

Environmental Management as an Undergraduate Programme of Study in Nigerian Universities: Challenges and Prospects

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Introduction

The modern term ‘University’ was derived from the classical Latin word, *universitas*, which means ‘the totality’ or ‘the whole’ (Verger, 1992a). *Universitas*, a name applied to diversified corporate bodies of the Middle Ages in Europe, also include the organization of teachers and students (Alemu, 2018). Alemu (2018) reiterated that the name had, through time, been particularly attached to the teacher-student corporate organization as *universitas literarum*, from which, particularly since the 18th century, the name University was derived. In another sense, Alemu (2018) stated that *universitas* had been a general term used in the medieval times to denote all kinds of community or corporate such as guild, a trade, a brotherhood, and so on. This, according to Alemu (2018), gradually culminates *universitas magistrorum et scholarium*, i.e. ‘the university of masters and students’ which stands for organized communities of individuals who were responsible for higher learning and study. Thus, a university represents both a higher learning institution and a community of scholars or persons. It is a higher learning institution that brings men and women to a high level of intellectual development in the arts and science, in the traditional professional disciplines, and also promotes high-level research. It also signifies a community of persons engaged in study and research. Thus, universities were established to pursue a set of goals, mission, functions and services (Assie-Lumumba, 2005), all of which depend on the needs and priorities of different societies (Alemu, 2018).

According to Paking (2007), the emergence of a university is premised on the relative advancement of civilization which necessitated for higher learning. Newman (1910) stated that ‘University is a place where inquiry is pushed forward, discoveries verified and perfected, rashness rendered innocuous, and errors exposed by the collision of mind with mind and knowledge with knowledge. It is a place where the professor becomes eloquent, and also a missionary and a preacher displaying this science in its most complete and winning form, pouring it forth with the zeal of enthusiasm, and lighting up his own love of it in the breast of his hearers.

In the light of Newman’s account, Alemu (2018) summed the meaning of university or higher education as a higher learning institution and academic environment where

a community of scholars engages in study (teaching and learning), research, and community services. He further added that it is also a center for professional training to serve society's socio-economic, political and cultural needs. From the ongoing, it is evident that it is not easy to give a straight-forward one sentence definition of University because it is differentiated in many ways. However, I feel that it is better understood when it is defined by virtue of its purpose and/or its functions. Thus, Alemu (2018) stated that universities can be seen in relation to education and scholarship through teaching, research and public services. Altbach (2006) and Boulton and Lucas (2008), observing the current background for establishing universities, corroborated this view by stating that, "a University is not an easy task, especially in this era of differentiation in higher education, with new and diverse institutions emerging everywhere", without explaining the common function, purposes and values. Also, Salmi (2009) and Tilak (2015) further revealed that the idea of a university stands for humanism, for tolerance, for progress, for the adventure of ideas and search for truths. It stands for the onward march of humans towards ever-higher objectives. Thus, it is evident that if universities discharge their duties adequately, then all is well with the nation and the people. Allen (1988), Newman (1996), Oakeshott (2004) and Toope (2014) also submitted that throughout history, universities have played three interlocking roles, but differently, at different times and in different places. These roles are teaching new generations; preserving and discovering knowledge; and constituting talent, ideas, advice and challenges to the wider societies. In an era of '*non-leux*' (non-place), universities are best placed to fulfill those roles today by resisting the pressures to uniformity and contributing to an intergenerational dialogue that requires diversity and disputation. In the light of the foregoing, Universities are usually organized into schools/faculties/colleges and departments around different fields of knowledge or around a specific instructional objective or mission. Autonomous (undated) stated that academic department is the basic administrative unit within the university organized to carry on and develop the instructional and research activities of its faculty. In furtherance, the faculty of an academic department shall include all those members of the university faculty who have been appointed to the department with the consent of other members of the department/faculty. The academic department shall have the fullest measure of autonomy consistent with its function and responsibilities within the college and the university, subject to the provision of the Charter establishing the University. Academic department is headed by a Chair appointed by the University Management. Universities are organized such that related programs are put together under same faculty/college which is most often premised upon the need to minimize overhead cost especially among private universities. It is organized in such a way that administrative overhead cost is grossly minimized. Boulton and Lucas (2008) and Jensen (2010) stated that Universities are organized into colleges which will be in charge of a preliminary degree and a number of professional schools which will provide the education proper- School of Medicine, Law, Engineering and so on. To this was added

