
# An Assessment of the University of Buea as a Hub of Excellence and a Center of Partnerships for the SDGs

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**Abstract**

In this paper, we assess the University of Buea as a hub of excellence for SDG 17, “Partnership for the Goals” through an analysis of the research work at the University in the past two decades to demonstrate the strong, historical engagement with the SDGs. Analysis revealed that 13 of the 53 partnership projects signed by the University within the last decade, impacted 16 SDG’s. Secondly, a survey was carried out to evaluate the engagement of Establishments’ research projects on the SDGs and to highlight how partnerships have been critical to their successful implementation. Results showed the Establishments’ interests and priorities—their priority SDGs; partnerships with the most impact; structures for long-term partnerships; SDGs for partnerships at the local/national, continental, and global levels. The results showed that research projects in the Establishments impacted all 16 SDGs, and their interconnectedness was evident. Thirdly, we analyzed the themes of the abstracts submitted to this UN Conference and determined that they covered 14 out of the 17 SDGs. With one of the usual challenges of SDGs being impacts assessment and interconnectedness, the success of this approach resides in its possible application as an alternative framework for SDG impact assessment as well as its affirmation of the necessity of the multi stakeholder approach for economic development. Furthermore, given the interconnectedness of the SDGs, their ranking by impacts and other criteria, allows us to establish the resources that underpin their implementation in order to strengthen or shift these resources to enhance the SDGs outcomes.

Keywords: partnership; epicenter; interconnection; impact assessment

## Introduction

The University of Buea (UB) was created in 1993 as one of six new Universities in the country, which before then, had a lone University of Yaoundé. Although it started with four Faculties, today, it hosts eleven Faculties and Schools, which provide quality education in classical and professional programs in the areas of Pure Sciences, Social Sciences, Arts, Engineering and Technology, Education, Agriculture and Veterinary Medicine and Health Sciences. It also hosts the pioneer Advanced School of Translation and Interpretation on the continent, to which was added the Translation and Conference Interpreting section of the Pan African University Institute for Governance, Humanities and Social Sciences (PAUGHSS) by the African Union in 2012 (ref). With this expansion have come Language Centers, Science and Engineering Workshops, Research Laboratories, field experimental stations, etc. The rapid expansion of the University consequently increased its training capacity and created the necessity, at that very early stage of its growth, for partnership and international cooperation to cope with its training and research

needs. This not only strengthened the capacity of the University of Buea as a training and research institution, it equally encouraged partnership and multidisciplinary research.

**Compliance with Government Policy Objectives**

The Law on the Orientation of Cameroon's Higher Education Institutions of 2001, Law 2001/005 of 16th April 2001, assigned to higher education the mission to transmit, produce and disseminate knowledge while being mindful of national development goals in the various aspects and dimensions of its outreach activities (Ministry of Higher Education, 2018). These goals have been the subject of successive development strategy plans. In Article 2, Section 31(1) of the Law states that "*Higher education institutions shall maintain and promote cooperative relationships amongst themselves and with similar national and foreign institutions or bodies"*. This legislation set the promotion of partnership as a policy objective for higher education.

The Government of Cameroon, envisioned joining the ranks of the countries with emerging economies in the world by 2035, as enunciated in its growth and employment strategy paper published in 2010 (ref). This Vision 2010 Paper is the blueprint for all the activities that needed to be carried out by the sectoral actors: education sector, energy sector, infrastructure, water and energy, forestry and wildlife, research and innovation, agriculture and livestock, tourism, to attain defined development goals and targets to lead Cameroon to economic emergence. In the blueprint, the Government of Cameroon assigned to higher education the responsibility to produce highly qualified manpower to accompany the implementation of this Vision. In the same vein, Cameroon's current National Development Strategic plan, code named SND 30 - an improvement of the 2010 Paper, Higher Education is given a similar role.

To effectively train highly qualified manpower, means effective skills transfer to learners There was thus a paradigm shift in university education from implicit capacity building to professionalization of classical programs where curricula development became driven by industry with modifications as the needs change. Although with a long tradition of outreach activities, there were no deliberate attempt to develop indicators to measure their relevance of the educational system to populations' development. Calderon (2021) notes that, it is only since the 1990 that sustainability has taken center stage in understanding and measuring the impact of higher education institutions in their operational environment (ref). The 17 SDG's adopted by the United Nations in 2016 now oblige higher education to institutionalize sustainable development and to calibrate their research activities against the backdrop of their responses to the SDG's.

**Institutional Organization to Enhance Research at the University of Buea**

**Creation of a Department of Cooperation to Facilitate Partnerships**

The organizational structure of the University of Buea features a Department of Research and Cooperation, charged with the drafting of cooperation agreements and MoU's be they on behalf of the university as an institution, or between individual researchers and external organizations. The purpose is to provide expertise to the researchers to avoid risky partnership, while ensuring

at the same time that these accords conform with University policies on cooperation. To encourage partnerships, the department organizes, on an annual basis, capacity-building seminars and workshops for assistant lecturers intended to hone their skills on research problem identification, competitive grant writing, grant management, identification of national and international experts for various thematic, etc. This has improved the capacity of our researchers to win grants.

**University of Buea Research Fund**

The University of Buea operates a competitive research funds managed by the department of cooperation(ref). The Fund gets its resources principally from budgetary allocations by the University's management Council, and also by leveraging the support of international research Funds, assistance from industries and external donors. The institution of an *in situ* research Fund allows the research beneficiaries to align their projects with national development goals.

**Research Planning Week**

The University has instituted a research academic planning week. This seven-day period is dedicated to seminars on grant application writing for young researchers. One of the highlights of the week is the public presentation, to a team of experts, by the authors themselves, research projects which have made it to the final selection phase for university funding. This presentation ensures a transparent and participatory process from which aspects of implementation of relevant SDG's can be identified.

**Research at the University of Buea**

In execution of this mandate, researchers at the University of Buea, whether working together within Faculties research projects or as individual researchers, have had a wealth of experience in collaborative projects, which has earned the University the reputation it enjoys amongst its peers in Cameroon's higher education landscape. To stay relevant to the challenges of national development, its research activities have through the years espoused issues of multi stakeholder interests—skills training; economic development; natural resource transformation, sociopolitical stability, conflict resolution, environmental sustainability, good health; fight against poverty in its various dimensions and energy production, all issues related to the SDGs.

From the point of view that each SDG thematic is accomplished by choosing different resources from a pool of resources as well as the technology, skills, techniques, expertise, necessary for implementation, the interconnection between SDG's and reasons for their shared outcomes becomes evident. The major challenge for the Conference now becomes how to use the platform of the Conference to examine the complex interconnectedness between each of the factors to enable the SDG's deliver better on their goals. This process involves the determination of how each of the resources affects the overall outcome of the thematic. This is achievable through the sharing of expert knowledge in Panel discussions during the Conference on transversal issues.

An analysis of a questionnaire on the SDGs which the different Establishments of UB have been involved in during the past two decades and the SDGs with partnerships during the past decade, some of which will be sustained until 2030 and beyond, provide the reasons why SDG17 matters in the development of UB and Cameroon. The long-term benefits of these partnerships to the donors and to UB are a reflection of why SDG17 matters in the development of Africa and of Europe for a South-South and a North-South development as stipulated in targets and indicators of SDG17.

**Objectives of the Study**

The paper seeks to assess the University of Buea as a hub of excellence for the SDG's through the following:

(1) A presentation of some 13 of the high impact multi stakeholder projects carried out in the past two decades from a list of 53 projects.

(2) An evaluation of the University's research engagement with Partnerships for the SDGs and an assessment of the roles and benefits of the partnerships.

