



GLOBAL JOURNAL OF HUMAN SOCIAL SCIENCE
Volume 12 Issue 1 Version 1.0 January 2012
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-460X & Print ISSN: 0975-587X

Environmental Information Utilization and Requirements in Solid Waste Management Organisations

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Abstract - The study among other things investigated the availability and accessibility of environmental information on their information requirements and the sources consulted. A descriptive survey design was adopted for the study. A purposive sampling technique was used to select the sample and method produced 205 respondents that consisted of 185 policy implementers (P.I) and 20 policy formulators (P.E). A total of one hundred and forth seven cases were finally analysed which included 16 policy formulators (8% of the total sample) and 131 policy implementers (71% of the total sample). Two research questions addressed in the study were analysed using descriptive statistics such as percentage and frequency counts. The findings revealed that both the policy formulators and implementers consulted environmental – related journals and publications from international organizations such as UNESCO, WHO, UNICEF, UNDP, and World Bank. However, both the policy formulators and implementers rarely consult important government documents.

GJHSS-C Classification : Code: 050205



Strictly as per the compliance and regulations of :



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1. BACKGROUND

The concern about the quality of the environment has been heightened over the past two decades, due to the strange manifestation around the globe, which include; ozone layer depletion as a results of global warming, climatic changes and resultant health hazards. The Brundtland Report of 1987 defined the environment of man as being consisting of the natural environment (including man made landscape). Man's life relies on the environment for survival because every act of living utilizes one resources or the other from the environment either for basic living exercises or as input of production. For too long, the society has taken the environment for granted, utilizing resources rather than conserving it. This has resulted into environmental problems now calling for special attention. These problems related to soil and wind erosion, air and water pollution, and those arising from drought, agricultural activities, transport development and road building, mining and industrialization, etc.

The case for a clear understanding of the physical environment; land, water and air in which man operates can not be made too strongly, as observed by NEST (1991), because the more sound the

understanding of the environment is, the more effectively it can be put at the service of human beings. There is, therefore, a need to educate people, especially at grassroot level to be aware of their responsibility for nurturing and wisely utilizing the environment and taking urgent steps towards resorting environmental balance wherever such balance has been upset.

The interdependency of man with or within the earth's ecosystem according to Okorodudu-Fubara (1998) is obviously fundamental to human existence. It is, therefore, a must for man to live in harmony within the earth's ecosystem because the components of the earth's ecosystem cannot function in disunity. Okorodudu-Fubara (1998) further stated that, in the awake of scientific and technological advancement, man has greatly intruded on the supporting web of the environment, which has continued to threaten the very existence of man. The environment must, therefore be secured if the survival of man is to be secured, and there must be regulation of man's activities regarding the abuse of the natural environment in order to ensure a reasonably harmonious and healthy relationship with the environment. The United Nation Environment Data Report of 1994 stated that, since the advent of industrial times, human activities have resulted in the release of chemical contaminants into the biosphere and have become major agents of environmental change on global, regional and local scale. Issues such as green house effect, global warming and stratosphere ozone depletion have dominated environmental discuss in the past, and more regularly is the localized environmental pollution problem such as trace elements and organochlorine contamination which have even reached an extent which can be described as global occurrence.

Consequence upon the rate at which environmental degradation occurs and the attendant concerns at abating the rate at which the environment is being destroyed, environmental issues have assumed a global discuss. It has become a priority on the World's political and economic agenda with remarkable impact in lifestyles, investments and religion (Umoren, 1995).

In recognition of these problems, according to Okorodudu-Fubara (1998) many international conferences were held, new treaties and conventions were proposed, and the need for regulatory power over the environment at inter-governmental levels were stated

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frequently. A number of international programmes were put in place. The World Health Organisation (WHO) and the World Meteorological Organisation (WMO) began a global programme to monitor pollution levels. The United Nation Educational, Scientific and Cultural Organisation (UNESCO) also launched a major scientific programme directed towards the problems of man and the biosphere' the international conference of environmental problem held at Stockholm in June 1972 culminated into the establishment of United Nations Environment Programme (UNEP). The UNEP in collaboration with other international bodies such as the International Union for Conservation of Nature Resources (IUCN) and the World Wide Fund (WWF) for Nature have published a lot of data reports on the environment and have evolved strategies for the rational use of the environment.