researcher education in a School of Graduate Studies. The first universities to adopt this structure were Cornell and John Hopkin dating from 1868 and 1872 respectively.

In Nigeria, the establishment of academic programmes is the sole responsibility of National Universities Commission (NUC) while Joint Admission and Matriculation Board (JAMB) oversee admissions into universities and other higher institutions in the country. All the approved universities in the country are expected to seek through their proposals for the establishment of any academic programme from the NUC, which then schedule a visit for the initial Resource Verification and approval or otherwise. At the appointed time after approval, university writes the NUC for programme accreditation. This is intermittently done by the body to ensure consistent adherence and compliance to the approved laid down guides for any respective academic programme. Some of the departments being run in Nigerian universities under each Faculty/College include Faculties of Arts (Humanities), Engineering, Social and Management Sciences, Health Sciences, Administration, Law and Technology, each with its own respective academic departments. The autonomy of universities enable each university to organize its own academic units as it wishes as long as it is borne out of senate approval (the only body responsible for academic matters with the Vice Chancellor as its Chair).

Historical Background and Practice of Environmental Management Practice

The development of Environmental Management programme is not similar to other sciences like Physics, Mathematics, Biology, Chemistry, Philosophy, among others, in the sense that it is more of a recent science dated to early 60s and also, it was not clearly associated with ancient philosophers such as Aristotle, Alexander, Plato, and Socrates, among others. Despite this, the consciousness and the practice of environmental management is as old as human race as man had been in charge of his own environment in terms of the benefits derivable therein, its protection, conservation and its sustenance for his comfort (Dernbach, 2003; Pigou, 1920). Environmental Management combines the term “environment” and “Management”. Environment as a concept is defined as “

Colby (1989) in his article titled “The Evolution of Paradigms of Environmental Management development revealed that “for centuries, a usually implicit debate has prevailed between what have come to be called “economics” and ‘development’ on one side, and the conservation of nature and ‘ecology’ on the other, at least in western civilization. In the past quarter century, as environmental management has become an increasingly explicit and significant matter requiring the attention of governments, this dichotomy has begun to break down. Thus, discussions have become serious on ‘sustainable development’, bringing about what environmental management and sustainable development entail. Thus, broad fundamental paradigms of environmental management in development are referred to as ‘frontier economics’, ‘deep ecology’,

‘environmental protection’, ‘resource management’ and ‘eco-development’. According to Colby, there are overlaps between these paradigms: they evolved from societies’ basic assumptions about the relationship between man and nature, and are therefore, related to each other. They are not completely distinct “species” but have implications for the future of environmental management.

By 1960s, especially after the 1962 publication of Rachel Carson’s book, *Silent Spring*, pollution was a major concern in the industrialized nations. Scientists began to study “environmental problems”, usually related to pollution or the destruction of habitats and/or species. The recognition of the pollution problem in the polarized context of frontier economics versus the nascent deep ecology schools led to the perception of the necessity to make compromises, or trade-offs; the constrained perception of “Ecology and Economic growth” became freshly explicit.

In the context of India, Das (2018) stated that economic development without due environmental considerations causes environmental crisis. Thus, management of both environment and natural resources in a country like India has become more urgent. He further stated that basic functions of good environmental management are goal setting, information management, environmental management, piloting, implementation and control, communication, internal and external auditing and so on. The implication of man’s activities on his environment has called for a broadened environmental management.