(3) Carrying out a survey through the distribution of a questionnaire to the Establishments in order to evaluate the University's research engagement with Partnerships for the SDGs and to make an assessment on how the tools of partnerships have been essential towards the realization of the implementation of the SDGs they have impacted.

(4) Report on two research projects as illustrative of the orientation of most of the research projects and how a triple helix framework can easily be developed to enhance their realization and benefits sharing. More importantly, for the University of Buea, this has been very important as collaboration has facilitated the mobilization of funds, expertise, technology, and shared knowledge.

**Methodology**

**An Outline of the Growth of UB as a Hub of Excellence**

The University of Buea (UB) was created in 1993 as one of six new Universities in the country, which before then, had a lone University of Yaoundé. It is presently one of eight State Universities and one of two Universities where instruction is in English. Although it started with four Faculties, today it hosts eleven faculties and Schools, which provide quality education in classical and professional programs in the areas of Pure Sciences, Social Sciences, Arts, Health, Engineering and Technology, Education, Agriculture and Veterinary Medicine. It also hosts the pioneer Advanced School of Translation and Interpretation (ASTI) on the continent to which was added the Translation and Conference Interpreting section of the Pan African University Institute for Governance, Humanities and Social Sciences (PAUGHSS) in 2012.

Although the University started with 3 Faculties, with 14 departments and a student enrolment of about 750, there are presently 11 Faculties and Schools (Establishments) with 74 Departments which run 265 degree programs at the undergraduate, graduate and post graduate levels. The academic staff strength during the 2021/2022 academic year is 625, a support staff strength of 630 and a student enrollment of about 25,000.

As a young Institution, it depended on partnerships for its growth withone of them being the University of Manchester in the United Kingdom, which from the start of the University, provided expertise in the areas of capacity building of Administrative and Academic staff over several years as a North-South partnership. South-South partnerships were also established with other Universities on the continent such as the University of Ibadan in Nigeria and the "mother University" of Yaoundé I, which was the sole University in Cameroon until 1993 when the University of Buea was created as explained above.

There is presently a strong component of quality research and outreach activities in the areas of Health, Agriculture and Fisheries, Clean Energy, Technology, Water Resources, Climate Change, Gender Issues, and Law as presented below. Some of its major research and teaching laboratories include the Emerging Infectious Disease Laboratory, which is accredited for COVID-19 for the South West Region of the country, the Biotechnology Laboratory, the Energy Transformation Laboratory, and the Volcano Monitoring Laboratory, which hosts the PERIPERI-U Center for Disaster Management for the Central African Sub-Region. Researchers received externally funded grants of more than 100,000 USD during the past five years.

**A Presentation of UB's Projects Involving Partnerships within the Past Two Decades that have Impacted the SDGs in the Areas of:**

i. Funding (research, fieldwork, etc.),

ii. Expertise (provision of expertise for teaching and research, improvement of the expertise of both academic and support staff) and of PG students, etc.

iii. Capacity building, (of students, especially in the research of PG students), outreach and community engagements such as sensitization and awareness creation, etc.

iv. Technology in terms of equipment (provision of lab and field equipment including drones, materials, reagents, etc.)

v. Infrastructure (Construction of buildings such as laboratories, the library, classrooms, etc.)

**The Educational Values that Need to be Developed in the SDG17**

These values are reflected in the priority SDGs, which the Establishments of the University have shown preferences for, based on their interests and expertise. These have further been concretized by the partnerships they have created, especially those within the past decade, some

of which will be implemented until 2030 and beyond, while others will most likely be renewed based on the aspirations and needs of both the donor partners and the University. This is further encouraged by the fact that most of these partnerships are in the areas of capacity building, research, and exchange of expertise and students as reflected below in the list of partnerships that impact the SDGs.

One of the major challenges for the research projects, as mentioned earlier, is how to relate the contribution of the projects developed in the Faculties and Schools in terms of SDG's. To assess the Impact Assessment of the projects on the SDG's, their interconnectivities are usually expressed in terms of Triple or Multiple Helix Framework (Lahi ,2019); (Etzkowitz and Leydesdorff, 1998) and the SDG Impact Tool Assessment Methodology as discussed by Castor et al. (2020) and attributed to the University of Gothenburg Centre for Sustainable Development (GMV). Briefly, the triple-helix model as a framework allows the formulation of the interdependence between actors sharing the same vision for the realization of SDG's.

**Utilization of Questionnaire**

For the purpose of the assessment of UB research projects through two decades with respect to their impact on the SDG's, we proceeded with the distribution of a questionnaire to Heads of Establishments. The questionnaire, which is a widely applied SDG Impact Assessment Tool, enables the assessment by the researchers themselves of the impact of partnerships as solutions, research activities, or projects on the Sustainable Development Goals (SDGs). On the basis of the researchers own knowledge, he/she are able to identify opportunities and risks and knowledge gaps. It is expected that an improved understanding of how the project responds to the SDGs will allow the researcher to be better equipped to prioritize actions ahead. This method of analysis has preferably been used for different research projects (Dalampira and Nastis, 2020); Salvia, et al.,2019).

For this study, a purposive assessment of the priority SDGs that Faculties and Schools are involved in was carried out using a questionnaire. These Establishments are as follows:

FAVM…… Faculty of Agriculture and Veterinary Medicines

FLPS…… Faculty of law and Political Sciences

FED…… Faculty of Education

COT…… College of Technology

FET…… Faculty of Engineering and Technology

FHS…… Faculty of Health Sciences

FS…… Faculty of Science

FSMS…… Faculty of Social and Management Sciences

FA…… Faculty of Arts

The Questions were formulated to enable the stratified evaluation of the University of Buea Research Projects based on their SDG-related impacts, which is essential to capture how researchers in these Establishments are aware of the 2030 Agenda and the SDGs.

The questionnaire was divided into seven blocks of questions. The first block requested the respondents to rank, on a scale of 1 to 5 (1 being the most important) amongst the 17 SDG's, which each establishment has been most involved with in the past two decades.

The second block of questions requested the respondents, based on the signed partnerships in the first block, to prioritize the ranked SDG's.

The third block of questions requested the respondents, where applicable, the priority types of Structures/organization with which the Faculty/School has established a partnership; structures such as Local Government Councils; Government Institutions in Cameroon; National Organizations in Cameroon; Foreign Governments; International/Foreign organizations and others.

The fourth block of questions required the respondents to rank (from 1 to 6) the nature of the benefits from the partnerships—Funding (for more research, community engagement; outreach); Expertise (academic and support staff); Capacity building (staff and students); Technology (equipment and materials); Infrastructure (buildings); and others.

The fifth block of questions requested the respondents to identify for each of the ranked SDGs, which organization or structure they would prefer to have for long term partnerships.

The sixth block of questions requested the respondents to explain how the partners in the fifth block of questions will benefit from sustained partnership with UB.

The seventh block of questions required the respondents to identify which SDG's could be built into the activities of UB for implementation at the National Level (Cameroon); Continental level; Global Level.

In summary the above approach was aimed at establishing:

a. The priority SDGs the Establishments are involved in,

b. The types of structures (Institutions/Organizations) which have signed partnerships with the Establishments during the past 2 decades,

c. The partnerships which have impacted the Establishments,

d. The types of structures to be considered for long term partnerships until 2030 and beyond,

e. A ranking of the SDGs to be considered for partnerships at the local/national, continental and global levels, and

f. The potential benefits of the partners/donors for such partnerships,

**Analysis of the 30 Abstracts (proposals) Submitted**

Thirty abstracts submitted by academic staff and students for evaluation for use in the proceedings, oral presentations and poster presentations of the WIM Conference were analyzed in order to identify the frequency of SDGs that were captured in these abstracts.

