programs with Liberia's workforce development priorities is a direct reflection of the failed oversight role of the Commission. In the crafting of the Government's Pro-Poor Agenda for Prosperity and Development (PAPD) development agenda, the Government admits the concern of a "miss match" between disciplines pursued by students and the current and future demands for skills in the economy. Government of Liberia has traditionally focused on providing recurrent expenditure funding such as wages and salaries with limited investment into much needed areas such as infrastructure. These effects are not only felt in the university education sector but also in the TVET sector as well. The country still remains far behind other countries in West Africa in Science, Technology, Engineering and Mathematic (STEM) education. Science education in particular is substandard owing to lack of equipped laboratories, obsolete equipment in most instances, inadequacy of qualified instructors and laboratory technicians in specialized STEM disciplines. Other factors for the weakness in the education system include the lack of interest of qualified Liberians with graduate and post graduate degrees to enter the teaching profession. Their demonstrated preference is for high paid and more prestigious jobs. This is why universities and colleges requiring graduate or post graduate level faculties have the greatest challenge attracting and retaining highly trained faculty. For example, only 13% of the teaching staff the College of Agriculture and Forestry at the University of Liberia (UL) hold PhD degrees, while 82% hold master degrees. The remaining 5% are bachelor degree holders that serve as Teaching Assistants for undergraduate courses. Even then Higher education institutions are experiencing challenges in retaining instructors because of the severe shortage of qualified Liberians willing to take teaching positions. As a result, a significant percentage of instructors work on part time basis in two or more institutions. Part-time instructors of University of Liberia College of Agriculture and Forestry ideally requiring graduate and post graduate degrees in specialized disciplines make up over a third of the

teaching staff (36%) while the University of Liberia College of Engineering is over a quarter (28%). Aging of instructors further exacerbates the weakness of TVET and higher education institutions. On average, 11 percent of teaching staff in higher education and TVET institutions have either reached or surpassed the official 60-year retirement age. Moreover, an additional 3-4 percent will reach retirement age in the next 5 – 10 years. Data from the institutions surveyed show a disproportionate gender representation in both Higher Education and TVET faculty and staff. The consolidated female share of faculty and staff in three major TVET and Higher Education institutions is 9 percent while male share is 91 percent. These data indicate a need to pay special attention to attract and retain females teaching staff in the TVET and higher education institutions. The scale and scope of research and scholarly activities in Liberia's higher education is negligible compared to other universities in the region. Although University of Liberia and Cuttington University have demonstrated some level of research activities, neither of these two institutions has published significant research results in recent years. Key recommendations for improving Liberia's education sector are, but not limited to; investment of significant public resources (financing) in faculty and staff development, improvement of demonstration laboratories, libraries and infrastructural facilities, and payments of commensurate salaries and benefits to enhance the recruitment and retention of quality teaching staff, and putting emphasis in STEM education and increasing the pool of women students and academics. In addition, regulatory bodies, especially the National Commission on Higher Education should be adequately funded and depoliticized to enable them carry out their mandates of quality assurance and relevance of higher education. If investments are not increased in higher and TVET education, it is unlikely that the broader development goals enshrined in the Government's Pro-poor Agenda for Prosperity and Development (PAPD) will be achieved.

Key words: Gender representation, higher education, Liberia, staffing, technical education

## **RÉSUMÉ**

Le Libéria est l'un des pays ayant l'indice de développement humain le plus bas, classé 181ème sur 189 pays dans le monde. Son secteur éducatif est le reflet de la fragilité politique et économique du pays. Le secteur est généralement faible et fragmenté. La situation actuelle du secteur de l'éducation reflète des années de négligence du public et d'investissement inadéquat. La provision d'un enseignement et d'une formation techniques et professionnels (EFTP) de qualité au Libéria est soumise à de nombreuses contraintes allant de la surpopulation des salles de classe aux bibliothèques, aux laboratoires mal équipés et aux professeurs qualifiés insuffisants, en particulier dans les cours spécialisés. Les installations disponibles ne correspondent pas à la croissance constante de la population étudiante. Ces contraintes traduisent le sous-financement du secteur par le gouvernement. La politique façonne la société et influence de temps en temps le cours du destin. Il joue un rôle essentiel en influençant la prestation d'un enseignement supérieur de qualité en exerçant une pression sur la Commission nationale de l'enseignement supérieur (CNES), qui a une responsabilité de surveillance dans le secteur de l'enseignement supérieur. En conséquence, la prolifération observée d'établissements supérieurs à travers le pays sans une évaluation approfondie des normes requises telles que la qualification académique et l'expérience du corps professoral, des infrastructures adéquates et l'alignement des programmes proposés sur les priorités de développement de la main-d'œuvre du Libéria est un reflet direct de l'échec du rôle de la supervision de la Commission. Dans l'élaboration du programme de développement du gouvernement en faveur des pauvres, pour la

prospérité et le développement (PAPD), le gouvernement reconnaît la préoccupation d'une "correspondance manquée" entre les compétences acquises par les étudiants et les demandes actuelles et futures de compétences exigées par l'économie. Le gouvernement du Libéria s'est traditionnellement concentré sur le financement de dépenses récurrentes telles que les salaires et traitements avec un investissement limité dans des domaines très nécessaires tels que les infrastructures. Ces effets se font sentir non seulement dans le secteur de l'enseignement universitaire mais aussi dans le secteur de l'EFTP. Le pays reste loin derrière les autres pays d'Afrique de l'Ouest en matière de science, technologie, ingénierie et enseignement mathématique (STIM). L'enseignement des sciences en particulier est inférieur aux normes en raison du manque de laboratoires équipés, d'équipements obsolètes dans la plupart des cas, de l'insuffisance d'instructeurs qualifiés et de techniciens de laboratoire dans les disciplines STIM spécialisées. D'autres facteurs expliquent la faiblesse du système éducatif, notamment le manque d'intérêt des Libériens qualifiés titulaires d'un diplôme d'études supérieures et postuniversitaires pour accéder à la profession d'enseignant. Leur préférence démontrée est pour les emplois bien rémunérés et plus prestigieux. C'est pourquoi les universités et les collèges qui ont besoin de facultés de niveau supérieur ou postuniversitaire ont le plus grand défi à attirer et à retenir des professeurs hautement qualifiés. Par exemple, seulement 13% du personnel enseignant du Collège d'agriculture et de foresterie de l'Université du Libéria (UL) sont titulaires d'un doctorat, tandis que 82% sont titulaires d'un master. Les 5% restants sont des titulaires d'un baccalauréat qui servent d'assistants d'enseignement pour les cours de premier cycle. Même alors, les établissements d'enseignement supérieur rencontrent des difficultés pour retenir les instructeurs en raison de la grave pénurie de Libériens qualifiés désireux d'occuper des postes d'enseignant. Par conséquent, un pourcentage important d'instructeurs travaillent à temps partiel dans deux établissements ou plus. Les instructeurs à temps partiel du Collège d'agriculture et de foresterie de l'Université du Libéria, qui exigent idéalement des diplômes d'études supérieures et postuniversitaires dans des disciplines spécialisées, représentent plus du tiers du personnel enseignant (36%), tandis que le Collège d'ingénierie de l'Université du Libéria compte plus d'un quart (28 %). Le vieillissement des instructeurs aggrave encore la faiblesse de l'EFTP et des établissements d'enseignement supérieur. En moyenne, 11% du personnel enseignant des établissements d'enseignement supérieur et d'EFTP ont atteint ou dépassé l'âge officiel de 60 ans de la retraite. De plus, 3 à 4% supplémentaires atteindront l'âge de la retraite dans les 5 à 10 prochaines années. Les données des établissements interrogés montrent une représentation disproportionnée des sexes dans les facultés et le personnel de l'enseignement supérieur et de l'EFTP. La part féminine consolidée des professeurs et du personnel dans les trois principaux établissements d'EFTP et d'enseignement supérieur est de 9%, tandis que la part des hommes est de 91%. Ces données indiquent la nécessité d'accorder une attention particulière pour attirer et retenir le personnel enseignant féminin dans l'EFTP et les établissements d'enseignement supérieur. L'ampleur et la portée de la recherche et des activités savantes dans l'enseignement supérieur au Libéria sont négligeables par rapport aux autres universités de la région. Bien que l'Université du Libéria et l'Université de Cuttington aient démontré un certain niveau d'activités de recherche, aucune de ces deux institutions n'a publié de résultats de recherche importants ces dernières années. Les principales recommandations pour améliorer le secteur de l'éducation au Libéria sont, mais sans s'y limiter; investissement de ressources publiques importantes (financement) dans le développement du corps professoral et du personnel, amélioration des laboratoires de démonstration, des bibliothèques et des infrastructures, et paiement de salaires et d'avantages proportionnels pour améliorer le recrutement et la rétention d'un personnel enseignant de qualité, et mettre l'accent sur l'enseignement des STIM et accroître le bassin de

femmes étudiantes et universitaires. En outre, les organismes de réglementation, en particulier la Commission nationale de l'enseignement supérieur, devraient être financés et dépolitisés de manière adéquate pour leur permettre de s'acquitter de leurs mandats d'assurance qualité et de pertinence de l'enseignement supérieur. Si les investissements ne sont pas augmentés dans l'enseignement supérieur et l'EFTP, il est peu probable que les objectifs de développement plus larges inscrits dans le programme gouvernemental en faveur des pauvres pour la prospérité et le développement (PAPD) soient atteints.