In Nigeria, Obasi and Ogwuche (2016) revealed that environmental management education as an academic and professional discipline is relatively new though, evolving rapidly. Obasi and Ogwuche (2016) and Iyalomhe et al., (2017), however, lamented that thirty one (31) out of one hundred and forty one (141) Universities and other fifty two (52) degree/HND/NCE awarding tertiary institutions offer Environmental Management programmes. This is a gross dearth of professionals in this field to ensure sufficient tackling of environmental challenges. They, in addition, revealed that environmental education is one of the twenty-one (21) strategies of tackling environmental challenges.

Why Bachelor of Science in Environmental Management?

The need for the training of professionals in Environmental Management in Universities at undergraduate level is found in their various prospective. This contains the University name, School/Faculty/College name, philosophy and the duration as shown for some Universities in Table 1:

Table 1. Environmental Management Programmes in Nigerian Universities

S/N	University Name	Ownership	School/ Faculty/College	Nomenclature
1	University of Agriculture, Abeokuta	Public	Agriculture	Environmental management and Toxicology
2	Michael Okpara University of Agric, Umudike, Umuahia	Public	Agriculture	Toxicology & Environmental management
3	Benson Idahosa University, Benin City	Private	Agriculture	Forestry/Wildlife & Environmental Management
4	Kogi State University, Anyigba	Public	Agriculture	Soil & Environmental Management
	Evan Enwerem University, Owerri	Public	Agriculture	
	Ebonyi State University, Abakaliki	Public	Agriculture	
	Crawford University of Apostolic Faith City, Ogun State	Private	Agriculture	
5	Evan Enwerem University, Owerri	Public	Social and Management Sciences	Geography & Environmental Management
	University of Ilorin	Public	Management Sciences	
6	University of Benin, Benin City	Public	Education	Environmental Education
	University of Calabar, Calabar	Public	Education	
	University of Abuja, Abuja	Public	Education	
	Bayaro University, Kano	Public	Education	
	Abubakar Tafawa Balewa University, Bauchi	Public	Education	
	University of Maiduguri	Public	Education	
	Ekiti State University, Ado Ekiti	Public	Education	
	Niger Delta University, Wilberforce Island	Public	Education	
	Rivers State University of Science and Tech., Port Harcourt	Public	Education	

7	Anambra State University, Uli	Public	Environmental Sciences	Environmental Management Technology
	Abubakar Tafawa Balewa University			
	Novena University, Ogunme	Private	Environmental Sciences	
	University of Port Harcourt	Public	Environmental Sciences	
8	Nnamdi Azikwe University, Awka	Public	Environmental Sciences	Environmental Management
9	Abia State University, Okigwe	Public	School of Technology	Environmental Resource Management
10	Igbinedion University, Okada	Private	School of Technology	Environmental Management and Control
	Ekiti State University, Ado-Ekiti	Public	School of Technology	
11	University of Calabar	Public	Management Sciences	Resource Management
12	Kaduna State University*	Public	Environmental Sciences	Environmental Management
13	Calleb University**	Private	Environmental Science	Environmental Protection and Management
14	Birmingham University***	Private	Environmental Sciences	Environmental Management

Sources: S/No I-II: UTME Brochure, 2014; ***: Birmingham University Website (29/3/2020); **: Vanguard Newspaper website (29/3/2020)

*:Kaduna State University Website (29/3/2020)

Often, the introduction of any academic programme is usually premised upon the need of the society, among others (Perkin, 2007; Simon, et al., 2011; Ndlovu-Gatsheni, 2017). The approval of any new academic school/faculty/college is the sole responsibility of National Universities Commission in Nigeria. Such accreditation is usually on the basis of University meeting all the laid down guidelines with the belief that national interest and manpower needs are the top most priorities. Other conditions, according to National Universities Commission (2007, 2014), for accrediting a programme are as follows:

- a. Philosophy and objectives of the programme.
- b. Curriculum: the curriculum of the programme to be accredited should be adequate to prepare practitioners at appropriate level on a particular field;
- c. Teaching staff, quantity and quality;
- d. Student admission, retention and graduation requirements;
- e. Standard of degree examination;

- f. Financial support;
- g. Physical facilities;
- h. Administration of the Department and
- i. Employers' rating of graduates.