**Results**

**A Historic Review of Partnerships with UB that have Impacted and Developed UB in the Areas of the SDG's**

The Sustainable Development Goals (SDGs) came about in 2012 and in 2015, the 17 Sustainable Development Goals (SDGs) were adopted by UN Member States. After the adoption, Higher Educational Institutions (HEIs) have engaged in efforts to fulfill the SDGs and develop ways of assessing performance. Performance assessment in HEIs is possible by universities effectively reporting information about SDGs to the Times Higher Education (THE). The University of Buea (UB) is engaged in 244 partnerships in countries from five (05) continents in the area of expertise, technology, knowledge sharing and mobilization of financial resources. Thirteen (13) SDGs are impacted by these partnerships namely, SDG1, SDG2, SDG3, SDG4, SDG 5, SDG6, SDG7, SDG9, SDG10, SDG11, SDG13, SDG14, SDG15, SDG16. The partnerships in UB for the last decade as per SDG ranking are summarized in Table 1 (De la Poza et al., 2021)

**Table 1: University of Buea Partnerships**

| S/N | SDG IMPACTED | THE DEFINITION | INSTITUTIONS/ ORGANIZATIONS | RANGE OF PARTNERSHIP |
|---|---|---|---|---|
| 1 | SDG 1 | No poverty. Focuses on university's research into poverty and its support for poor students and the poor members of the local community. | AFRILAND First Bank | Mobilization of financial resources |
| | | | Cameroon University Housing Corporation (UHC) Meyomessala | Infrastructure |
| | | | Cameroon Real Estate Development | Infrastructure |

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| | | | Agency (CREDA), Yaoundé | |
| 2 | SDG 2 | Zero hunger. Focuses on university's research into hunger, its teaching on food sustainability, and commitment to tackling food waste and addressing hunger in students and local communities. | GREFCON Group Ltd. Limbe | Knowledge sharing, Expertise |
| | | | Southwest Development Authority (SOWEDA) Buea | Knowledge sharing, Expertise |
| | | | Olive Foundation | Knowledge sharing, Expertise |
| 3 | SDG 3 | Good health and well-being. Focuses on university's research into the key conditions and diseases with a disproportionate impact on health outcomes worldwide, its support for healthcare professions, and the health of both students and staff. | Brain Research Africa Initiative (BRAIN) | Knowledge sharing, Expertise |
| | | | Institute of Medical Research and Medicinal Plants Studies (IMPM) Yaoundé | Knowledge sharing, Expertise |
| | | | Ministry of Public Health Yaoundé | Knowledge sharing, Expertise |
| | | | Mezam Clinique, Bamenda | Knowledge sharing, Expertise |
| | | | Centre Pasteur Yaounde | Knowledge sharing, Expertise |
| | | | Regional Hospital Buea | Knowledge sharing, Expertise |
| 4 | SDG 4 | Quality education. Focuses on university's contribution to early years and lifelong learning, its pedagogy research, and commitment to inclusive education | University of Yaounde 1 | Knowledge sharing |
| | | | LVMT Business School, Douala/ UK | Knowledge sharing |
| | | | Ministry of Basic Education, Yaounde | Knowledge sharing |
| | | | St. Jerome Catholic University Institute, Douala | Knowledge sharing |
| | | | University of Douala (FSJP) | Knowledge sharing |

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| | | | African Institute for Mathematical Sciences, AIMS, Limbe, Cameroon | Knowledge sharing |
| 5 | SDG 5 | Gender equality. Focuses on university's research into the study of gender, its gender equality policies, and commitment to recruiting and promoting women. | Women's Empowerment and the Family Centre, Kumba | Knowledge sharing |
| 6 | SDG 6 | Clean Water and Sanitation. Focuses on the University's role to improve on water availability, sanitation and hygiene through research to inform policy and behavioral change. | Douala City Council, Ministry of Public Health | Knowledge sharing, Expertise |
| 7 | SDG 7 | Affordable and clean energy. Focuses on university's research into energy, its energy use and policies, and commitment to promoting energy efficiency in the wider community. | municipal councils of Southwest Region Cameroon | Knowledge sharing |
| 8 | SDG 9 | Industry, innovation, and infrastructure. Focuses on university's role to foster innovation and serve industry's needs. | ENEO Cameroon | Technology, Expertise, Infrastructure |
| | | | Cameroon Development Corporation (CDC) | Technology, Expertise, |
| | | | Oil Refinery Company (SONARA) | Technology, Expertise, |
| | | | National Hydrocarbons Corporation (SNH) | Technology, Expertise, |
| | | | MTN Cameroon | Technology, Expertise, |
| | | | ORANGE Cameroon | Technology, Expertise, |

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|---|---|---|---|---|
| 9 | SDG 10 | Reduced inequalities. Focuses on university's research into social inequalities, its discrimination policies, and commitment to recruiting staff | Association of Commonwealth Universities (ACU); Association of African Universities (AAU); African Economic Research Consortium (AERC); Fullbright; DAAD Foundation; UNESCO; AUF; EU Erasmus Mundus. | Knowledge sharing, Expertise |
| 10 | SDG 11 | Sustainable cities and communities. Deals with the stewardship of resources to seek the university's role to sustain and preserve communities' heritage | Mount Cameroon Inter-Communal Ecotourism Organization Buea | Knowledge sharing, Expertise |
| 11 | SDG 13 | Climate action. Explores university's climate change research, its energy use, and preparations to deal with climate change consequences. | National Forestry Development Agency (ANAFOR) | Knowledge sharing, Expertise |
| 12 | SDG 14 | Life below water. Explores university's research into life below water, and its education on and support for aquatic ecosystems. | Cameroon Fish Farmers' Union (CAMFFU) | Knowledge sharing, Expertise |
| | | | Limbe Nautical Arts and Fisheries Institute (LINAFI) | Knowledge sharing, Expertise |
| 13 | SDG 15 | Life on land. Explores university's research into life on land, and its education on and support for land ecosystems. | Mount Cameroon Inter-Communal Ecotourism Organization (MOUNT CEO) | Knowledge sharing |
| | | | National Forestry Development Agency (ANAFOR) | Knowledge sharing |
| 14 | SDG 16 | Peace, justice, and strong institutions. Focuses on how | Pan African University Institute for Governance, | Knowledge sharing |

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| | | university can support strong institutions in the country and promote peace and justice. | Humanities (PAUGHSS) | |

The overall score of the University of Buea using Africa as a benchmark for the 14 key performance indicators (KPIs) grouped into five areas namely, teaching, research, citations, industry income and international outlook is encouraging. However, as HEIs are now occupied with identifying and quantifying key indicators to fulfill the SDGs, the University of Buea will explore valuable broad based partnerships to achieve a better overall score in the KPIs comparable to teaching (30%), research (30%), citations (30%), industry income (7.5%), and international outlook (2.5%) by 2030 (De la Poza et al., 2021).

**Results from the Analysis of the Answers from the Questionnaires**

A ranking of the top five SDGs which Establishments have been involved with during the past two decades is indicated in Figure 1(a). These results are indicative of more involvement with the SDGs shown in Figure 1(b).

Figure 1a shows that for FAVM ranks the top five SDGs which it has been involved in, in the following order of importance, SDGs 2, 1, 14, 15,13, while for FED, the ranking of SDGs it is involved in is: SDGs 4,1,2,6,3 in that order.