Mots-clés: représentation des sexes, enseignement supérieur, Libéria, dotation en personnel, enseignement technique

## **BACKGROUND**

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) was established in 2004, and currently has 126 member universities in 38 countries across the African continent. RUFORUM has a mandate to strengthen the quality and relevance of postgraduate training and research in African universities, especially in agriculture, science, technology, and innovation. As such, RUFORUM commissioned the assessment of technical and higher education institutions in Liberia. The overall objective of the assessment was to identify challenges and gaps and develop specific recommendations towards improving the performances and contributions of technical and higher education institutions to agriculture, science, technology and innovation in Liberia. This assessment built on discussions during the Liberian Higher Education Day held on 26th April 2019 in Monrovia, Liberia, consultations with key stakeholders and review of documents.

Tertiary education in Liberia began in 1862 with the establishment of the public-funded Liberia College, which later became a full University in 1951 (University of Liberia). The first private (faith-based) higher education institution, Cuttington College (now Cuttington University), was established in 1889 by the Episcopal Church of the United States. According to the National Commission on Higher Education (NCHE), currently there are 20 universities offering bachelor degrees

and above, and 18 higher education institutions offering associate degrees in various disciplines (NCHE 2019). No higher education institution offers Ph.D. degree in Liberia. The list of accredited institutions of higher education in Liberia is shown in Table 1.

The National Commission on Higher Education (NCHE) is the regulatory body for all degree-granting higher education institutions in Liberia. It was established by an Act of Liberia National Legislature in 1989. It oversees implementation of the Revised Policy on Higher Education in Liberia Act of 2015. The NCHE has drafted policies that set minimum standards for the accreditation of Higher Education institutions. The draft standards have not yet been validated by stakeholders for use as a tool for evaluating higher education institutions. Additionally, the NCHE has not been able to facilitate establishment of the proposed autonomous National Accreditation Center (NAC) enshrined in its mandate to take responsibility for evaluating and accrediting higher institutions of learning in Liberia.

The NCHE has two major challenges: (1) underfunding, and (2) politicization. Funding has been especially limited in the last few years. Funding to NCHE has largely covered payrolls with limited funds for operations. Moreover, until recently investments from development partners (especially the World Bank) for the African education sector were focused more on basic and childhood education

**Table 1. Recognized and accredited higher education institutions in Liberia, 2018/2019 - National Commission on Higher Education**

No.	Name of institution	Year established	Type of institution	Location	Degrees offered
1	University of Liberia	1862	Public	Monrovia	B & M
2	Cuttington University	1889	Faith-Based	Suakoko, Bong County	B & M
3	African Methodist Episcopal University	1996	Faith-Based	Monrovia	B & M
4	United Methodist University	1998	Faith-Based	Monrovia	B & M
5	Stella Maris University	2005	Faith-Based	Monrovia	B & M
6	Starz College of Technology	2012	Private	Monrovia	B & M
7	William V. S. Tubman University	1978	Public	Harper, Maryland County	B
8	African Methodist Episcopal Zion University College	1995	Faith-Based	Monrovia	B
9	Liberia Baptist Theological Seminary	1975	Faith-Based	Roberts International Highway	B
10	African Bible College University	1977	Faith-Based	Yekepa, Nimba County	B
11	Liberia Assemblies Of God Bible College	1980	Faith-Based	Brewerville, Montserrado County	B
12	Monrovia Bible College	1984	Faith-Based	King Gray, Paynesville, Monrovia	B
13	Adventist University Of West Africa	2010	Faith-Based	Monrovia	B
14	Harbel College	2014	Public	Harbel, Margibi County	B
15	Bong County Technical College	2013	Public	Gbarnga, Bong County	B
16	Blue Crest University College	2014	Private	Monrovia	B
17	St. Clements University College	2010	Private	Monrovia	B
18	Bushrod Institute Of Technology	2016	Private	New Kru Town Monrovia	B
19	Smythe Institute Of Management and Technology	1999	Private	Monrovia	B
20	Trinity Bible College	2001	Faith-Based	Harbel, Margibi County	A
21	Jake Memorial Baptist College	1995	Faith-Based	Monrovia	A
22	Leigh-Sherman Community College	1976	Private	Monrovia	A
23	Christian Theological Seminary	2007	Faith-Based	Jamaica Road, Monrovia	A
24	Bomi County Community College	2005	Public	Tubmanburg, Bomi County	A
25	Baptist College of Missionary Physician Assistants	2007	Private	Gbarnga, Bong County	A
26	Grand Bassa Community College	2008	Public	Buchanan, Grand Bassa County	A
27	Wesleyan College of Liberia	1995	Faith-Based	Somalia Drive, Monrovia	A
28	Vision International Christian College of Liberia	2009	Faith-Based	Paynesville, Monrovia	A
29	Liberia International Christian College	2008	Faith-Based	Ganta, Nimba County	A
30	Lincoln College of Professional Studies	1997	Private	Monrovia	A
31	Nimba County Community College	2010	Public	Sanniquellie, Nimba County	A
32	Liberia Dujah Technical College	2011	Private	Johnson, Montserrado County	A
33	Lofa County Community College	2011	Public	Voinjama, Lofa County	A
34	Free Pentecostal College	2010	Faith-Based	Voinjama, Lofa County	A
35	Grand Gedeh County Community College	2009	Public	Zwedru, Grand Gedeh County	A
36	Sinoe County Community College	2017	Public	Greenville, Sinoe County	A
37	Salvation Army Polytechnic	2018	Faith-Based	Monrovia	A
38	LICOSESS Teacher College	1995	Private	Paynesville, Monrovia	A

AA = Associate degree; B = Bachelor degree; M = Master degree

Source: Liberia National Commission on Higher Education (NCHE) 2019.

(World Bank, 2009). Fortunately, the World Bank made a complete turnabout at the turn of the century when it declared that the rate of return on African higher education was as high as 21%, among the highest in the world (Bloom *et al.*, 2014). The World Bank is now actively engaged in supporting a new initiative to revitalize the African higher education sector through its innovative “African Higher Education Centers of Excellence” aimed at strengthening universities’ capacity to deliver high quality training and applied research, and promoting regional specialization in areas that address specific common regional development challenges.

In terms of politicization of professional bodies, the appointments of Commissioners at the NCHE is no exception. Leadership turnovers have led to the lack of continuity in the national vision about higher education. As such, the NCHE has not been able to effectively deliver on its mandates which are crucial for delivery of quality higher education in Liberia. The Commission acknowledges the proliferation of higher education institutions across the country as a challenge, but lacks the requisite resources to assess their integrities for accreditation.

The objective of this study was to assess the current landscape of Higher and Technical education in Liberia, in terms of historical set up, current status, and institutional and policy frameworks guiding the sector so as to establish underlying issues and opportunities for making the sector more competitive and responsive to the development needs of Liberia. Special attention was given to analyse gender parity in the higher and technical education institutions. In addition, effort was made to establish the current trends in other West African countries so as to inform intervention strategies in Liberia.

## **METHODOLOGY AND LIMITATIONS**

Qualitative and quantitative data were collected and analyzed to inform this report. Secondary

data were collected through desk review of existing national policy documents and reports. In addition to Liberia higher and TVET education regulatory and policy frameworks, a desk study was conducted to appreciate the experiences of Ghana, Nigeria and Sierra Leone that have more advanced TVET and higher education programs and more robust regulatory frameworks than Liberia. A desk review of two World Bank Policy Review documents was also conducted to appreciate its experience in financing TVET programs in less developed countries. Primary data were collected from key informants’ interviews with leaders of TVET and higher institutions and regulatory agencies in the education sector. The draft report was shared and validated by key stakeholders in the education sector in Liberia. The assessment had several limitations: (i) four of the seven institutions (both public and private) purposively selected for the assessment did not respond to the questionnaires; and (ii) there were also varied levels of restrictions on information that institutions could release for public consumption, especially related to finances. These limitations are responsible for the limited data presented in this report regarding institutions’ funding trends, faculty qualities in terms of academic levels and ranks, and concentrations of students’ enrolment in colleges and courses. Yet these trends are necessary to inform the design and relevance of future capacity development programmes for TVET and higher education in the country. However, the findings in this report adequately represent the true status of TVET and higher education in Liberia. The recommendations are tailored to remove the major challenges and constraints hindering the delivery of quality TVET and higher education in Liberia.