The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, otherwise referred to as the Earth Summit, captured the growing consensus and dramatically accelerated the momentum for a drastic change in people's environment more than one hundred nations are trying to build environmental concerns into their planning processes and in about half of those nations substantial changes in policy and investment priorities are evident.

II. ENVIRONMENTAL INFORMATION AND SOLID WASTE MANAGEMENT PROBLEMS

The problems of solid waste management in Nigeria have been catalogued by Sridhar and Ojediran (1983), Federal Ministry of Housing and Environment (1982) and Wahab (1998). These include: lack of meaningful waste management strategy; lack of public awareness concerning waste recycling practices, economic value of wastes and the effect of improper disposal of waste both on the people and physical environment. In the same vein, Ayodele, (1997) categorized solid waste management problems into technical, institutional, financial and sustainable/human aspects. The problems identified, among others, include the inadequacy and poor maintenance of refuse vans and equipment, role conflict between state and local government, lack of continuity of governance with attendant shift in policies, structures and focus. The human/sustainability problems identified in the paper are lack of environmental awareness and poor attitude of people to waste management practices. Furthermore, as part of many problems militating against waste management practices, Babajide (1998) and Taiwo (1998) also identified lack of reliable data on waste generation. It was also observed by Okpala (1994) that waste are not really disposed of in Nigeria, but are transferred from one location to another where their nuisance value is thought to be less. Sridhar et al

(1983), Johnson (1991) and Ologhobo (1994) listed the following among other things: communicable diseases, contamination of the underground water, pollution of the landscape, urban flooding, unsightliness and odour nuisance as parts of the main environmental consequences of improper solid waste management practices.

III. THE PROBLEMS WITH SOLID WASTE MANAGEMENT

The problems with solid waste management are two fold, the attitude of the populace in embracing the culture of clean and health environment on one hand and the declining effort of the government agencies in evolving strategies to achieve same on the other hand. This therefore, raises the question on the information that is available and accessible to the environmental workers, who are involved in solid waste management. It is therefore, important to find out how information flow to the solid waste policy formulators and implementers, their information requirements, the sources they consult in order to meet their information requirements and their utilization capacity for environmental information for managing waste for a clean and health environment. Obviously, there exist a gap between the information requirement of solid waste policy formulators and implementers and their access to information presently. This seems to prevents them from effectively performing their functions of managing solid waste and creating public awareness. Environmental information on solid waste management seems rather scare for the policy formulators and implementers. This set of workers are thus incapacitated by the lack of access to information sources and the absence of information utilization capacity to enable them perform the task of managing waste and sensitizing the public on the importance for a clean and healthy environment.