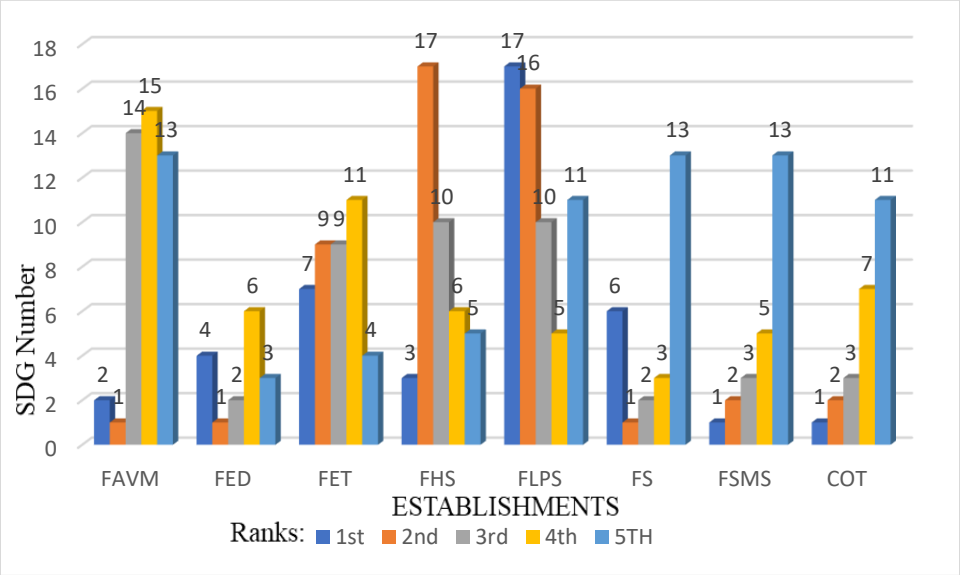


Figure 1 (a): Ranking of top five SDGs which establishments have been involved in during the past two decades

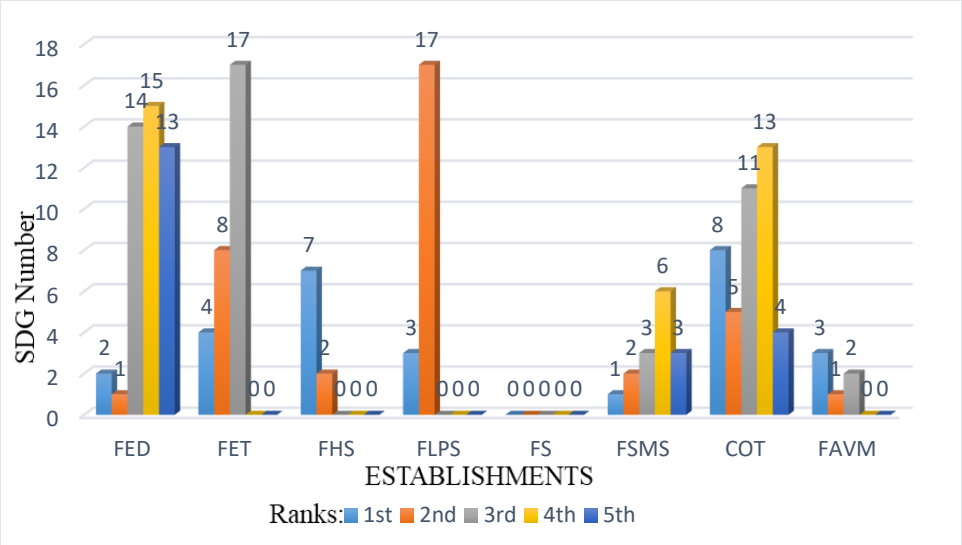


Figure 1 (b): Top five SDGs with signed partnerships

Figure 1(b) shows the classification by the Faculties and Schools of the ranked SDGs in Figure 1a, this time, in their order of priority. Hence, FSMS, for example gives priority to SDG 1; 2;3;6;3 in that order while FS apparently did not participate in the ranking. Nevertheless, it is observed that all the SDGs are given high priority as reflected in all Establishments. It thus shows the complexity of interconnectedness.

The major partnerships, which have had appreciable impacts in the University as expressed by the Establishments, are shown in Figure 2a while Figure 2b shows the major structures with which the Eastablishments have established partnerships. Both figures indicate the priority areas for each Establishment.

Figure 2a, for example indicates that for the Faculty of Arts (FA) it's the priority for established partnerships was motivated by the benefits of Funding, Capacity building, and Infrastructure. Figure 2b clearly indicates that Councils (Local governments), Foreign gov'ts, international organizations, NGO's, National Institutions constitute the choice of structures for partnerships, to varying degrees, by these Establishments.

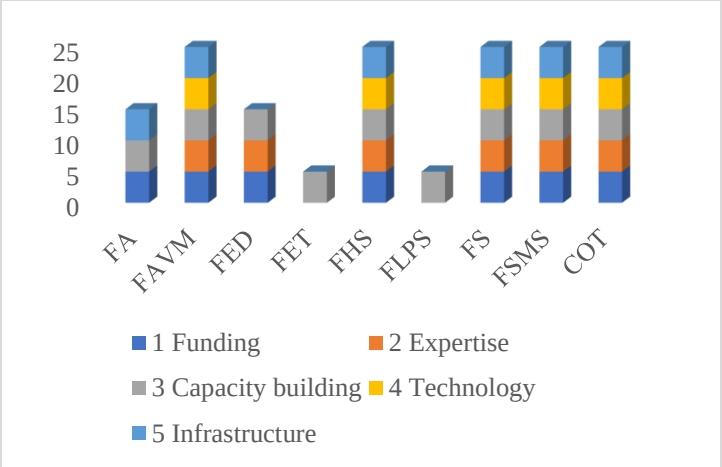


Fig 2a: Partnerships which have impacted Establishments

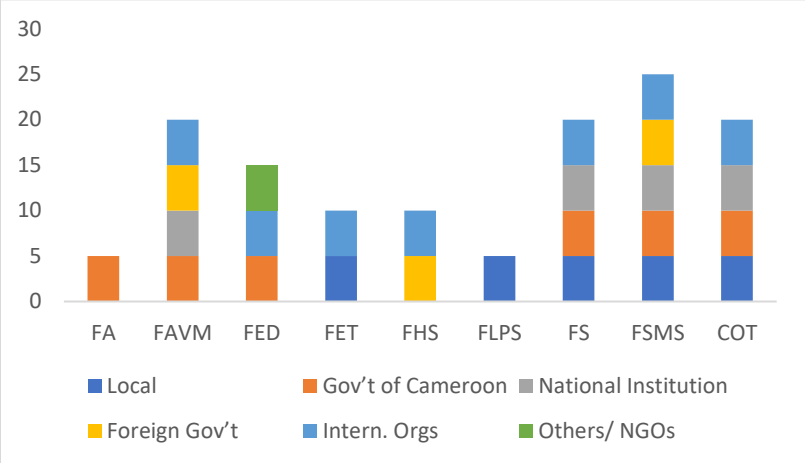


Fig 2b: Priority types of structures (institutions, organizations, etc) which have signed partnerships with Establishments

From the foregoing, one can identify the most suitable stakeholders who could be considered by the University for long term partnerships towards the implementation of the SDGs in question until 2030. These, according to the Establishments are indicated in Figure 3.