## **KEY FINDINGS**

**Liberia’s TVET Sector: Genesis and current status.** Technical and vocational education and training (TVET) is the most practical means for acquiring readily employable skills for the world of work (African Union, 2007). TVET started

in Liberia with the establishment of the Booker Washington Institute (BWI) in Kakata in 1929. Booker Washington Institute was established to produce middle level technicians in agriculture, business education, mechanical trades, building construction and electrical trades mainly to benefit the Firestone Natural Rubber Plantation as well as the middle level technician needs of other businesses. The turning point of TVET in Liberia was the emergence of large companies/concessions and businesses during the 1960s and 1970s (e.g. Liberian-American-Swedish Mining Company (LAMCO), Bong Mining Company (BMC), Liberian Mining Company (LMC), and National Iron Ore Company (NIOC). These companies set up TVET centers to train technical and administrative staff that required specific skills sets for efficient operation of their companies.

Many Liberians perceive TVETs as institutions for school dropouts who lack academic potential for formal education. Studies by Oketch (2014) and Rima (2014) support this perception that general education has the promise of better career mobility and higher wages than TVET. Experience from Ethiopia by Tamrat (2019) also indicates that in spite of potential of TVET to address the challenges of skill gaps and reduce unemployment in Ethiopia, students, parents and the larger community appear to show little interest towards TVET as compared to university degrees. It is widely considered as inferior to the academically-oriented degrees offered by higher education institutions and is seen as a training route suitable for those with poor academic abilities.

In spite of these negative perceptions, the Government of Liberia acknowledges that TVET holds the key to technological progress, rapid industrialization, wealth creation and poverty reduction in the country. Section 2.2 (Building Human Capacity for Knowledge Economy) of Pillar II (Power to the People) of the Government's Pro-Poor Agenda for Prosperity and Development (PADP), places

emphases on TVET. TVET programs will provide training opportunities for the youth (both men and women) to acquire the needed skills for the emerging job opportunities in agriculture value chains from production to marketing encompassing processing, manufacturing and other light industries. The Ministry of Education forecasts a potential demand for 620,000 skilled workers to fulfill demands of industry by 2030. Training in Science, Technology, Engineering and Mathematics (STEM) will be critical for preparing youth to meet the demands for these huge job opportunities. However, the PADP classifies STEM education and TVET programs in Liberia as underdeveloped and that no national qualification framework or competence-driven curriculum exist. The PADP further states that there is a severe mismatch between disciplines pursued by students and the current and future demands for skills in the economy (Government of Liberia, 2018).

The Ministry of Education (MOE) has a TVET Bureau which provides oversight for non-degree granting TVET institutions which are not governed by the NCHE. It is responsible for monitoring, management and coordination of TVET programs in Liberia. TVET provision is divided between public, private, faith-based and community providers. The Education Management Information System (EMIS) data reported that 148 TVET institutions were formally registered in the country with the Ministry of Education and Ministry of Youth and Sports (MYS) in 2015/2016. However, only 65 institutions were active where the majority were private (63%) followed by public (20%), faith-based (11%) and community-owned (6%) (Ministry of Education, 2017).

Key challenges to TVET delivery include, among others, (i) fragmented data on TVET supply and ad-hoc labor market information collection; (ii) weak linkages between TVET curricula and the productive sectors of the economy limit relevance; (iii) poorly equipped demonstration facilities; (iv) inadequate trained technical

faculty; (v) absence of state-of-the-art in-country training opportunity for training TVET teachers; (vi) lack of adequate gender-sensitive activities to address the obstacles girls and young women face in TVET; (vii) damaged infrastructure as a result of 14 years of civil conflict; (viii) training tools and equipment are inadequate and in most instances obsolete; and (ix) inadequate funding to efficiently run the institutions. In addition to these challenges, the diminishing level of large businesses and industrial activities has limited opportunities for internships or experiential learning opportunities that previously enforced TVET delivery. The employment windows have also shrunk significantly due to closure of many large businesses, concessions and industries and the thriving ones are said to not be making enough profits to accommodate TVET students and graduates.

The Government is planning to pass into law the establishment of the Liberia TVET Commission (LiTCom) that will govern, regulate, harmonize skills development, and guide all aspects of TVET delivery across Liberia. The responsibility of LiTCom will also include ensuring quality and accreditation, and setting up occupational standards and system for monitoring and evaluation. LiTCom is expected to also establish a national database for TVET graduates across the country. Other African countries have established similar commissions that have helped to improve the quality of their TVET programs. Examples include the Council for TVET (COTVET) in Ghana, and the Workforce Development Authority in Rwanda (Afeti and Adubra 2012, Afeti n.d). However, unless there is dramatic improvement in the economy and increased government investments in TVET programs, setting up LiTCom will not solve the huge challenges of TVET in Liberia.

In 2018, the European Union (EU) committed €20 million grant to support TVET programs in Liberia for a period of six years. These grants are

intended to improve the quality and relevance of TVET institutions to equip youth with skills, especially in ICT, agriculture, technology and electrification that actually match emerging labor market demands and respond to new economic growth opportunities. The United Nations Industrial Development Organization (UNIDO) as the implementing agency will collaborate with the Ministry of Education (MOE) and institutions to assess and improve their infrastructures, demonstration laboratories including modern training equipment, and to improve the quality of the faculty. The grant will also send a number of vocational instructors abroad for training and practice to enable them to serve upon their return as instructors in TVET institutions and as master trainers in the Centre of Excellence for Training of Vocational Instructor that will be established with support from the program. The institutions that will initially be supported by the grant are Booker Washington Institute, Monrovia Vocational Training Center (MVTC), Greenville Multilateral High School; Cape Palmas High School and Zwedru Multilateral High School.

Liberia needs to learn from ongoing efforts in other countries especially in West Africa. For example, According to Ansah and Ernest (2013), the Government of Ghana has, in recent times, given renewed recognition to TVET. The recognition highlights TVET in the Ghana Poverty Reduction Strategy (GPRS) document as means of developing the technical and skilled human resource base and a stimulant for rapid economic growth for Ghana to realize its Vision 2020 Plan. Similarly, the Federal Government of Nigeria acknowledges the critical role of TVET in national development and the mixed outcomes of previous TVET policies. As a result, its recent policy recognizes TVET as an integral part of technological development and provides for the apportioning of a greater proportion of education expenditure to TVET at both Federal and State levels. The recent policy

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"Associate Degree" in the Liberian context is a two-year post-secondary course (equivalent to the first two years of university undergraduate degree). It can also be equated to the Higher National Diploma (HND) in the British education system.



also recognizes the fundamental importance and cost intensive nature of TVET; hence, the Government of Nigeria made a commitment to provide adequate funds for TVET (Okorafor and Nnajofofor 2017).

Sierra Leone has several institutions of higher learning offering Bachelor, Master and Doctorate degrees while the polytechnics offer two-year programs leading to the Higher National Diploma (HND). The HND which is equivalent to an Associate Degree has been introduced in the agriculture programs of community colleges in Liberia. In 2018, GIZ conducted a diagnostic study of the quality of TVET in Sierra Leone that found out that existing TVET curricula were primarily assessed by the training providers themselves (GIZ, 2018). Similarly, in Liberia, TVET institutions make changes that are needed to improve their curricula from suggestions by employers on the basis of appraisals of interns. Unlike Liberia, however, Sierra Leone has a TVET Coalition composed of members from a variety of stakeholders both in private and public sectors who collaborate to foster the development of TVET. Similar coalition could help improve TVET programs in Liberia.

The 1992 review of the World Bank TVET Policy (Adams *et al.*, 1992) found that TVET funding has produced mixed result in such a way that, where successful in achieving set goals, a large proportion of graduates find jobs that use their skills. There is also evidence that TVET efforts have proved mainly unsuccessful because they are based on mistaken assumptions about the nature of employment and skills demand. Moreover, TVET has been found least effective where its objective is to solve broad social problems unrelated to prevailing or anticipated demand for skills. These assertions should be a wakeup call for Liberia to chart a new course of policy and action that will make TVET demand driven rather than supply driven for addressing

social issues.

### **Higher education in Liberia: Current status Programs and level of academic achievement.**

Liberia has two public higher education institutions - the University of Liberia (UL) and Tubman University (TU). These two universities and a host of private universities and colleges provide a wide array of academic and technical training programs at various degree levels, including Associate, Bachelor and Master. The major higher education programs include, but not limited to, agriculture and forestry, applied sciences, environmental science, mathematics, engineering and technology, social studies, and business studies. The majority of these programs are at the Bachelor degree level. Few higher education institutions, including University of Liberia and Cuttington University, do offer Master's Degrees in selected fields such as Business Management, Accounting, Urban and Regional Planning, Public Health, and Environmental Science. No PhD degrees are currently being offered in Liberia.