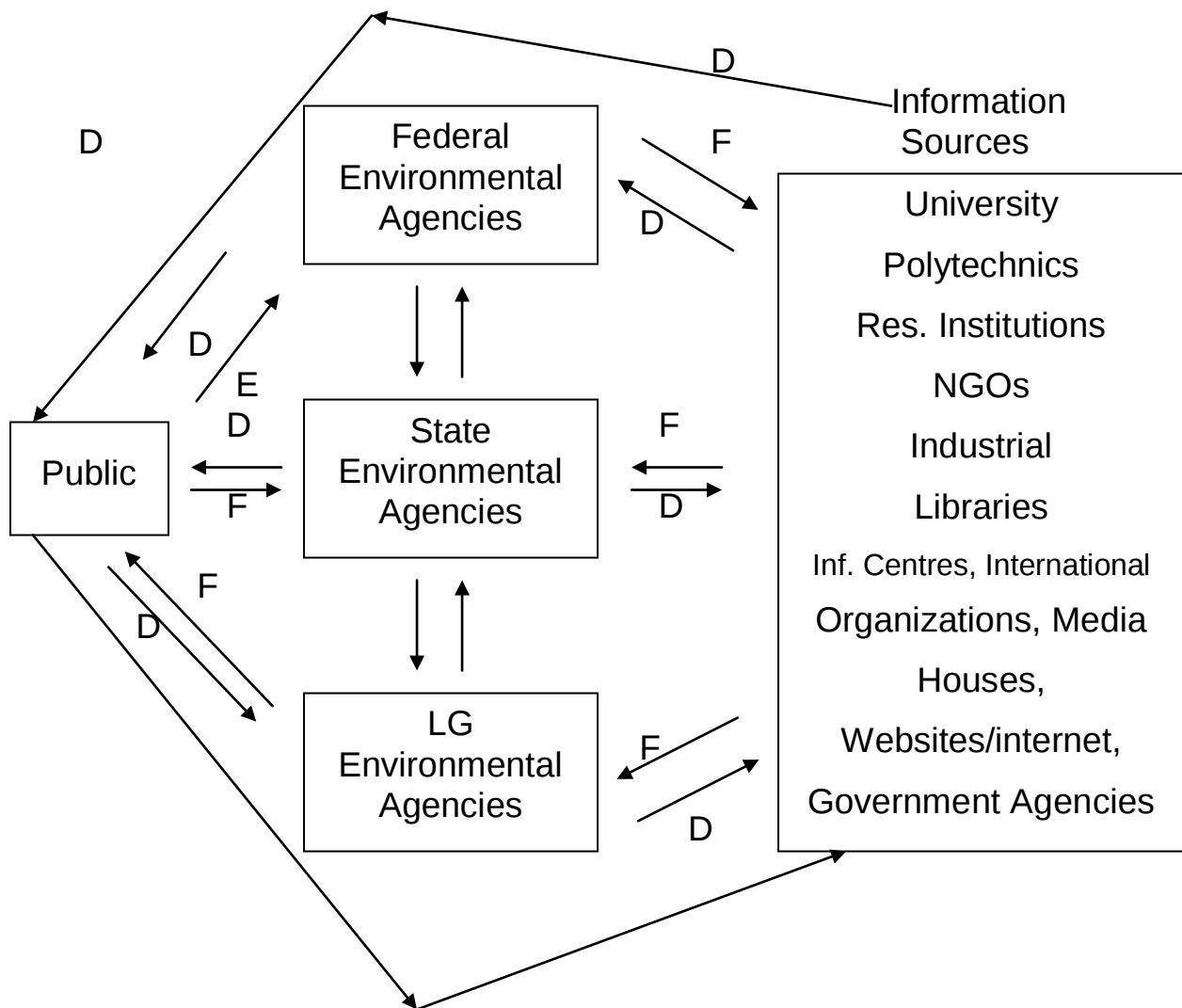
Aiyepoku (1984) in an African Regional Centre for Information Science (ARCIS) seminar series gave some sets of assumption on effort at developing indicators for the assessment of information activities. The assumption deals with the role of information.

a) *Assumptions about the role of information:*

- Information is produced or collected to satisfy societal needs at all levels, recognizing that "society" is a heterogeneous concept and that information can be misused.
- Societal needs are satisfied through various kinds of activities, each of which require information as an input. These include, for example, education, policy formulation, research and development, personal needs, business decision – making, mass communication, public goods, and private goods.
- Societal needs are also satisfied at different levels, from individuals through to global communities.

The information flowchart in figure 1 shows the pattern of information flow from the various sources available to the environmental workers at both the Federal, State and Local Government levels and the Public. It is expected that these information sources

should reach out to the environmental agencies and vice versa. The Environmental Agencies themselves are also expected to reach out to the public and assess the feedback in terms of environmental knowledge and attitudinal change.



KEY D = Dissemination of Information F = Feed Back

Fig. 1 : Information flow chart between the information sources, the Environmental Agencies (Federal, State and Local Government) and the public

IV. STATEMENT OF PROBLEM

This study therefore investigated environmental information requirements, utilization and dissemination by policy formulators and implementers for solid waste management in Oyo State, Nigeria. Essentially, the study determined the environmental information requirements and utilization of policy formulators and implementers in solid waste management agencies in Oyo State.

V. OBJECTIVES OF THE STUDY

The following specific objectives were addressed in the study.

1. To determine the information requirements of solid waste policy formulators and implementers in Oyo State.
2. To identify prevailing sources of environmental information for solid waste management availability to policy formulators and implementers.

VI. RESEARCH QUESTIONS

The following research questions were addressed in the study.

1. What are the information requirements of solid waste policy formulators and implementers in Oyo State?
2. What are the sources of environmental information available for use by solid waste policy formulators and implementers?