Of all these conditions for effective take-off of any undergraduate programme in any approved University programme in Nigeria, at least, the criteria a, b, c, f and g are crucial to the commencement of any newly established programme. The remaining four criteria can be taken care of, while the preliminary activities are being carried out aftermath the commencement of the programme.

However, all the guidelines highlighted above are premised on the societal needs of the programme and at times, the prestige often attached to the running of the programme. For example, medicine and pharmacy. Apart from these, another salient condition that seems to be a powerful factor in establishing a new programme is the political will of the university management. It seems that when the management has keen interest in mounting an academic programme, all required resources will be made available for its take off. This fact seems to be peculiar to private Universities where the vested interests of possibly the University Proprietor, Council and Senate leadership influence the running of certain programmes in their respective Universities.

Bachelor of Science in Environmental Management in Nigerian Universities

For those keen to study a subject that touches many of the biggest challenges in the world today, Environmental Science degree is a good starting point. Environmental Science incorporates the study of the physical, chemical and biological processes that take place on earth as well as social, political and cultural processes which impact the planet. As an Environmental Science student, one will strive to understand the complex relationship between mankind and the environment, drawing on a diverse range of disciplines (topuniversities.com/course/environmental/studies/guide). The list of possible Environmental Science topics include but not limited to; Soil Ecology, Earth Systems, Environmental and Biological Conservation, Energy and Climate Change, Water Resource Management, Pollution Prevention and Remediation.

Scope of Environmental Science

Environmental Science is very much an interdisciplinary subject. Environmental Science degrees challenge students to combine skills and knowledge from a variety of different views. This could mean exploring aspects of Biology, Chemistry, Physics, Geography, Earth and Marine Sciences and Social Sciences like Economics, Law, Sociology and so

on. The idea is to combine multiple perspectives and data sources, to build up a fuller understanding of natural and human environment.

Fieldwork is an important part of environmental science degrees, which often includes trips to a variety of different countries and world regions given those who study environmental science the opportunity to experience habitat, climate, land formations and societies. Also, one is expected to spend a fair amount of time in the laboratory learning how to carry out different types of tests and analysis. In addition, students often undertake compulsory optional work in an environment-related role, which provides valuable experience to prepare them for future environmental science careers.

Interested in how best we can manage our environment, given the pressures that threaten its future and the design of more sustainable practices and use technology effectively, then The B.Sc (EM) is a MUST for anyone with an interest in this critical subject. Students shall explore the complexities of the natural and built environment; how our activities influence them both; and how they influence what we do, whether at home, in communities or in organizations. This interdisciplinary degree combines aspect of pure sciences, management, technology and social sciences to help students understand the environmental systems in which we live and work, and how we can improve the way we act within them. They shall gain the knowledge and skills needed to understand management of local, national and international environmental problems more sustainably as well as developing their analytical, design, and systems thinking skills.

Justification of B.Sc (Environmental Management) Programme

The global environmental realities and issues today, and the roles Nigeria is playing underscore the importance of this programme. The carbon credit and environmental threats that Nigeria and African Nations face as a result of susceptibility to natural upheavals speak to the need for this programme. These have social and economic implications. The programme, if allowed to be run in our universities undergraduate level, will increase the pool of persons in Nigeria who are qualified to contribute to the social and economic competitiveness of the country. The B.Sc (EM) shall develop broad and specialist skills that are in demand from government and regulatory bodies; the private sector, consultancies, conservation organizations and academic institutions. Careers directly related to the degree shall include;

1. Environmental Education
2. Planning and Sustainability
3. Environmental Management and Consultancy

4. Water Quality and Resources Management
5. Pollution Control
6. Waste Management and Recycling
7. Energy Management.

Apart from these, Table 2 shows several areas one could be relevant and actively engaged with B.Sc in Environmental Management