Clearly Liberia lags behind other regional countries in Science, Technology, Engineering and Mathematics (STEM) programs, for example with Uganda (see Tizikira *et al.*, 2019). The impact of the weakness of STEM education in Liberia is largely felt in its share of the high profile and well-paid jobs which are dominated by other nationals. Enrolment data show higher number of higher education students in the business and social studies courses compared to STEM courses. This is an indication that the contribution of STEM education to production of a competitive workforce for high tech industries will remain a challenge in the foreseeable future. Be it as it may, STEM programs have three key constraints in Liberia which are: (i) lack of equipped laboratories, (ii) inadequate qualified faculty and laboratory technicians in specialized science courses and, (iii) inadequate infrastructure in terms of

classroom space to conveniently accommodate high student enrolments so that each student has a work station for science demonstration. In addition, local source for science materials is unavailable and if found, the cost of materials can be quite exorbitant. Assumption is that perhaps enrolment in STEM programs will increase if these key constraints are removed or significantly minimized to improve quality of the programs.

Emerging demands for new skills sets in the current Liberia workforce has led to inclusion of Information and Communication Technology (ICT) primarily by private institutions. As such, the ICT is gradually taking root as a major technology program in the education system though there are institutional accreditation problems. The introduction of environmental science by several higher education institutions adds another course of relevance to workforce development in Liberia. These disciplines and others in the broad area of Digital Technology and Information Science are shaping the future of higher education and global development. As such Liberia needs to make more substantial investments in these areas. Similar recommendations have been made for Africa generally (World Bank and Elsevier, 2014).

**Enrolments and faculty-student ratios in Higher Education Institutions.** Higher education enrolment has increased rapidly over the last decade while the number of qualified faculty has increased slowly. This has led to high students' to faculty ratios, especially in public universities and colleges. For example, the student-faculty ratio in the College of Agriculture and Forestry at University of Liberia with about 2,900 students and 76 faculty members was 38:1 in the 2018/2019 academic year. The overall enrolment pressure on the University of Liberia in particular is due to its more ideal location and accessibility by students from 10 of Liberia's 15 counties and very low tuition fees as compared to in the

private universities in the same locality. Tubman University, the second public higher education institution is located remotely in the southeast of Liberia (about 403 km from Monrovia).

Southeast Liberia is hardly accessible during the rainy season from the greater part of Liberia. The region hosts five of the fifteen counties of Liberia.

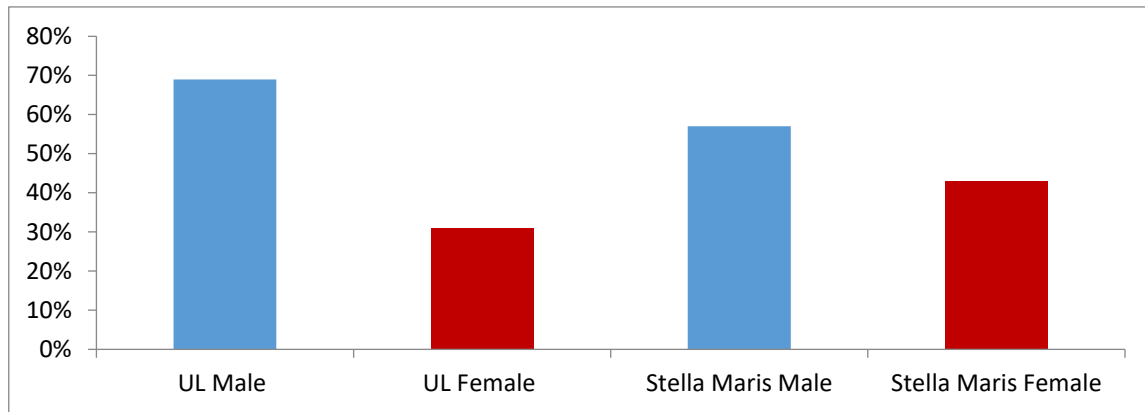
The disciplines most affected by high student population are business studies and social science and humanities. Stella Maris University, one of the private higher education institutions surveyed has made some strategic gains in attracting students in science, engineering and agriculture courses. It has fairly equipped science laboratories and demonstration farms for agriculture students. Moreover, female enrolment is peculiarly higher in agriculture compared to at University of Liberia (Figure 1). Stella Maris University's medium term goal is to train entrepreneurs who will do farming as a business and create jobs. However, its service learning/internship programs are facing some challenges due to limited opportunities in businesses.

**Higher education faculty by academic level and gender inclusiveness.** The total number of faculties with PhD and master degree in Liberia's Higher Education institutions is not representative of an ideal faculty for institutions granting undergraduate and graduate degrees. Considering the case of University of Liberia College of Agriculture and Forestry with the largest students enrolment (2,900) only 13% of the total teaching staff hold PhD, 82% hold Master Degree while the balance 5% are Bachelor Degree holders. The shortage of qualified faculty underpins why some institutions are allowing faculty members with bachelor degrees to teach undergraduate courses and master degree holders teaching graduate courses. This requires urgent intervention by the Government of Liberia and other partners

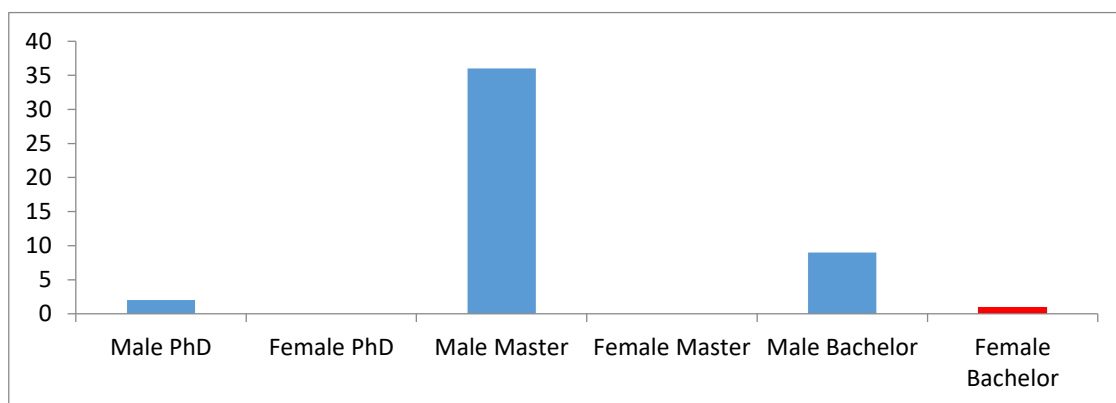
to invest substantial resources in higher education faculty development programs. This is to ensure that Liberia's future workforce is competitive enough to meet the contemporary needs of employers especially the private sector.

In addition, gender inclusiveness in higher education faculties is quite disproportionate and more pronounced in the University of Liberia College of Engineering (Figure 2). Female share of the Engineering College faculty is as low as 3% compared to 97% for males. Also, female

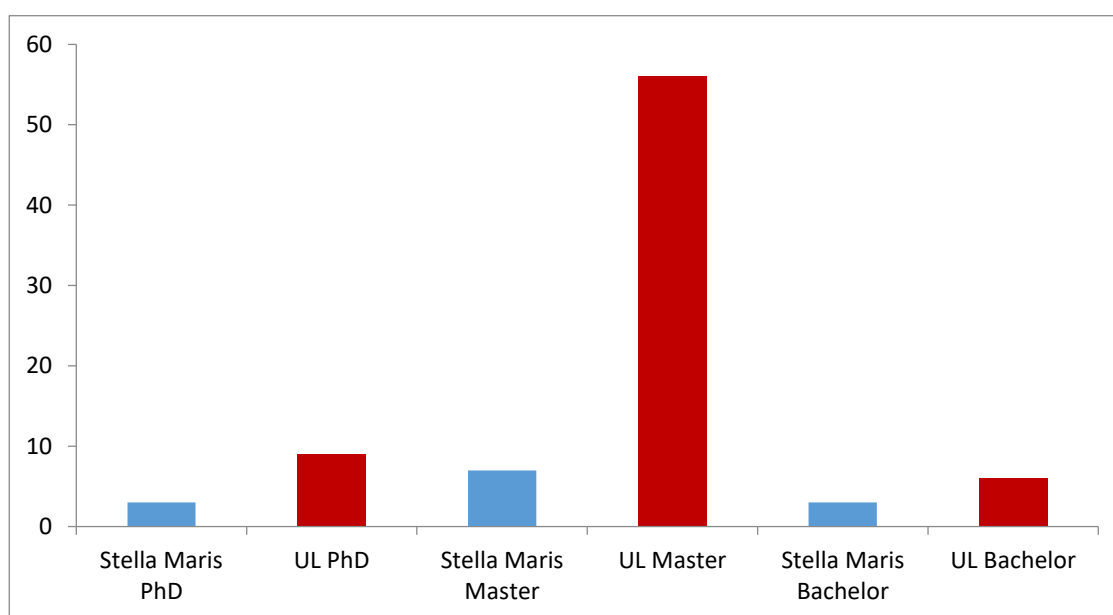
share in the Agriculture College is low, being only 9% compared to 91% male share (Figure 3). This disproportionate representation of male and female is not intentional but attributed to the biased assumption that women generally do not like to enroll in technical and related courses coupled with their lack of appetite for teaching profession. There is therefore a national need to address this balance and to put in policies that entice female students to enroll for higher degree training including in science disciplines.