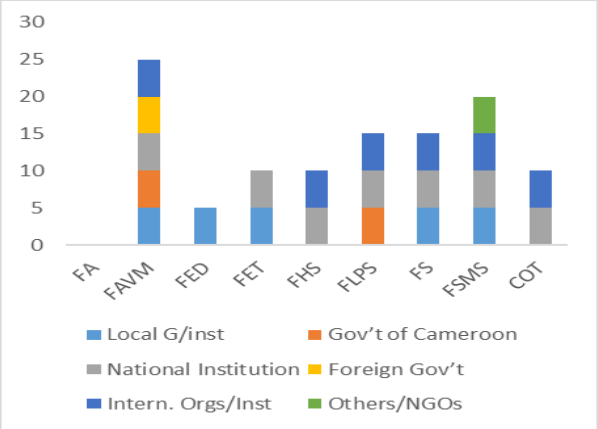


Fig 3: Types of structures to be considered by Establishments for long term partnerships until 2030 and beyond

The SDGs which, according to the Establishments, could be considered for implementation at the Local/National, Continental, and Global levels are indicated in Figure 4. This clearly identifies the SDGs which the University has the potential of engaging with to ensure their implementation by 2030.

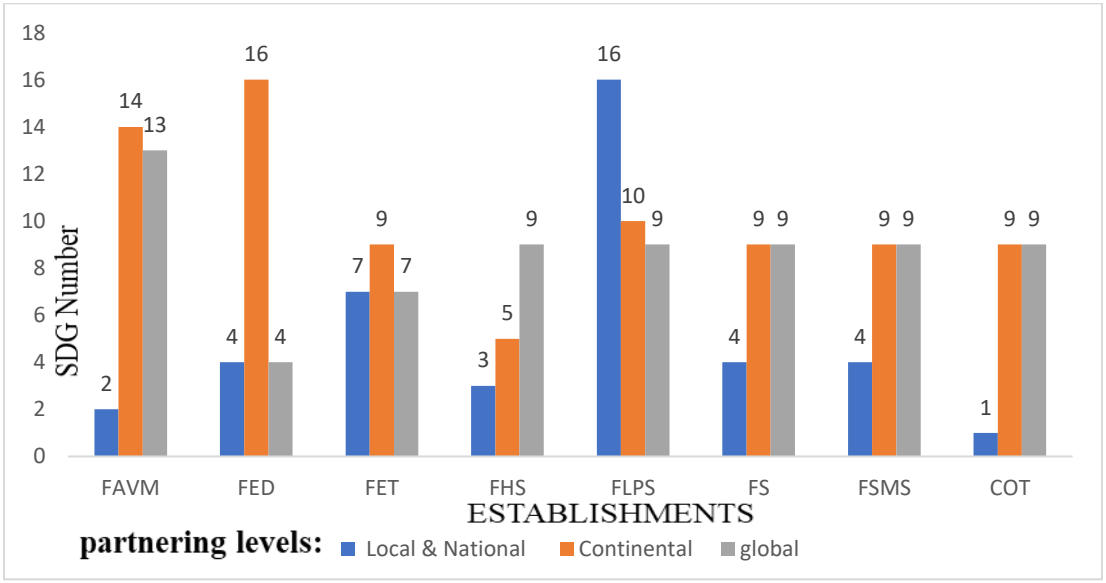


Fig 4: Ranked SDGs to be considered for partnerships at various levels

The potential benefits of partners/donors from sustained or renewed partnerships with the University until 2030 and beyond are as follows (Figure 5):

1) Staff development through mobility and exchange visits by staff and students.

2) Joint research projects

3) Exposure to global issues (legal, political, and other perspectives)

4) Exchange of experiences and knowledge sharing through forums such as fieldtrips, meetings, workshops, conferences, etc.

5) The realization of the mission of donor such as; transfer of expertise and technology

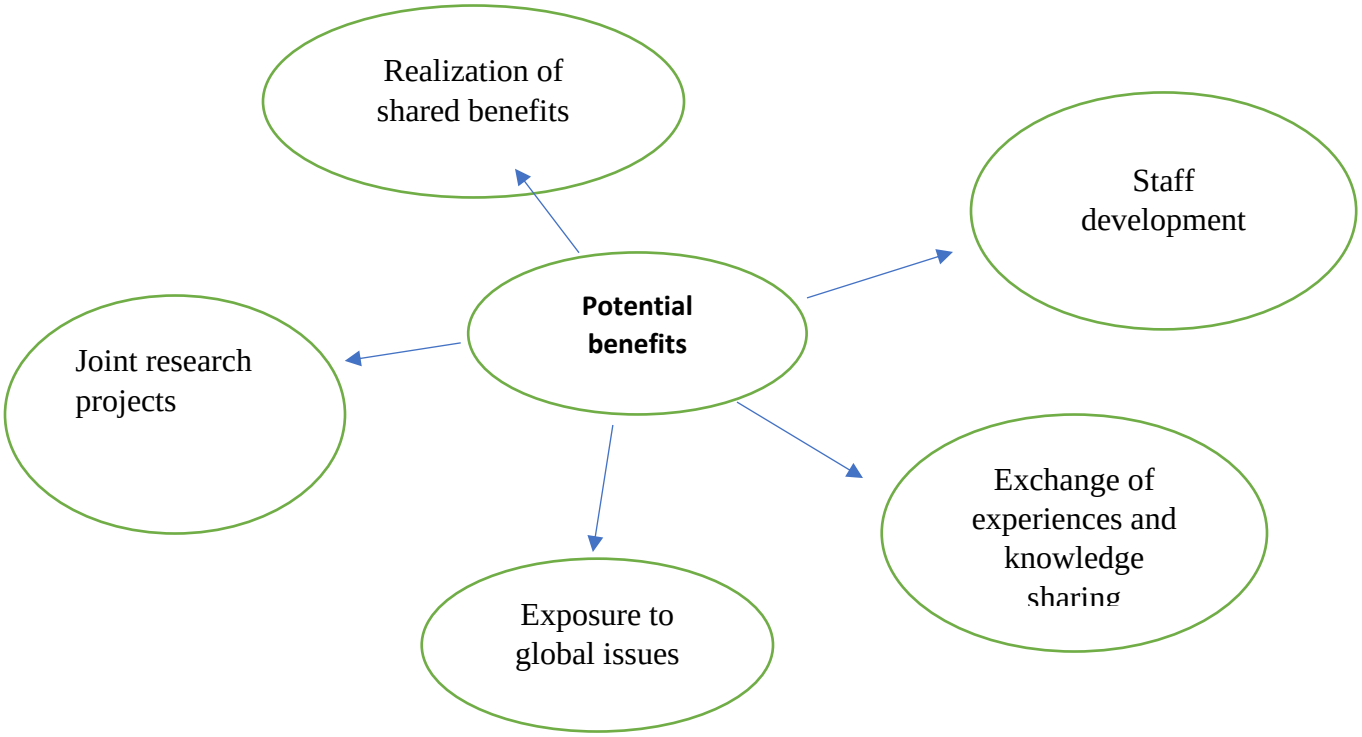


Fig 5: shared benefits of partners from sustained partnerships with UB until 2030

**Presentation of Abstracts Submitted to the United Nations Conference on Partnerships for the SDGs, Why It Matters**

The contributions of staff and students at the University as a hub of excellence, towards this vision has accordingly been based on their proficiencies and experiences as exemplified in the 30 abstracts/proposals, which were submitted, from which 28 out of 30 were accepted (13 for full papers, 8 for oral presentations and 7 for posters presentations), giving an overall success rate of 93.3% (Tables 2,3 and 4).

