Environmental literacy and the emerging roles of information professionals in developing economies

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Abstract:

Environmental degradation has become a serious source of concern for contemporary society, giving rise to efforts in the way of advocacies, conferences and awareness campaigns at different levels. While information professionals in developing economies are positioned to contribute to environmental sustainability; they need to apply creativity and innovation to overcome issues like low literacy levels, poor infrastructures, political apathy of environmental information to achieve the intended goal of environmental literacy. New roles are evolving beyond mere provision of information; these include information professionals as change agents, educators, electronic experts and partners to other change agents. The paper argues that information professionals could be more relevant to the needs of sustainable environment by repositioning themselves in terms of their roles in their various communities. Some recommendations made in the paper include revitalizing public libraries, training in Information and Communication Technology skills and collaboration with interest groups.

Keywords: Environmental literacy, environmental sustainability, Information professionals, developing economies.

In nature there are neither rewards nor punishments—there are consequences.

Robert G. Ingersoll (1833 - 1899)

Introduction

From local to national and global news lines, the information that filter down to the world population are grim stories of environmental challenges and evidences that all is not well with our earth. These happenings leave nobody in doubt that drastic efforts are needed to halt or alleviate some of these problems. Advocacies and summits have been carried out in the past and present at different levels and by different forums on environmental protection and management. International concerns about the declining quality of the environment especially on issues relating to scarcity of natural resources are on the increase (Ijatuyi, 2005).

UNEP (1989) and Oyesola (1995) documented that contemporary international concerns began with the United Nations Conference on the Human Environment in 1972 in Stockholm. This continued with efforts in the eighties with the World Commission on Environment and Development (Brundtland Commission), through to the nineties with the Earth Summit Conference (Rio Conference) this later culminated in the publication of Agenda 21 in 1992. In this conference, environmental issues were given a place of prominence in the process of sustainable development (Francis 1996). In December 2009, the parties of the United Nations Framework Convention on Climate Change (UNFCC) met in Copenhagen, Denmark to renew the climate protocol in preparation for the expiration of the 2012 Kyoto Protocol aimed at preventing climate changes and global warming.

These are sincere efforts; however governments in developing countries need to be more aggressive at different levels to make the goals and resolutions of these forums realizable in the long run. Grassroot orientation is required to provide the right level of sensitivity that will build a world population that is ready to relate more positively with mother earth.

Factors like low literacy levels in developing countries, poor infrastructural/ technological development and insufficient political will to uphold policy issues are some of the challenges information professionals in developing economies have to cope with. These professionals require innovative methods if they want to create an impact in their societies.