**Figure 1. Student Enrollment in the Colleges of Agriculture at University Liberia (UL) and Stella Mari** (Source: Based on data from the survey)



**Figure 2. Academic qualification of Faculty in the College of Engineering at University of Liberia** Source: Based on data from the survey



**Figure 3. Staffing at Stella Maris and University of Liberia Colleges of Agriculture by academic qualification and gender (Source: Based on data from the survey)**

**Funding of higher education institutions in Liberia.** Funding is unique challenge across all development sectors in Liberia and the education sector is no exception. The Education Reform Act of 2015 makes higher education a national priority and provides for the allocation of at least 20 percent of national budget to education. This policy statement has never materialized as actual Government of Liberia budgetary allocations to education has ranged from 10 - 13 percent in 2014 - 2017 to 6 - 7 percent as its lowest in 2018 and 2019. In the last two years, over 50 percent of national budget have been allocated for personnel services alone. Public Higher Education institutions are experiencing their share of this economic problem which has been further exacerbated by the recent tuition free pronouncement for all public Higher Education by the Government under its PAPD policy. Moreover, Higher Education has not also been a high priority for donors' funding in the past decade; their focus is on the lower

echelon of the education system – from early childhood to second high school (Bloom and Canning, 2006; World Bank, 2009; Monenegro *et al.*, 2013; Montenegro and Patrines, 2013).

The private sector is contributing immensely to the education sector from the foundation level to higher education. Public schools would have been overwhelmed with student enrolment if the private sector had not intervened by building many educational institutions ranging from nursery schools to colleges and universities across the country. Private schools however rely primarily on tuitions and fees and occasional external grants. The Government of Liberia previously provided varied amounts of subsidies on annual basis to selected private institutions to keep tuitions and fees in some reasonable range for students. In 2017, these subsidies were abolished owing to economic constraints. This underpins the higher cost of education in private higher

education institutions. Nevertheless, there is still proliferation of private institutions to cater for the growing number of secondary school graduates requiring higher education although there are certification challenges.

**Higher education faculty retention challenges and matriculation.** The retention of quality faculty or to circumvent their full time instructional commitment to single institutions has been a challenge to universities and colleges. Remunerations and benefits are not commensurate with faculty qualifications. As a result, faculties matriculate from one institution to another to improve their monthly incomes. Faculty matriculation is noticeable to the extent that some instructors are commuting from institution in Monrovia to institutions outside of Montserrado County on the same day to provide instructions. Faculty matriculation is exacerbated by the huge shortage of graduate and post graduate degree holders in Liberia with appetite for instructional jobs. In addition, higher education institutions are desperate to have instructors in their classrooms but have limited options in identifying qualified instructors. Administrators blame the brain drain that emerged as a result of the 14-year civil conflicts (1989 – 2003) for Liberia lingering behind other regional countries in terms of the quality of faculty and staff at higher and TVET institutions. Figure 4 illustrates the proportion of full time and part time instructors in the higher education institutions surveyed.

**Aging of faculty and retirement scenarios.** Aging faculty is a major challenge to the implementation of retirement plans by both private and public universities and colleges. For example, 25 percent and 4 percent of the instructors at the University of Liberia College of Agriculture and Stella Maris, respectively, have either reached or surpassed retirement age, and an average of 4 percent will reach retirement ages in 5 -10 years (Figures 5 and 6).

By comparison, the aging problem is also more severe in the University of Liberia College of Agriculture with 25% of faculty being 60 years old or above, but the figure for the College of Engineering is lower (6%). Identifying qualified replacements for faculties that are at or have even surpassed the lawful retirement age of 60 is preventing institutions from rigorously implementing their retirement plans. This situation, coupled with existing faculty gaps, poses serious challenge to the improvement of higher education and should be a concern to the Government of Liberia as well as university administrators.

### **TVET Institutions**

#### **TVET programs and level of achievement.**

There are two categories of TVET education in Liberia: (i) Associate degree granting programs at Community Colleges (see Table 1), and (ii) non-degree granting programs. The Non-degree granting TVET institutions offer diploma and certificate of proficiency in agriculture technology, electrical technology, mechanical technology, building construction technology and business education courses (Table 3). Non-degree granting TVET courses are designed for the production of proficient middle level technicians for Liberia's workforce (Table 4).

The associate degree granting TVET programs are based mainly at the community colleges spread in several counties in Liberia. The community colleges were established to address the workforce needs of the various counties. However, this arrangement is no longer the case and alludes to the socioeconomic theory of TVET delivery (African Union, 2007; Afeti and Adubra, 2012; Afeti n.d). Most of the community colleges award associate degrees in agriculture equivalent to High National Diploma (HND) in other countries in West Africa as well as associate degree programmes in other TVET courses - businesses courses, social studies,

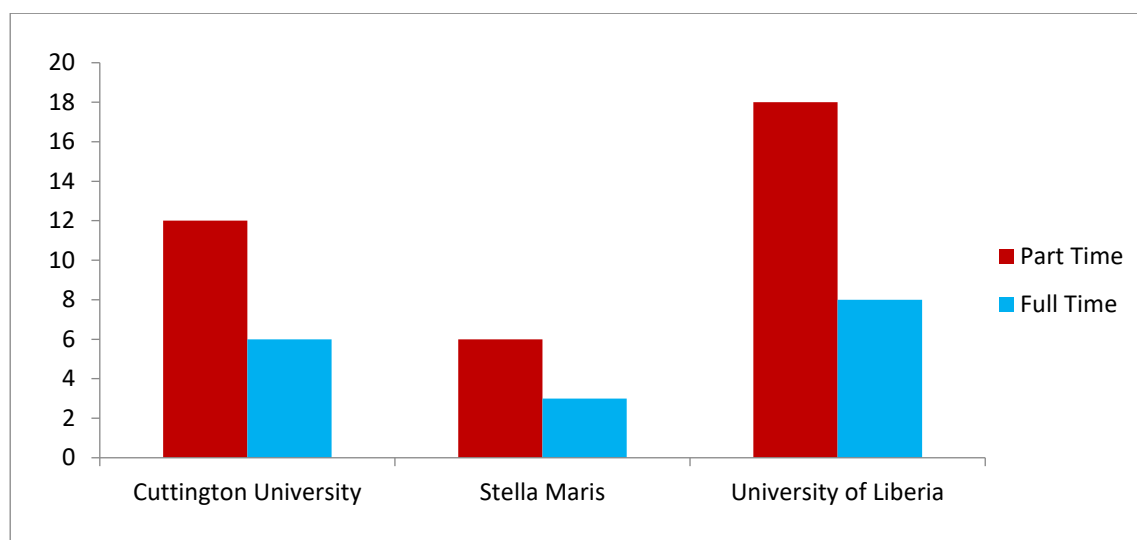
geology, among others. TVET post associate courses in higher education institutions award bachelor degrees in engineering and are largely theory-based with limited hands-on activities due to lack of properly equipped demonstration facilities.

Opportunities for internships or service learning for both TVET and higher education are not readily available due to the closure of many large businesses and concessions and industries that provided such opportunities in the past. To support market assessment to propel TVET curricula review, students returning from internships bring back appraisals from collaborating industries and businesses. Such feedbacks form the basis for TVET institutions to update their curriculum and this is often done without the approval of the Ministry of Education or school board.