**Table 2: List of Abstracts Submitted for Full Papers and Corresponding SDGs Treated**

| Titles of Abstracts | SDGs Treated |
|---|---|
| Improvement of the livelihoods of rural populations of Sub-Saharan Africa through post-harvest and cook technologies powered by renewable resources | SDG 7 |

| | |
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| Renewable Energy for Rural Electrification of Sub-Saharan Africa: Why it matters | SDG 7 |
| Trends of malaria in the South West Region of Cameroon | SDG 3 |
| Diarrheal diseases and evaluation of inhabitants' knowledge and practices | SDG 3 |
| State of Food Security and Nutrition : Building Climate Resilience for Food Security and Nutrition in the South West Region, Cameroon | SDG 2,<br>SDG 3<br>SDG 13 |
| Enhancing quality education through partnerships: Why it matters in Higher Education in Cameroon | SDG 4 |
| Addressing the growing gender inequalities in new conflict areas in Africa | SDG 5,<br>SDG 10 |
| Problems of climate change-related hazards in African coastal communities | SDG 11 |
| Monitoring and predicting future eruptions of Mount Cameroon to ensure sustainable development in towns and communities | SDG 11<br>SDG 17 |
| Expanding economies, and employment in Saharan Africa: a comparative study of Cameroon, Côte d'Ivoire and Kenya | SDG 8 |
| Partnering to maximize the impact of technological innovation in post-harvest | SDG 1.<br>SDG 2,<br>SDG 9 |
| Partnering to Achieve Reducing Inequalities and Attaining Peace, Justice and Strong Institutions in Central Africa | SDG 10,<br>SDG 16 |
| The University of Buea as a Hub of Excellence and an Epicenter of Partnerships for SDG 17 | SDG 17 |

Total number of abstracts =13; Number accepted for full papers =13; Success rate =100%

**Table 3: List of Abstracts Submitted for Oral Presentations and Corresponding SDGs Treated**

| **Titles of Abstracts** | **SDGs Treated** |
|---|---|
| Reversible hydrogen-to-electricity technology as a Renewable Energy option | SDG7 |
| The urgent need to standardise and valorise the usage of African Herbal Medicine | SDG 1<br>SDG 3 |
| Adapting beneficial microbes and plant bio-active materials to control the invasive fall armyworm pest in maize production systems | SDG 2 |
| Engineering beneficial microorganisms to rebuild the rhizosphere microbiome and improve the nutritive value of soybean to mitigate hidden hunger | SDG 2 |

| | |
|---|---|
| Vegetable crop production and livelihood strategies in Cameroon: A case study of the Noun plateau | SDBG 1<br>SDG 2 |
| Managing Urban Growth in Sub-Saharan Africa: The Neglected Dimension of Urban Poverty | SDG 1<br>SDG 11 |
| Meeting the Challenges of Gender Inequality and Poverty for Persons with Disabilities: Lessons to be learnt from Best Practices in Cameroon | SDG 5 |
| The Urgent need for Multisectoral Action on Antimicrobial Resistance Surveillance | SDG 1<br>SDG 3 |
| Transformational Changes in Health Care Services Delivery in sub-Saharan African Countries to Achieve Good health and Well-being in the Context of COVID-19 | SDG 1<br>SDG 3 |

Total number of Abstracts =9; Number accepted for Oral Presentation=8 ; Success rate =88.8%

**Table 4: List of Abstracts Submitted for Poster Presentations and Corresponding SDGs Treated**

| Titles of Abstracts | SDGs Treated |
|---|---|
| Rain-to-Electricity Conversion System | SDG 7 |
| Intrusive and None-intrusive Energy Harvesting Techniques from Water Distribution Networks: The case of Buea in Cameroon | SDG 7 |
| Advanced HIV disease in people living with HIV under antiretroviral treatment at the Buea Regional Hospital and coinfection rate of *Mycobacterium* spp. and *Cryptococcus* spp | SDG 3 |
| Urinary Tract infection in pregnant women in the Limbe Health District of Cameroon: A Phenotypic and Biochemical analytic study | SDG 3 |
| Fight against a communicable disease (Covid-19), its response strategies and effectiveness in Buea Municipality, Cameroon (SDG 3) | SDG 3 |
| Food insecurity status of households, associated hazards and risk reduction strategies as determinants for sustainable development, in South West- Cameroon (SDG 2 and 3) | SDG 2<br>SDG 3 |
| Potential of ornamental fishes in the Lower Guinea Rainforest Rivers | SDG 14 |
| Pay as you go solar module equipped with adapted online maintenance: Case study of Cameroon | SDG 4<br>SDG 7 |

Total number of abstracts =8; Number accepted for Oral Presentation=7; Success rate =87.5%

A synopsis of the above abstracts/proposals is indicative of emphasis in the following priority goals:

- SDG 1: No Poverty
- SDG 2: Zero Hunger
- SDG 3: Good Health and Well-being
- SDG 4: Quality Education
- SDG 5: Gender Equality

- SDG 6: Clean Water and Sanitation
- SDG 7: Affordable and Clean Energy
- SDG 9: Industry, Innovation and Infrastructure
- SDG 10: Reduced Inequality
- SDG 11: Sustainable Cities and Communities
- SDG 13: Climate Action
- SDG 14: Life Below Water
- SDG 15: Life on Land
- SDG 16: Peace, Justice and Strong Institutions

These results are indicative of prioritized SDGs which Establishments have been engaged in, and which can be integrated into their curriculum for continuous capacity building in the areas of the SDGs in which this Institution is already embarked on. Such implementation could be at the level of Cameroon, Africa, and even at the global level since the University has already established several partnerships at the global level as indicated earlier.

It is worth noting here that the prioritized types of SDGs which the University is involved in, will equally be relevant for most developing countries, and that is why it matters that the University continues to develop its capacity to be a Hub of Excellence for the promotion and implementation of the SDGs.

**Relevance of Activities of UB for the Sustainable Development Goals**

All facets of sustainable development require partnerships between governments, the scientific committee, the private sector and the civil society. Thus, the various stakeholders of development namely: governments' industries' institutions and communities have the responsibility of supporting the achievement of the SDGs.

A holistic presentation on the contributions of the University of Buea within its context as the member of the scientific committee responsible for SDG 17 is indicative of a wide range of involvement in 14 out of the 17 SDGs based on the 30 proposals submitted for consideration for the conference (Tables 2,3 and 4). These SDGs constitute a system of universally accepted indices of human development, which can only be achieved through such partnerships.

**The University of Buea as an Epicenter of Partnerships for the SDGs**

Thus, SDG17, “Partnerships to achieve the goals”, which the University of Buea represents on the Hub of the Scientific Committee of the WIM22 conference, underscores the fact that all the goals cannot be achieved without the mobilization of funds for capacity building, expertise, and technology for infrastructure and shared knowledge by all.

The contributions of staff and students of the University of Buea in this endeavour, have accordingly been based on SDG 17 thereby rendering this Institution an Epicenter for Partnerships towards the realization of nearly all the goals. This has been based on the proficiencies and experiences of the staff and students/youths as exemplified in the 30 abstracts/proposals, which were submitted, from which 28 were accepted (Tables 2,3 and
Furthermore, the results of the purposive administration of questionnaires to Heads of Establishments were analyzed in order to establish the priority SDGs that the Establishments are involved in amongst other attributes as presented earlier.

**A Historic and Current Reviews of Partnerships with UB for the SDGs**

Since the creation of this Institution, it has been involved in a total of 167 partnerships at the national, continental and global levels as shown below:

- Cameroon – 65
- Africa – 25
- USA – 53
- Europe – 20
- Australia – 1
- Latin America -3

The types of partnerships are indicated in the pie chart. below.