Sustainability - The Goal

The Millennium Development Goals have environmental sustainability as one of the eight goals. This is in recognition of the poor state of health of the earth brought about by industrialization and unhealthy human activities. Some of the effects of poor environmental management include erosion, decline in biodiversity, global warming, food insecurity, health problems, climate change, drought and desertification. The Atmospheric Radiation Measurement (2011) revealed that severe deforestation has reduced original world forest area from 6 billion hectares to about 4 billion hectares. This has affected the world carbon sink, contributed to global warming and reduced the biodiversity component of the earth. Figure 1 indicates some environmental trouble spots in the African Continent (Collins, 2010).
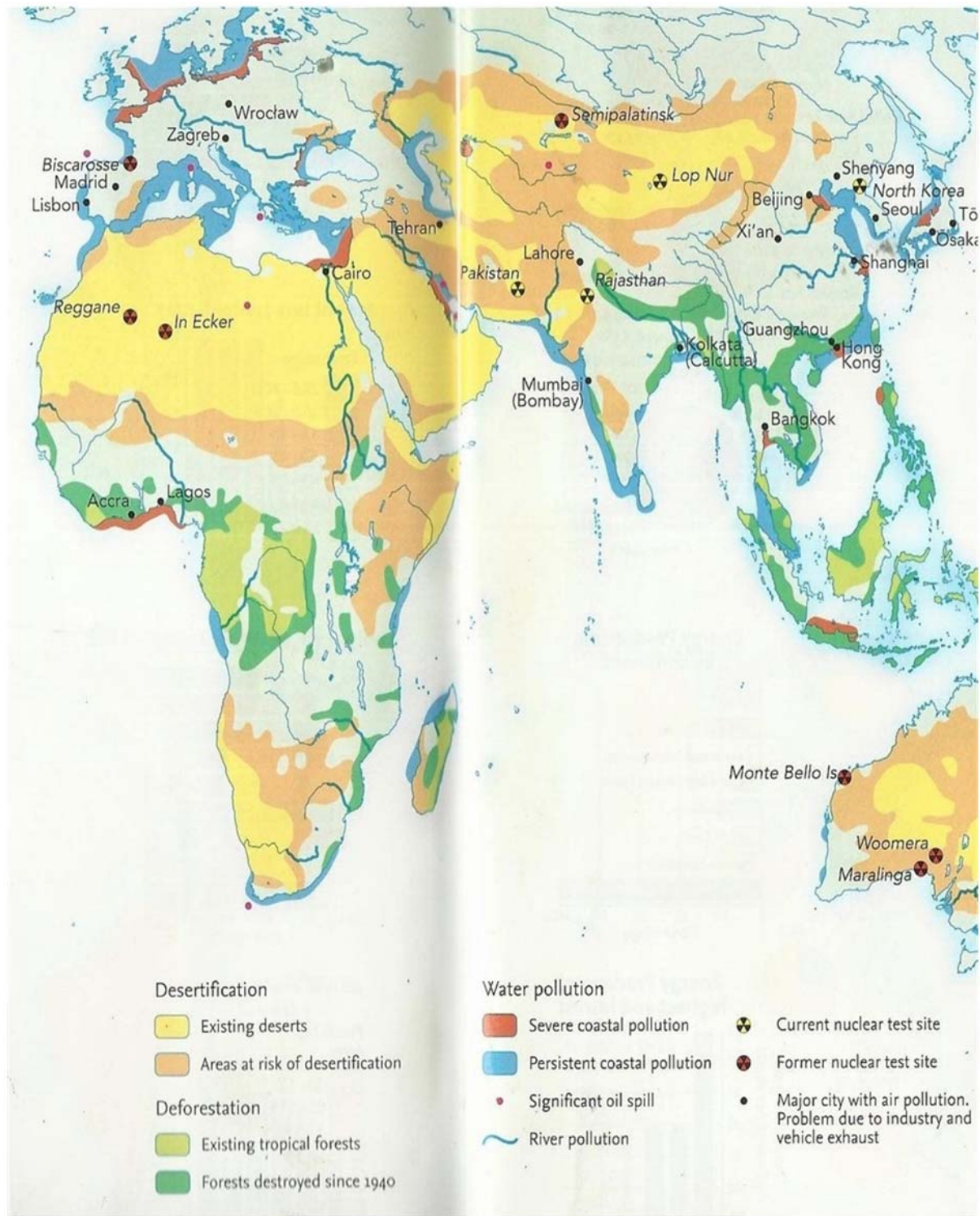
Figure 1: Threats to the Environment

Source: **Collins Senior Secondary Atlas (2010).**

The term "sustainability" has a wider scope than is usually applied to it. Newport, Chesnes, and Lindner (2003) presented a picture of sustainability as a tripod comprising the

environment, economic development and social equity. Sustainable development can only be achieved through an interaction of the three components rather than the continuous emphasis on the environment at the expense of the others. Brundtland Report captures these three components within a unifying picture by stating that sustainable development is the development, which meets the needs of the present without compromising the ability of the future generations to meet theirs. (Mortensen, 1998).