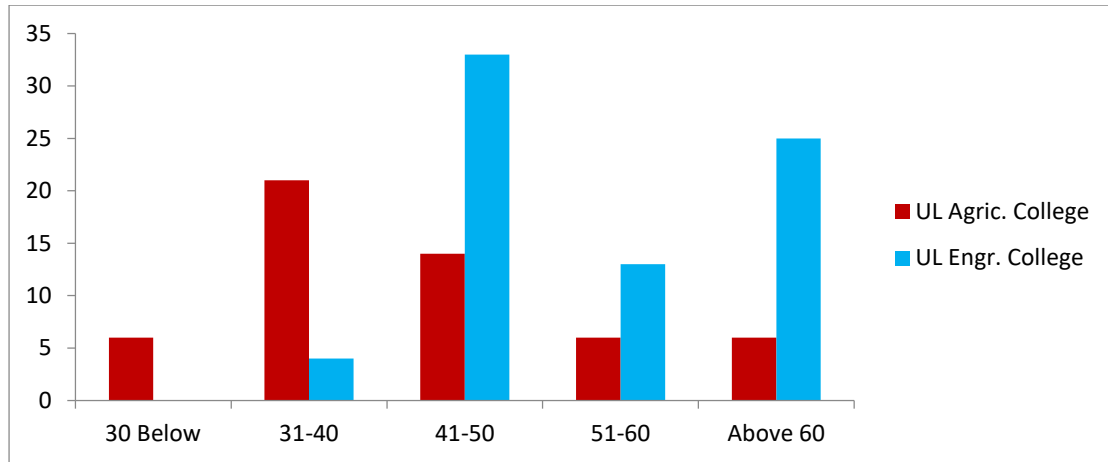
**TVET enrolment and faculty-students ratio.** The emergence of large industries and concessions in the 1970s changed perceptions that TVET was for academically disadvantaged youth. This has not only led to steady increase in TVET enrolment but also to a proliferation of private TVET institutions. TVET is intended to produce

proficient middle level technicians and requires reasonable number of students to a faculty to be able to properly evaluate learners' skills development outcomes. The establishment of community colleges in Liberia was based on this assumption and the aim was to reduce enrolment burden on the University of Liberia and private universities. Data show an average of 25 – 38 students per faculty in the TVET institutions surveyed.

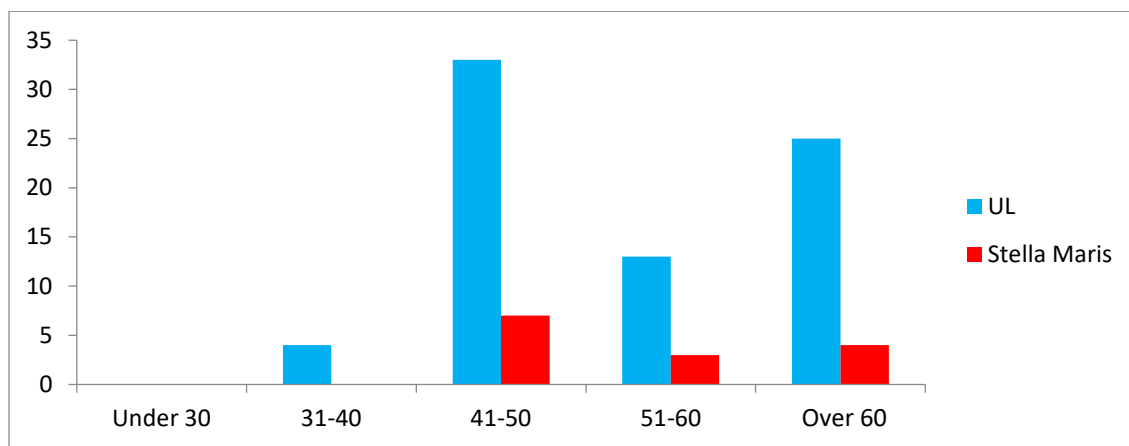
**TVET funding trends.** TVET has consistently featured prominently in discussions by politicians, policy makers, stakeholders as well as technocrats at educational forums and events. TVET is viewed in nearly all educational policy documents as the way forward for socioeconomic development and for constructive engagement of youth for national security. However, the consolidated funding trends from the 2015 - 2017 academic years for two leading TVET institutions (Booker Washington Institute and Nimba County Community College) do not indicate that TVET is considered as a vital tool for developing a competitive and robust workforce in Liberia. Gaps between these two major TVET institutions' funding request to Government of Liberia and actual disbursements



**Figure 4. Full and part time instructors at Colleges of Agriculture of University of Liberia, Stella Maris and Cuttington University** (Source: Based on data from the survey)



**Figure 5. Ages of staff in Faculties of College of Agriculture and College of Engineering at University of Liberia** (Source: Based on data from the survey)



**Figure 6. Ages of staff in the Faculties of the Colleges of Agriculture at University of Liberia and Stella Maris** (Source: Based on data from the survey)

ranged from 15 - 20% from 2015 - 2017 to 38% in 2018/2019. In 2018, the European Union brought some relief to Government by allocating €20 million grant to help improve the delivery of TVET education including the community colleges. The grant is intended to train TVET instructors' trainers, improve infrastructures and upgrade TVET demonstration laboratories.

**Age implications for the TVET sector.** TVET institutions, like the Higher Education institutions in Liberia, are also challenged by inadequate qualified faculty (Figure 7). These institutions cannot proceed with timely

implementation of retirement plans because replacement faculties are not readily available. As such, faculties that have reached or even surpassed official retirement ages are retained on faculties even if ineffective. This alludes to an urgent need for TVET teacher training facilities in Liberia to train new instructors as well as provide refresher training for existing staff to cope with contemporary technological advancements. From 1978 to 1999, Tubman College (now Tubman University) trained TVET instructors in the STEM disciplines. Tubman University was transformed into a university in early 2000. Its transformation has

created a vacuum in the supply of trainers for community colleges and non-degree granting TVET institutions in the STEM disciplines. Consequently, many graduates from Higher Education institutions with degrees in civil, electrical and mechanical engineering are those currently providing instructions in technical areas such as building construction, electronics, electricity and mechanical technologies.

**Gender inclusiveness in tvet faculty and staff.** Though gender equality is relatively a new development phenomenon in Liberia, the disproportionate representation of women and men in both Higher Education and TVET

faculty is wide (Figure 8). It is a common perception in Liberia that that most Liberian women do not have appetite for teaching profession especially with the low wages and incentives paid to instructors. The ascendancy of Madam Ellen Johnson-Sirleaf as the first female Liberian and African President provided impetus for the Government of Liberia and development partners to give increased attention to inclusion of an agenda for gender equality in development programs in Liberia. However, a lot still needs to be done to significantly increase women participation in both the TVET and Higher education sectors.

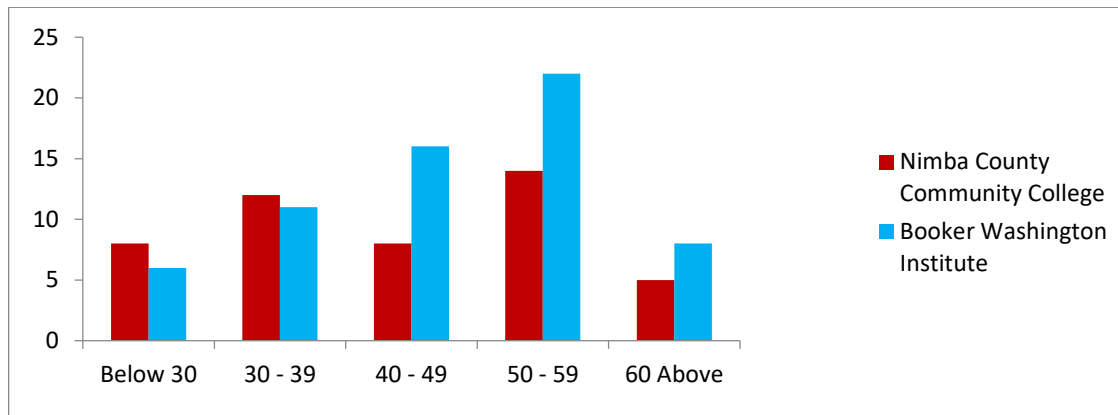
**Table 3. List of public community colleges in Liberia**

Community colleges	Location
Lofa County Community College	Voinjama, Lofa County
Grand Bassa County Community College	Buchanan, Grand Bassa County
Nimba County Community College	Sanniquellie, Nimba County
Bomi County Community College	Sinje, Bomi County
Bong County Technical College	Gbarnga, Bong County
Harbel Community College	Harbel, Margibi County

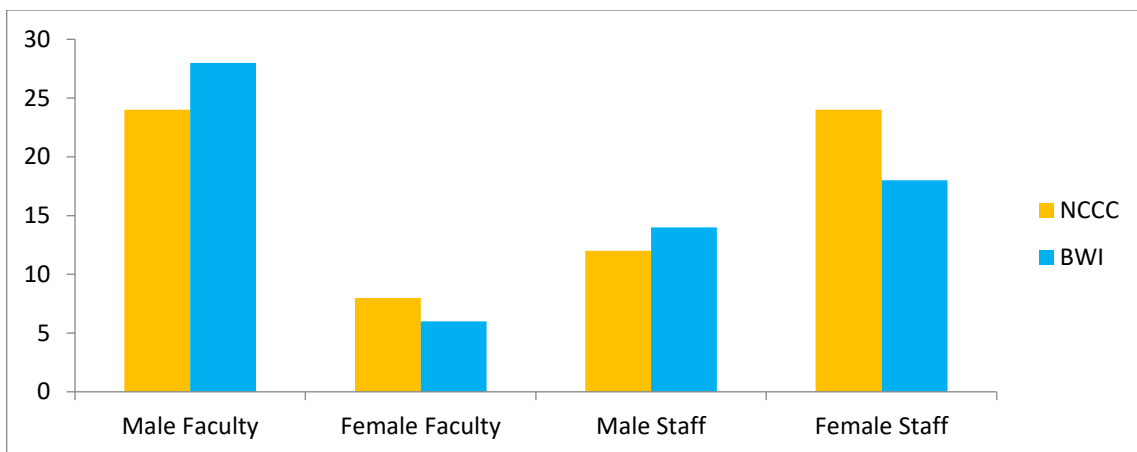
**Table 4. List of major non-degree granting public TVET institutions in Liberia**