Table 2: Job Prospects for Environmental Management Graduates

S/N	Private Sector	Public Sector
1	Self employed	Lecturers in Federal and State Universities, Colleges of Education, Polytechnics and Research Institute
2	Consultancy jobs (e.g. United Nations, World Bank etc.).	Energy Parastatals e.g. Power Holdings etc.
3	Oil companies (e.g. Mobil, ELF, Shell, Chevron, etc.)	Oil and Gas – NNPC, Niger Delta Development Commission (NDDC).
4	Banks (e.g. UBA, First Bank, Union Bank, Access, etc.	Water Basin Development Authority (e.g. Anambra – Imo River Basin Authority).
5	Environmental Management Firms (e.g. Environmental Impact Assessment Services, Waste Management	Federal and State Ministries as Administrators
6	Transport Corporation (e.g. Land, Air & Sea)	Local Government Administration
7	Housing Estate Developers	International Organizations
8	Lecturers in Private Universities, Colleges of Education and Polytechnics	Rural Development Authorities
9	Business/Trade/Manufacturing Firms	Urban Development Authorities
10	Oil and Gas Servicing Firms	National Commission(e.g. INEC, Energy, etc.)
11	Political Parties Secretariat Administrators	Town Planning Authorities
12	Agricultural Services and Supplies	NESREA, Water Corporation Boards
13	Information and Communication Technology Companies (MTN, Airtel, Etisalat, etc)	Environmental Management Boards (e.g. Waste Disposal, Pollution Control etc.).
14	Construction and Engineering Company Administrators	Tourism and Sports Board
15		Information and Communication Technology (Nigeria Communication Commission)
16		International Non-Governmental Organization
17		Military and Defense Organizations
18		National Space and Meteorology Agencies
19		Federal and State Infrastructure Development Boards
20		Railways, Airports, Seaports, etc.

Source: Nwadiogwu and Iyi (2015)

The Philosophy of B. Sc Environmental Management Programme

The philosophy of the programme across universities is generally hovering around the

quoted National Open University of Nigeria (NOUN) philosophy: “to produce graduate who are environmental literate, sensitive and skillful. It also seeks graduates who can make objective contributions to national development by providing solution(s) to natural and man-made environmental problems arising from environmental abuse and make the surface of the earth to be functional habitable and sustainable. The justification of B.Sc (Environmental Science and Resources Management) in NOUN is thus “the environment has become a global issue as such: -students are provided with up-to-date information on environmental trends through the programme; - students are equipped with sufficient skills in the theory and practical applications.

Challenges of Environmental Management Programme at Undergraduate Level

Up till date, few universities run Bachelor of Science degree in Environmental Management programme at undergraduate level in Nigeria as shown in Table 1. While some use the nomenclature in conjunction with other older discipline, most especially, Geography, Soil and Agriculture, some others combine it with toxicology, an aspect of Chemistry programme. Also, such respective nomenclatures, at times, are to improve enrolment in the preexisting programme or as a new field of study. Thus, the programme only exists as Environmental Management in few universities in the country. Examples include Kaduna State University, Kaduna, Igbinedion University, Okada, Edo State and Nnamdi Azikiwe University, Owerri, Imo State. Thus, it is revealed here that most private Universities in Nigeria do not run Environmental Management programme at Bachelor degree level, apart from Igbinedion University. Bowen University is probably the only university that runs the programme at postgraduate levels, awarding Masters and Doctorate degrees.

The globe seems to be plagued by a catalogue of disasters that no one can stop. Environmental management is about coordinating these efforts- investigating problems, developing solutions and working in multidisciplinary teams to get things done. Environmental Management gives you skills and knowledge to find creative responses to environmental challenges.

Environmental Management is a multidisciplinary discipline involving knowledge of various aspects of subjects that influence the environment (University of Guelph, 2020). These include biological, chemical and physical activities. In addition, it encompasses the knowledge of economics, sociology, statistics, technology, law and cultural studies. In fact, a comprehensive approach to solving environmental challenges span through every aspect of human life- including religion, occupation, language and so on.