Environmental Literacy

The terms "environmental literacy", "ecological literacy" and "environmental education" have been used interchangeably. However, environmental literacy can be perceived as a goal of environmental education while ecological literacy relates to an individual's intimate knowledge of a specific ecosystem. Experts have defined environmental literacy in various ways. Miller (2010) defined environmental literacy as the ability to recognize that one's choices impact the environment; to identify the most sustainable solution to a problem; and to be able to act in the most environmentally friendly way on that solution. In the same vein, Disinger and Roth (1992) defined it as "essentially the capacity to perceive and interpret the relative health of the environmental systems and take appropriate action to maintain, restore and improve the health of those systems". Carnegie Mellon University (2003) and Disinger and Roth (1992) clarified that action, not just a literacy of "knowing" but one accompanied by observable behaviours is a distinctive quality of environmental literacy.

Imparting information literacy is a traditional role for librarians and information professionals. Information literacy refers to the set of skills required to find, retrieve, analyze and use information. According to Hancock (2003) information literacy enables individuals cope with information explosion and disinformation and enhances their ability to make informed decisions. Environmental literacy is therefore one of the many literacies and is required by individuals to manage their environment. Some of the areas (Briggs, 1998) environmental information is needed include:

- highlighting environmental problems and issues of concern;
- identifying 'hot-spots' and places in need of special and even urgent attention;
- raising awareness on the environment;
- informing the public, other actors and stakeholders;
- providing a baseline for debate;
- meeting statutory requirements for environmental reporting and
- helping to set sustainability targets and goals.

David W. Orr who coined the word ecological literacy stated that "institutions that purport to improve minds" have a central role to play in correcting the disorder in the ecosystem which is a reflection of a prior disorder of the mind (Wikipedia, 2011). The Tbilisi Report of 1977 and the UNCED's Agenda 21 expand on the theme of "education, public awareness and training" in relation to sustainable development (Palmer and Neal, 1994). One of the good reasons why environmental education should be sustained as explained by Campaign for Environmental Literacy (2007) is that environmental education when incorporated into the curriculum improves students performance in the sciences and other core subject areas, since students are able to link classroom experience to the real world. Also that contemporary business leaders consider an environmentally literate workforce critical to business success and profitability since sustainability, economy and efficiency are fundamental to the growth of enterprises in the present day.

Reynolds *et al.* (2010) identified three ways of reinforcing environmental sustainability on campuses. Citing Orr (2004) they opined that the campus itself was a powerful form of pedagogy, a "hidden curriculum" which can foster better appreciation and understanding for the environment. This is through the practice of sustainable technologies or "greening operations" in the way of architectural designs, waste management, renewable energy generation and use of energy efficient lighting. A good example is the use of solar energy lighting in the Federal University of Technology Akure, Nigeria. Also mentioned in Reynolds et al (2010) is offering environmental or sustainability studies as major or minor programmes. This has been adopted by universities and colleges such as University of Adelaide, University of Lancaster and University of Ibadan. Finally, introducing it as a basic competency course across the curricula for all students creates far reaching positive effects such as an improvement on responsible environmental behaviour and other variables such as locus of control, environmental responsibility, intention to act, perceived knowledge of environmental issues and perceived knowledge of and skills in using environmental action strategies (Hsu 2004).

Cunningham and Cunningham, (2010) put forward some other methods of carrying out environmental education as : organizations engaging in teaching in schools, people carrying out internships in agencies or environmental organizations and citizen science projects involving ordinary people and established scientists. Another model discussed by Rowe (2002) is integration of a sustainability paradigm into the mission statement of higher institutions. All these are practical methods that can succeed only if supported by a sound information base.

Information access, provision and management and the developing economy

Providing citizens of developing countries with access to information has quite different challenges from that faced by the more developed countries. Poor literacy rates are a major challenge to information access in developing economies. UNESCO (2008) confirms that:

> "More than three-quarters of the world's illiterates live in only fifteen countries, including eight of the nine high population countries (E-9): Bangladesh, Brazil, China, Egypt, India, Indonesia, Nigeria and Pakistan. In most of the fifteen countries, adult literacy rates have improved since 1985–1994, although continuing population growth translates into increases in absolute numbers of illiterates in several countries (e.g. Bangladesh, Ethiopia, Morocco). Adult literacy rates below 50% persist in several countries of South and West Asia, and sub-Saharan Africa."