TVET Institution	Status	Location
Booker Washington Institute (BWI)	Formal/Secondary level	Kakata
Monrovia Vocational Training Center (MVTC)	Informal/Apprenticeship	Monrovia
Liberia Opportunity Industrialization Center (LOIC)	Informal/ Apprenticeship	Monrovia
William V.S. Tubman High School Accelerated Vocational Training Program (AVTP)	Formal/Post-Secondary	Monrovia





**Figure 7. Ages of Faculty staff at two TVET Institutions in Liberia (Source: Based on data from the survey)**



**Figure 8. Gender inclusiveness on the Faculty of two major TVET institutions in Liberia (Source: Based on data from the survey)**

**Status of educational infrastructure in Liberia.** The relocation of many of the colleges from the University of Liberia main campus on Capitol Hill in Monrovia to Fendell brought some relief to the over crowdedness problem. However, being the only low cost public Higher Education institution accessible to majority of the student population in two thirds of the nation, University of Liberia is already experiencing serious over-crowdedness. This is due to the steady increase in student population which underpins the inadequacy of infrastructure especially classrooms and

demonstration facilities. The need for expansion of infrastructural capacity to accommodate the steadily growing student population is therefore urgent. Unlike University of Liberia, Tubman University, the second public university, is located remotely in the southeast of Liberia. Southeast Liberia, comprising five of the fifteen counties, is not accessible during the rainy season from the greater part of Liberia. It is foreseeable that enrolment will increase sharply in subsequent academic years at these two public institutions of higher learning if the Government of Liberia maintains its tuition free

policy for Higher Education. This will further deteriorate the quality of higher education in Liberia.

Most of the private universities and colleges are located in the center of Monrovia and surroundings where there are very limited opportunities for expansion of infrastructure in the future. These private institutions are also experiencing increases in students who cannot be accommodated by the University of Liberia. According to some of the administrators interviewed, this challenge was anticipated years back and they have already acquired land outside of Monrovia for relocation and expansion of their institutions.

**Agriculture education.** Agriculture provides livelihood for approximately 70 percent of the population of Liberia. The country is rich in soil and agro climatic conditions including fallow land, rain and sunshine. However, Liberia has yet to be food secure despite huge investments in the agriculture sector by government and donor agencies. Agriculture education is integral to the achievement of food security; thus integral to both Higher Education and TVET programmes. All of the institutions surveyed have multi-faceted agriculture activities for demonstration and income generation purpose. These institutions produce crops such as vegetables and rubber and raise poultry, cattle, goat, pigs and pond fish. Unfortunately, graduates from TVET programs and agriculture colleges seek employment opportunities with government and large concessions and businesses rather than engaging in farm enterprises to be self-employed and to create jobs. Hence, one could assume that something is fundamentally wrong with the design and delivery of agriculture education in Liberia.

Higher education and TVET agriculture curricula are currently focused primarily on the production phase of agriculture value

chain development. Though value addition (processing, packaging and marketing) is relatively a new phenomenon in Liberia's agriculture, its inclusion in the curricula of Higher Education and TVET programs has several economic and social advantages. It a) offers opportunities for food processing and preservation and improved food security; b) creates marketing and manufacturing jobs for youth and women; and, c) provides supplementary income for institutions to reduce their dependence on external resources. This will require a paradigm shift in agriculture education delivery from training agriculturist to training farmers and agripreneurs who will engage in farming as a business to create jobs. Recruitment processes, which are currently academic and primarily based on results of entrances and placement exams, will have to include other requirements like applicants' previous farming backgrounds, land holdings and personal vision and interest about the application of acquired knowledge and skills in agriculture from training.

**Status of research activities in higher education institutions.** The scale and scope of research and scholarly activities in higher education in Liberia is almost a euphoria compared to other universities in the region and other parts of the continent (see Bloom and Canning, 2006; Cloete and Bailey, 2011). In 2015, the Ministry of Education reported that 16 institutions of higher learning in Liberia comprised of vocational schools, community colleges and universities and eight were degree granting institutions. The University of Liberia which is the nation's largest Higher Education institution and Cuttington University, a private university, are the only two with some aspiration for research. However, none has produced any significant stand-alone research data or publication in recent years. The underlying factors for Higher Education institutions reneging on scholarly activities need to be assessed and research and scholarly activities

should be supported in higher education, as ably argued by Cloete and Maassen (2015).

**Research at the central agricultural research institute.** The Central Agricultural Research Institute (CARI) is the only research institution in Liberia. The 2016 Revised Research Strategy of CARI underscores adaptive research and promotion of knowledge, information and technologies that respond to clients' demands and opportunities towards the attainment of food security. The strategy also aims to promote poverty alleviation, income generation and job creation. However, the achievement of this new vision is constrained by inadequate budgetary support to attract experienced scientists, fund research proposals and to equip research laboratories. The only functional laboratory at CARI currently is the Seed Testing Lab which is even minimally equipped. Unfortunately, CARI has had very limited budgetary support and funding especially over the last two years. CARI is somehow hopeful of prospects for securing funding from external partners to elevate its research activities.

## RECOMMENDATIONS AND CONCLUSIONS

The aim of this study was to conduct an assessment of the status of higher and technical education in Liberia so as to identify priorities for strengthening competitiveness of the sector. Although tertiary education in Liberia began in 1862 with the establishment of Liberia College (now University of Liberia), which was followed by establishment of the first higher education institution, Cuttington College (now Cuttington University), Liberia remains among the countries with the lowest human development index, ranked at 181 out of 189 countries in the world. This has been a result of a myriad of problems including civil strife, limited investment in higher and technical education, and indeed the broader education sector, and inconsistent government policies including political interference. The findings of this study revealed that TVET's effectiveness

on employability and national development has been hindered by a number of constraining factors especially limited funding, poor policy direction, limited expertise and synergy with industry, and poor public perception of TVET in the country. Likewise, the higher education sector is extremely weak, with the country having only two public universities, both of which are poorly staffed, but a number of private universities have emerged. The proportion of PhD qualified staff is very low (13%) with 28% above the retirement age. Worse still, the proportion of female staff in public universities is decimal, 13%, being even lower in the TVET institutions (6%). In some of the institutions, part time staffing is more than full time staff, due to the poor remuneration of the staff in academic institutions. Currently there is no PhD training offered in Liberian Universities.

The above challenges are recognized by policy makers in Liberia. As part of the effort to strengthen the sector, the Government approved the Education Reform Act of 2015 but its implementation is still at infancy. The Government has also created the National Council for Higher Education, a regulatory body to provide quality assurance and accreditation of institutions and their programmes in the country. However, until the Government of Liberia depoliticizes regulatory agencies including the NCHE to function as a professional entity and increase public resource investment in the education sector, Liberia's chance of being on par with other countries in developing a competitive workforce is highly unlikely in the foreseeable future from TVET and Higher Education perspectives. Moreover, developing a competitive workforce for Liberia's economic growth and overall development will remain in jeopardy if the weak state of STEM education is not improved. This requires priority attention by the Government of Liberia and her development partners.

Improving training in STEM disciplines will

increase Liberia's share of its own professional workforce to take charge of the economy which is currently in the hands of foreigners. Achieving this objective requires a strong political will to put Liberia on track for effective policy implementation and prioritization of its meager resources for the general good of building the human resource capacity of the country.

Constructive engagements between the Government of Liberia and its development partners on aligning assistance packages with the priorities of national development agenda including education which is in poor state cannot be over emphasized. Any further deterioration of the education sector beyond its current state will be tantamount to virtual non-existence of a serious competitive workforce development programmes in Liberia from TVET and Higher Education perspectives. Moreover, improving transparency and accountability for meager public resources to address development priorities will create opportunities for increased funding for much needed social services including education.