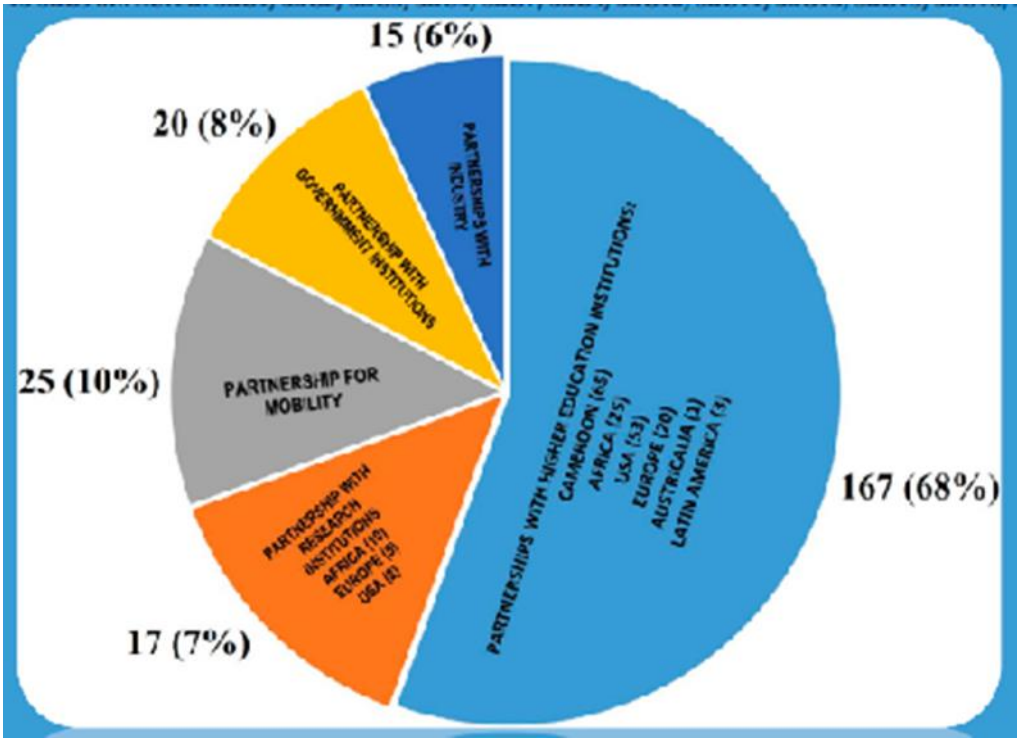


Figure 1: A pie chart showing the global distribution of partnerships signed with the university of Buea since 1993

These results are further indicative of the fact that the prioritized SDGs which Establishments have been engaged in, and which can be inbuilt in their activities for further implementation of these SDGs for development in this Institution, Cameroon, Africa, and at the global level, are relevant for the needs of the country, for Africa and for most developing countries.

The results are further indications of the availability of competent resource persons who, through their expertise, exposure, and scientific productivity, have, throughout the years, been involved with these partnerships at all levels and can therefore be expected to continue with the implementation of the SDGs they are involved in during the next 8 years until 2030.

**Interconnectedness of the Goals through SDG 7 and SDG 2**

It is however important to stress the fact that for these partnerships to be relevant, impactful, and sustainable, they must address the interconnectedness of the SDGs. An analysis of the interconnectedness of the SDGs presented in the 30 abstracts submitted to the WIM Conference as presented in Table 1 provides a means of proposing a conceptual framework of various models of partnerships.

**Interconnectivity of SDG 7: Affordable and Clean Energy with other SDGs**

By providing Affordable and Clean Energy (SDG 7) which is one of the priority goals of this Institution and since this goal impacts at least seven other SDGs amongst which five are amongst

the top priority SDGs, SDG 17 can therefore be said to be at the epicenter of these goals This is because energy directly or indirectly facilitates the attainment of the following SDGs through:

I. Ending Poverty (SDG 1), and thus Zero Hunger (SDG 2),

II. Providing Good Health and Well-being; (SDG 3),

III. Providing Access to Quality Education; (SDG 4),

IV. Building Industries, Innovation and Infrastructures, (SDG 9)

V. Ensuring Sustainable Cities and Communities (SDG 11), and

VI. Facilitating Climate Action (SDG 13) and

VII. Combating Climate Change (SDG 13) by reducing the pressure on forest exploitation to provide firewood for rural populations, combats desertification and halts biodiversity loss, which is a consequence of the depletion of forests resulting in the loss of the natural habitat of wildlife.

This matters because the availability of electricity to both rural and urban populations provides a lever to poverty alleviation, improves the well-being of the population, facilitates inclusive economic growth through the creation of enterprises, facilitates industrialization and fosters innovation as well as helps in combating climate change.

**Interconnectivity of SDG 2: *Zero Hunger*, with other SDGs**

The realization of Zero Hunger (SDG 2) directly impacts Good Health and Well-being (SDG3) and indirectly impacts the following ten SDGs: This is because communities with “no hunger” generally have:

i. Low Poverty Levels (SDG1),

ii. Get Quality Education (SDG 4)

iii. Clean Water and Sanitation (SDG 6)

iv. Reduced inequality (SDG10)

Furthermore, lack of sustainability of some economic and industrial activities which are designed to achieve “zero hunger” negatively impact

v. Change (SDG13),

vi. Life Below Water (SDG14),

vii. Life on Land (SDG15),

viii. Responsible Consumption and Production (SDG12), and

ix. Sustainable Cities and Communities (SDG11) and

x. Peace, Justice, and Strong Institutions (SDG 16).

It is hoped that this assessment of the interconnectivity of some SDGs which were presented in the 30 proposals would be useful towards considering the interrelationship of these SDGs. It is hoped that this approach could constitute a framework for assessing the opportunities that will be available for the implementation of the SDGs during the next 8 years until 2030, instead of treating each SDG in isolation, especially as some of the interconnections can be can expressed in a . Multi Helix Framework.

The approaches to be adopted during this conference towards the mobilization of funds from the various sources, through partnerships with various stakeholders at various levels as indicated in the example for the University of Buea (Figures 1 and 2) will, therefore, be streamlined to carter for interconnected SDGs rather than for individual SDGs.

**Example of Partnerships for the Goals from Various Schools and Faculties**

These are partnerships which have been established by the various Establishments of the University, and which impact, and will continue to impact the University in the implementation of the SDGs until 2030.

**Partnerships For the Goals at College of Technology, University Of Buea**

The College of Technology, University of Buea, has engaged in partnership with the Africa Loss Prevention Society (ALPS) and Cameroon's Power utility company, ENEO, for the Training of World Engineering Technicians (TWCET). The range of the partnership includes expertise, technology and knowledge sharing and three SDGs are impacted namely, SDG1, SG8 and SDG9. The partnership aims at designing and delivering training courses for Engineering Technicians to World Class Standards. Initiation of the partnership follows observation that the transition from expatriates to local technicians in most African public or para public companies some years after independence left a huge skills gap that affected the productivity of the companies. First, the transition created, with time, a fall in training standards and, secondly, technological advancement demanded retraining of technicians in the new industrial technologies if the companies were to deliver on their mandate and continue to expand.

This program is thus conceived to make up for the observed critical deficits in essentials skills needed to meet the whole range of operational challenges inherent in their business. It is

expected to help strengthen the competitiveness of the local manufacturing and services industries by providing short training courses for the initial and continuous development of technical manpower. This program is built on the sectoral strategies laid down in the 2010 Growth and Employment Strategy Paper of Cameroon as well as the corresponding Strategy Papers developed in several African countries between 2005 and 2010.