The implication for these information professionals is that they must submit to Marshall McLuhan's proposition that "the medium is the message". Since information provided in print form will serve only a limited percentage of the population, information must therefore not only come in visual and audio forms, but must also be presented in local languages if the goals of universal access must be achieved. The issues are made worse by the fact that public libraries that are the most accessible to the generality of the population almost do not exist as functional institutions in a country like Nigeria at the moment (Abdulkarim, 2010; Opara, 2008 and Nwokocha, 1998). Governments are more engaged in managing political instability, unemployment and insecurity than in supporting such facilities, thus poor funding has become the lot of these structures, which now exist as mere shadows of themselves. Ironically, investment in education and by extension libraries is one of the most feasible panacea to social problems.

Energy or power supply is also a major barrier to full exploitation of the privileges of Information and Communication Technology. It is a universal fact that ICT has revolutionized the way information is utilized, which is what globalization is all about. However, because there is need for power to drive the wheels of technology, advantages of ICT are still not absolutely harnessed to bring about desirable changes in developing countries. Catching up the pace of technological advancement puts most developing countries behind the line.

The essence of information literacy which is basically to build an informed citizenry is yet to be enjoyed in developing economies because of these challenges. This has implications for the skills, competencies and roles expected of information professionals engaged in environmental information literacy.

A Definition of Roles

Traditionally, librarians and other information professionals served solely as custodians of knowledge, however present day realities require greater professionalism, creativity and innovation. This is because the existing matrix presents users who are well informed, who know what they want and will go for nothing less. ICT has also widened the available options. Change is therefore imperative for information professionals who want to survive.

In addition to this, environmental information is characterised by certain attributes that pose challenges to researchers, educators, information professionals and other individuals engaged in its use. Primarily, it is inter- and multidisciplinary and complex in nature cutting across so many other fields and concerns (Dosa, 1974 and Francis, 1996). Other attributes of knowledge in environmental information are that it is:

- fragmented and scattered in nature;
- subject to value judgements because of its highly emotive nature;
- expansive in vocabulary growth (new usages and colourful language such as eco-friendly, eco-consumer, eco-efficiency, greening and so on) and
- dominantly localised.

Land (2011) supported this view by pointing out that the challenge for higher education is to exploit the rich and diverse expertise of other disciplines to enhance environmental curriculum and programming. These are some of reasons that inform a change in the role of information professional who would be relevant to the Millennium Development Goal of Environmental Sustainability.

A discussion on the role of librarians in the information society can be explored in two directions. Firstly, in terms of the prevailing and changing situations in the different library types and their various user groups or according to the general overriding trends experienced in information environments. This second method is adopted in this paper.

The Information Provider

Armstrong (1971) in a report identified the role of the library in environmental education in terms of creating a special collection of materials including fiction, non-fiction and audio-visual resources and creating a pleasant and conducive environment that will attract users. As an intermediary, librarians and information professionals not only select and acquire information resources relevant to the needs of users but also manage information explosion

and overload through bibliographic control. This becomes especially necessary in the light of the multi-disciplinary nature of environmental information. Nuhu (1994) observed the gap in information provision to the rural and non-literate communities in northern Nigeria. This implies that information professionals in such communities also necessarily have to repackage information to widen access to information.

The Change Agent

Bhatti (2010) discussed the librarian as a change agent with the responsibility of providing relevant materials in various formats with the intent of attitudinal change. Theme-based exhibitions and displays also have a potential to pass on powerful messages to their audience. In the health and agricultural sector, extension work is a well-developed method of community awareness and information dissemination to societies with poor literacy levels. Librarians have the potentials to work closely with extension workers in community information services in rural communities (Aboyade, 1987 and Aina, 2006).

Information Professional in Partnerships

Sharing of resources and ideas by libraries through partnerships and collaborations is a role that is taking on newer dimensions. The information manager may collaborate with interest groups and stakeholders in environmental information. Such groups include government, non-government and community-based organisations, volunteer groups, mass media and other change agents. Collaboration exists through organizing and participating in conferences, documentation, exchange of ideas and facilities amongst others. Since team leadership and collaborative skills are required in the management of consortiums for collection development, resource sharing and networking have expanded the roles and responsibilities of today's librarians. Indeed, academic and research librarians have realised that this is most practical way to widen user access.