In view of the scope complexities embedded in Environmental Management subject matter, the programme has been seen as too much-involving for it to be handled at undergraduate level. Thus, some higher institutions of learning run the programme at

postgraduate level which will enable specialty among scholars. It is not surprising that limited specialists are available to tackle the enormous environmental challenges plaguing the global community. Nwadiogwu and Iyi (2015) had lamented that it is abysmally low that only 30 out of 107 universities and other 52 degree/HND/NCE awarding institutions in Nigeria offer environmental management education.

Apart from this, another challenge facing the running of Environmental Management at undergraduate level is lack of history. Environmental Management derives its curriculum from various disciplines that have history like chemistry, physics, geography, and economics, among others. Environmental Management is a discipline of modern era which has no trace to the ancient times or men of the olden days, though, it has been in practical existence through ages (University of Guyana, undated).

Inadequate knowledge of what the discipline can achieve and what it can offer to whoever pursues Environmental Management at undergraduate level is one of the bedeviling factors that hinder its existence in most Universities, especially in Nigeria. The assumption that the contents of Environmental Management are already being taken up by those disciplines from which it derives its curriculum is erroneous. These origins are specialists in their respective disciplines and not specialists in Environmental Management. A graduate of Physics is a specialist in Physics, even if he/she talks about environmental Physics; Chemistry graduates are specialists in Chemistry and not in Environmental Management, though, they may be made to teach environmental chemistry students some courses. This same thing applies to specialists in Biology, Economics, Law, Sociology, Ecology, even when involved in producing graduates in Environmental Management; they still remain specialists in their respective diverse disciplines and not in Environmental Management. Environmental Management graduates are equipped to holistically tap relevant knowledge in these diverse disciplines to tackle environmental problems.

Benefits of B. Sc Environmental Management Programme

From the foregoing, it is evident that mounting Bachelor of Science degree in Environmental Management in universities is crucial and desirable for the following reasons:

Firstly, it is cheaper employing a graduate of Environmental Management than engaging specialists in diverse disciplines in solving multifarious environmental challenges currently ravaging the entire globe.

Secondly, more specialists in Environmental Management will be available for engagement in tackling environmental challenges which postgraduate level may not be able to produce by reasons of their fewness and also, they may not be available since

they will be trained to handle more complex and higher challenges. Nwadiogwu and Iyi (2015), in corroborating this observation, stated that Environmental Management is a necessity and a vehicle that will carry the country to sustainable development.

Offering Environmental Management education improves the level of environmental education in the global community. Environmental Management curriculum is run in such a way that the subject matter, if introduced at secondary level, as being clamored, there will be relevant hands to handle it. Nwadiogwu and Iyi (2015) and Rauen, et al. (2015), in their separate observations, revealed that Environmental Management and Control education needs to be made necessary at both tertiary and pre-tertiary levels, if the perennial challenges prevailing human natural environment would be subdued.

Recommendation and Conclusion

The entire globe is currently plagued with various environmental challenges which seem threatening to human continued existence. These challenges include flooding, climate change, loss of biodiversity, erosion, acid rain, desert encroachment, land degradation, water quality, urban pollution, waste disposal, urban heat, landslide, population explosion, slum development, to mention but a few. All these challenges need to be tackled holistically to ensure that they are mitigated, if not totally eliminated. Such approach can only be accomplished through the engagement of graduates of Environmental Management who have been well grounded in both theoretical and practical aspects of the subject matter. The comprehensive curriculum of Environmental Management enables the graduates to work with other related professionals in proffering ways of making our environment worth living in. As a result of this, universities globally, public or private, may not have the choice in this regard than to ensure that adequate resources and moral supports are given to the running of B.Sc degree in Environmental Management, if their contributions to the solution of multifarious challenges in human environment will be visible to the world. This is, apart from other benefits that stand to be benefited at local, national and international levels.

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