This program is intended to cover short courses up to between 1 week and twelve months duration in the following domains:

1) Construction and Maintenance of Electric Power Networks
2) Internal Electrical Installations
3) Maintenance of Mechanical Equipment
4) Maintenance of Electrical Equipment
5) Operation and Maintenance in Process Industry
6) Techniques of Effective Supervision
7) Health and Safety at Work
8) Environmental Considerations in Construction, Maintenance and Operations

The industries covered will include Power utility; Telecommunications; Oil and Gas Exploration, Production; Refining and Distribution; Water, Land and Air Transportation; Metallurgy; Food and Drinks Processing; Meat and Poultry; Mining; Entertainment; Textile; and Urban Development.

**New Approach based on Partnerships**

The College of Technology, University of Buea has adopted a new approach for the training of high skilled workforce by partnering with a professional body and industry. The professional partner is Africa Loss Prevention Society comprised of engineers in diverse sectors, while the industry partner is ENEO, Cameroon for the training of Power Utility Linemen. The outcomes of the training are as follows:

1. High quality support services for maintenance
2. Low rate of breakdown failures
3. Low accident levels
4. Small down time

**Future Perspectives on Partnerships and Impacts on SDGs at the College of Technology by 2030**

Presently, the College of Technology, University of Buea uses its meagre financial resources and donations from power utility company, ENEO Cameroon to positively impact the power utility sector of the economy. With increased funding and broad-based partnerships, the training could be extended to the Central African sub region in the power utility sector and with the involvement of companies in the other sectors, most of the industries mentioned in section 3.1.1 will be positively impacted by 2030. With well-trained maintenance crew, it is expected that the country will have reliable power supply, which is a major resource across the board for the SDG 7 and a determinant for industrial development.

**Why It Matters**

Capacity building in the energy sector matters because the array of companies to be impacted is limitless as virtually every company utilizes electrical energy, which is so critical to industrial productivity, expansion and economic development of the African continent. The implication for job creation, reduction in employment and poverty alleviation are evident. Energy is essential to the realization of majority of the SDG's and uninterrupted provision of energy continues to pose a challenge in most African countries. Capacity building in such a vital sector in this industry-university-government partnership is a model that can be replicated in several African countries with the well-known impacts on the SDG's.

**An Example of Partnerships in the Faculty of Science on Monitoring Active Mountains in Cameroon and in the Democratic Republic of Congo**

Two partnership agreements on SDG 11(Sustainable Cities and Communities) which involve *Monitoring and predicting future eruptions of Mount Cameroon* and on *the health impacts of volcanic and flood hazards around Mount Cameroon (Cameroon) and Mount Nyirangongo (Democratic Republic of Congo).*

These partnerships were aimed at ensuring sustainable development in communities in towns within these areas which, from past disasters, are exposed to hazards from volcanic eruptions such as lava flows and earthquakes which impact society and infrastructures. Modern societies are reliant on dependable functioning critical infrastructure and lifelines, which are vital for effective emergency response and recovery during volcanic eruptions (Grant, 2015). Hence, the partnerships were aimed at ensuring the sustainable cities and communities within these areas, where volcanic risks have been of major concerns for policy makers and the communities, especially with regards to conducting developmental projects.

Mount Cameroon (MC) in particular is one of the most active volcanoes in Africa, having erupted seven times during the last 100 years. Hazards from its 1999 eruption, caused significant environmental and infrastructural damage estimated at 750 million FCFA (Wantim et al., 2018). These eruptions are usually preceded and accompanied by earthquakes (Ubangoh et al., 1997);

emissions of sulphurous gases, increase temperature of vents which affect the quality and physical properties of water bodies.

Volcanic eruptions are difficult to predict, but progress has, been through volcanic surveillance in order to reduce the impact of its hazards on society (Brown et al., 2015). Monitoring these precursory parameters will help predict future eruptions at MC, which host major cities, and over 63 villages at its flanks characterised by increasing population caused by the presence of several higher institutions of learning such as the University of Buea, companies and plantations.

The sensitisation of the population on how to cope with future eruptions of this mountain therefore matters in order to ensure the sustainable developments within these areas. A recently designed Earthquake Building Code and Building Regulations for the mount Cameroon area was therefore necessary. The two partnerships below have been useful in these endeavours in facilitating the implementation of some targets of SDG3, SDG6, SDG9, and SDG13.

A PERIPERI – U partnership agreement with the USAID on Hazards and disasters associated with the eruptions of Mount Cameroon which provided funding for:

a. Technological transfer,

b. Capacity building of the population through workshops and

c. Support towards the training of MSc and PhD students,

d. Short courses in GIS

e. The design of an Earthquake Building Code for the Mount Cameroon area,

f. Infrastructural development and equipping of the Volcano Monitoring Laboratory, and

g. The design of a degree programme in Disaster Risk Management.

Swedish Partnership Grant on Leading Integrated Research on Agenda 2030 (LIRA 2030) which provided funding which was used for workshops on urbanisation, on health and human wellbeing (SDG 3), Food security (SDG 2), the impacts of climate change on water resources (SDG 6 and 13).

**Why these Partnerships Matter**

The continuous monitoring aimed at predicting the eruptions of these mountains and the associated hazards in an attempt to sensitise the population and prepare them for subsequent disasters matters since this will:

1) Ensure the continuous monitoring and surveillance of the hazards from these mountains aimed at the sensitisation of the population and alerting them in the cases of eminent eruptions.

2) Provide capacity building of students on disaster risk management.

3) Ensure the construction of buildings and related infrastructure which respect the standard Building Code and Regulations approved for volcanic areas. and

4) Provide information which is relevant for investment confidence within the population

**Conclusion**

A holistic presentation on the contributions of the University of Buea within its context of its membership of the scientific committee responsible for SDG 17 is indicative of a wide range of involvement in 14 out of the 17 SDGs based on the 30 proposals submitted for consideration for the conference (Figure 2). The results of the analysis of our survey of the engagement of Faculties and Schools projects in the SDGs involving a purposive administration of questionnaires, provides a powerful framework to distinguish the interconnectedness of the SDG's and the relevance of partnerships.

Since all facets of sustainable development require such partnerships, the multiplicity of interconnectedness which were not evident in the projects before this analysis, validate the applicability of this methodology as an alternative Framework for SDG Impact Assessment. It further reiterates the need for partnerships for the optimal implementation of the sixteen SDGs, which constitute a system of universally accepted indices of human development, and that is why it matters.

Thus SDG17, "Partnerships to achieve the goals", which the University of Buea represents on the Hub of the Scientific Committee of this WIM22 conference, underscores the fact that all the goals cannot be achieved without the mobilization of funds, expertise, technology, and shared knowledge by all. The various stakeholders of development namely: governments, industry, institutions, and communities therefore have the responsibility of supporting the achievement of the SDGs.

Furthermore, from the point of view that each SDG thematic is accomplished by choosing different resources from a pool of resources as well as the technology, skills, techniques, expertise, necessary for implementation, the interconnection between SDG's and reasons for their shared outcomes becomes evident.

The major challenge for the Conference now becomes how to use the platform of the Conference to examine the complex interconnectedness between each of the factors at the national, continental and global levels to enable the SDG's deliver better on their goals. This process will involve the determination of how much each of the resources (Funding, expertise, infrastructure,

technology, and the appropriate capacity building approaches, etc.) affects the overall outcome of the thematic. In addition, commitments aimed at ensuring the stability of socio political systems, promoting gender equality, advocating human rights, and ensuring healthy environments, amongst other attributes will enhance the attainment of the goals. This is achievable through the sharing of expert knowledge in Panel discussions during the Conference on transversal issues.

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