The Electronic Resources Expert

Information technologies have created new roles for librarians as electronic-resources expert (Rowland, 1998). The management of online catalogues, bibliographic databases, e-journals, Web 2.0 technologies and other internet resources is a role librarians must play to enhance access. Subscription by libraries to e-resources such as OARE (Online Access to Research in the Environment), and AGORA (Access to Global Online Research in Agriculture), AEER (Applied Ecology and Environmental Research) and EBSCO Host has assisted librarians in the role of providing high quality environmental research material in these days of poor funding, consequently extending their roles. According to Troll (2001),

> " libraries become publishers when they digitize collections, host journals that are 'born digital', or assemble student or faculty works online. Librarians become politicians when they lobby faculty not to sign away copyright to a print publisher, who then requires them or the library to pay for use of their own works."

These reflect some roles that come with change and the information society.

The Educator

Another role librarians need to emphasize to maintain their relevance is their reference and teaching role. While the situation of information users in developing economies is changing

from an extreme of information scarcity to one of overload because of the influence of ICT, librarians from the smallest library to the largest are burdened with the responsibility of creating independent and lifelong users of information. The basic information literacy skills they impart on library users will ensure that users of environmental information will not only be able to find and use information, but also be able to evaluate the information retrieved and ensure that it is satisfactory and actually useful. The implication is that in such socially relevant areas of education like citizenship education, gender studies and environmental education that have lifelong value, the librarian needs to equip the user to cope with changing technologies and methods of information retrieval. For instance, Web 2.0 has changed how information is presented and utilized today, yet cumulative experience makes it a challenge that can be accommodated by the IT literate. This is actually what information literacy is about – learning how to learn.

CONCLUSION AND RECOMMENDATIONS

Sustainable development is a collective responsibility. Since information professionals are strategically positioned to influence behaviour at different levels through information, awareness creation and education, the onus lies on them to contribute to building and maintaining an environmentally literate citizenry. Of significant importance is the plight of the illiterate population most of which are in developing countries and who have little access to information.

The goal of environmental literacy goes beyond merely being custodians of information and calls for information professionals who are sensitive to the needs and characteristics of their environment. This is why contemporary professionals are evolving as active change agents, educators, and electronic experts who are ready to work with other sectors of society to create healthier environments.

This paper recommends the following towards improving the activities of information professionals engaged in environmental literacy:

- Information professionals should exploit a variety of techniques or methods in their efforts to achieve better access to environmental information especially to the illiterate populations through repackaging, seminars, exhibitions, social media and awareness activities.
- ICT has contributed to changing roles, this implies that information professionals must develop skills that will enable them manage electronic resources. Training schools must consistently update their curriculum to reflect the changes, since these inform the roles. The consciousness of change as a reality of the times and its management should be incorporated into the training of present day information professionals.
- Training schools should incorporate competencies like background courses in environmental studies, management (to enable information professionals cope with the complexities of collaboration) and repackaging skills among others into their programmes.
- Reviving public libraries through investment of both capital and competent manpower will ensure greater grassroot involvement and interest. Government and non-government organizations should set up an urgent action plan to restore public libraries to their pride of place. Community information services (CIS) have the potentials to contribute to wider access to information and should be deployed to environmental information dissemination in rural areas

- Greater collaborative activity is called for in information service. Collaboration or partnerships with interest groups in environmental concerns should come in the way of organizing conferences and workshops and participating in think tanks. This will make interactions more robust and effective.
- Centres of excellence are being established in many strategic areas like gender, community health and conflict management as well as environmental research. Many more should be established in the area of environmental management; however, librarians and information professionals must be given a prominent position in these centres because of their distinctive competencies in information management, research and documentation.
- Information professional must emphasize acquisition of local content in the provision of environmental information to their target groups.

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Finding effective new ways to retain traditional service values in this dynamic environment is a challenge.