The proposal advanced in Pillar One of the PADP for improving the quality of TVET delivery is a step in the right direction for developing a competitive workforce for Liberia. As overly ambitious as it may sound with respect to the current state of the economy, the compelling reasons for supporting Pillar One has to do with regulating and standardizing TVET. These are among the major problems currently associated with the poor quality of TVET delivery in Liberia. Importantly Liberia needs to build its research capacity and learn from other countries experiences in linking research institutions and academia. This would enhance the role of education in development as elucidated by Reimers and Klasen (2013). Research development in Liberia will be enhanced if CARI and Higher Education institutions make concerted efforts to link with similar institutions in the continent, and

intensify effort in developing joint proposals for funding consideration. This includes capacity building encompassing research proposal and report writing, equipping research laboratories as well as strengthening the human resource base for research.

Finally, the study findings indicate six key gap areas which need to be urgently addressed; a) the disproportionately very low women participation in higher education at all levels but especially in STEM areas; b) significantly high level of aging staff (close to retirement age) or staff who have reached retirement age; c) low staffing at both higher and TVET institutions; d) poor remuneration which makes it difficult to retain staff; e) little or no research activities in Liberian universities; and f) absence of PhD programme in Liberian Universities. These gaps will continue to hamper the quality of education and human resource in the country, with negative consequences on the country's development.

## **RECOMMENDATIONS AND WAY FORWARD**

There is an urgent need for the Government to implement the various policy frameworks developed for strengthening the Higher and Technical Education Sector. Firstly, appointments of Executive Directors and deputies of the National Commission on Higher Education (NCHE) should be guided by the Act that created the Commission to ensure competencies. Second, NCHE should institutionalize credible accreditation system in order to standardize all current and future higher education institutions in Liberia to ensure the quality of the training programs. Third, the Government should provide resources for implementation of the draft TVET policy to ensure the certification and standardization of TVET education which are critical to developing a competitive workforce for Liberia. Other specific recommendations are detailed below:

1. Based on the findings, the study recommends that for TVET to stimulate employability and promote national development there is

- need for the policymakers to improve the level of funding, entice positive perception to TVET education, strengthen expertise of TVET instructors, and ensure curriculum harmonization. First, there is a need to create a national TVET enabling environment, including conducive policy framework and quality assurance mechanisms for TVET to effectively contribute to economic and industrial transformation in Liberia. Second, TVET institutions, particularly the flagship institutions, need to institutionalize their linkages with industries, to be forward-looking and adjust their programs to respond to the changing skill needs, use technology in the delivery of training, and efforts be made to upgrade the technical knowledge and practical skills of the TVET instructors to enable them promote student-centered teaching approach.
2. Government of Liberia needs to review its funding mechanisms to the Higher Education sector, especially to the two public universities. There is thus a need to a) significantly increase funding for operations, teaching, staffing and infrastructure development, and b) ensure Government pays unit costs for the students' education in the two public universities. Overall, Government of Liberia should increase funding for the education sector to the minimum 20% of National Budget proposed in the Revised Education Act of 2011 and 2016.
  3. There is a staffing crisis in both Higher and Technical education institutions, with often less than 30% qualified staff. Accordingly, the Government needs to make significant and long term investment to increase the pool of high level trained staff and arrange for upgrading of existing staff. In this regard Liberia should seek support from other African Governments and agencies to help it build up its staff capacities including in emerging areas to support its national development. In these endeavors deliberate effort should be made to increase the pool of women scientists.
  4. Liberia needs to prioritise STEM education. While initial efforts have been made at especially University of Liberia, the scale is too low to support the development needs of the country. Liberia needs to make deliberate effort to build its STEM capacity to help the country leap-frog also towards the Fourth Industrial revolution
  5. Currently Liberia Universities are not offering PhD level training. This will negatively affect the country's ability to strengthen its higher education sector. As such, effort should be made to launch initially 2-3 PhD programmes at the University of Liberia in areas of strategic importance where there is basic capacity (PhD level trained staff). Partnership with other Universities especially in Africa, such as through the RUFORUM Network Universities, should be utilized to backstop this effort.
  6. The inclusion of value addition and marketing in agriculture education will increase technical skills and knowledge base for achieving food and nutrition security and provide opportunities for increasing the inclusion of women and youth in the agriculture sector. Curricula revision in the future should therefore include value addition and marketing courses. In this regard, effort should be made to identify agro-food producing and processing zones and universities and CARI be tasked to develop programmes to build capacity and programmes responding to this strategic need.
  7. The Government of Liberia should undertake a skills audit so as to guide human skill development at various levels in the country.
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## **STATEMENT OF NO-CONFLICT OF INTEREST**

The authors declare that there is no conflict of interest in this paper.

## **REFERENCES**

- Adams, A.V., Middleton, J. and Ziderman, A. 1992. The World Bank's policy paper on vocational and technical education and training. Washington DC, World Bank Vol. XXII.
- Afeti, G. (n.d). The importance of TVET in Africa's socio-economic development Africa Policy Review.
- Afeti, G. and Adubra, A. L. 2012. Lifelong technical and vocational skills development for sustainable socioeconomic growth in Africa. ADEA Triennale on Education and Training in Africa, Ouagadougou, Burkina Faso.
- African Union. 2007. Continental strategy for TVET to foster youth employment. African Union, Addis Ababa,
- Ansah, S. K. and Ernest, K. 2013. Technical and vocational education and training in Ghana: a tool for skill acquisition and industrial development. *Journal of Education and Practice* 4 (16): 172-180.
- ASTI/RUFORUM 2018. Assessment of RUFORUM member universities in Uganda, <https://www.ruforum.org/MCF/sites/default/files/documents/Uganda-RUFORUMUniversities-Assessment.pdf>, October 2018.
- Bloom, D. and Canning, D. 2006. Higher Education and Economic Development in Africa. . Washington D.C., Human Development Sector Africa Region, Commissioned by the World Bank (AFTHD).
- Bloom, D.E., Canning, D., Chan, K.J. and Luca, D.L. 2014. Higher education and economic growth in Africa. *International Journal of African Higher Education* 1 (1): 22-57.
- Borland, J. and Dawkins, P. 2000. Returns to Investment in Higher Education. The Melbourne Economics of Higher Education Research Program. Melbourne, The University of Melbourne.
- Cloete, N. and Bailey, T. 2011. Universities and Economic Development in Africa. Cape Town, Centre for Higher Education Transformation.
- Cloete, N. and Maassen, P. 2015. Roles of Universities and the African Context. Knowledge production and contradictory functions in African Higher Education. Cloete, N., Maassen, P. and Bailey, T. (Eds.), African Minds. Cape Town.
- GIZ. 2018. Sierra Leone Diagnosis of TVET Sector. Final Report. GIZ
- Government of Liberia. 2018. Pro-Poor Agenda for Prosperity and Development 2018 – 2023. Monrovia, Liberia.
- IPO. 2019. Gender profiles in worldwide patenting: an analysis of female inventorship (2019 edition). Intellectual Property Office of the United Kingdom ([https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/834013/gender-profiles-in-worldwidepatenting-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834013/gender-profiles-in-worldwidepatenting-2019.pdf)) and <https://delano.lu/d/detail/news/countries-most-femaleinventors/208038>; and <https://www.weforum.org/agenda/2019/10/countries-highestnumbers-female-inventors/>
- Ministry of Education. 2017. Getting to best education sector Plan (2017-2021). Government of the Republic of Liberia, Monrovia.
- Montenegro, C. E. and Patrinos, H. A. 2013. Returns to schooling around the World: Background Paper to the World Development Report 2013. Washington D.C: World Bank.
- National Commission for Higher Education (NCHE). 2019. Recognized and Accredited Higher Education Institutions (HEIs) in Liberia, National Commission for Higher

- Education, Monrovia, Liberia.
- Oketch, M. 2014. Education policy, vocational training, and the youth in Sub-Saharan Africa. WIDER Working Paper No. 2014/069.
- Okorafor, O. and Nnajifor, F. N. 2017. TVET policies and practices in Nigeria: Why the Gap? *European Journal of Education Studies* 3 (4): 612-624.
- Reimers, M. and Klasen, S. 2013. Revisiting the role of education for agricultural productivity. *American Journal of Agricultural Economics* 95 (1): 131-152. doi: 10.1093/ajae/aas118
- Rima, L. A. A. 2014. Has TVET imparted on employment and national development?. *The Macrotheme Review* 3 (2): 129-146.
- Tamrat, W. 2019. Universities vs TVET – Are attitudes the problem?, University World News: Africa Edition.
- Tizikara, C., Nakayiwa-Mayega, F. and Otto, F. 2019. Investing in women as drivers of growth: A gender-based assessment of the Science, Technology and Innovation ecosystem in Uganda. *African Journal of Rural Development* 4 (2): 261-281.
- World Bank. 2009. Accelerating catch-up: tertiary education for growth in Sub-Saharan Africa. Washington DC, World Bank.
- World Bank, and Elsevier. 2014. A decade of development in Sub-Saharan African science, technology, engineering and mathematics. World Bank and Elsevier.