VII. METHODOLOGY

This is essentially a survey research.

VIII. SAMPLING

Oyo State of Nigeria was selected for this study. The state represents typical urban cities with their attendant solid waste management problems. The study therefore employed the use of total enumeration technique for the policy formulators and implementers in the following organizations. The sample consisted of 20 policy formulators and 20 policy implementers drawn from Oyo State Environmental Protection Agency (OYSEPA) and the Ibadan Waste Management Authority (IWMA) and 165 policy implementers drawn from the 33 Local Government Authorities in Oyo State.

IX. INSTRUMENT

A questionnaire was used in the collection of data for the study.

X. PROCEDURE FOR DATA COLLECTION

After the due processes of selecting the various organizations involved in the study, the researcher visited the organizations to establish the requisite functions and activities of the organizations concerned with solid waste management in Oyo State, Nigeria. The questionnaire were then administered to the solid waste as well as policy implementers in all the selected agencies. A total of two hundred and five questionnaires were administered on the respondents, however, one hundred and forty-seven of the questionnaires (which represent 72%) were recovered. The completed questionnaires were later collated and analysed.

XI. DATA ANALYSIS

Data collected from this study was analysed using descriptive statistics. This being an essentially survey study, descriptive statistics of percentages, mean, etc constituted the main procedure for data analysis.

XII. FINDINGS

Table 1 : General, Scientific/Technical, Commercial/Industrial, Legal And Scientific Information Requirements For Solid Waste Management.

TYPE OF ENVIRONMENTAL INFORMATION	POLICY IMPLEMENTERS	POLICY FORMULATORS
<u>General Information</u>	n(%)	n(%)
Proper Handling of Wastes	102 (77.9)	10 (62.5)
Data Analysis	74(56.5)	12(75)
Programme Planning	69(52.7)	11(68.7)
Innovative Approach To Waste Management	81(61.8)	9(56.3)
Administration and Supervision	78 (59.5)	12 (75)
Project Implementation	65 (49.6)	12 (75)
Information Gathering	58 (44.3)	9 (56.30)
<u>Scientific Technical Information</u>		
Design and Fabrication of Equipment	79 (60.3)	12 (75)
Landfill Management	87 (66.4)	12 (75)
Environmental Impact Assessment of Industries Concerning Waste Generation	102 (77.9)	13 (81.3)
<u>Commercial/Industrial Information</u>		
Recycling Waste for Cost Recovery	103 (78.6)	11 (68.7)
Cleaner Production	52 (39.7)	11 (68.7)

Composting / Maturing for Cost Recovery	75 (57.3)	10 (62.5)
Legal Information		
Enforcement of Environment Laws and Legislation	113 (86.3)	14 (87.5)
Acquisition of Land Fill Sites	69 (52.7)	10 (62.5)
International Agreement, Environment Tax/Pollution Tax.	70 (53.4)	9 (56.3)
Statistical Information		
Waste Generation Data	87 (66.4)	9 (56.3)
Population and Demographic Data	66 (50.4)	11 (68.7)
State of Environment Reports	83 (63.4)	10 (52.5)
Waste Management Indicator	78 (59.9)	10 (62.5)

Four categories of information requirements are presented to the two groups of respondents, the policy formulators and implementers. It could be observed from the table that both the policy implementers 86.3% and formulators 87.5% indicated that the area where environmental information is mostly require is enforcement of environmental laws and legislation. This is an indication that the two groups considered enforcement of environmental laws and legislations as their primary duties, which is just a very small aspect of solid waste management. This is followed by information requirements form of environmental impact assessment of industries, with 77.9% and 81.3% of the policy

implementers and formulators respectively indicating information requirements in this area as very crucial.

The policy formulators and implementers also indicate general information requirements form of proper handling of waste (P.I = 77.9%, P.F = 62.5%). Programme planning (P.I. = 52.7%, P.F. = 75%) and administration and supervision two groups also conformed information requirement in the area of recycling of waste for cost recovery as indicated by 78.6% of the policy implementers and 68.7% of the policy formulators.

Table 2: National and International Publications Consulted by Solid Waste Formulators and Implementers

PUBLICATION	POLICY IMPLEMENTERS	POLICY FORMULATOR	POLICY FORMULATORS			
	N n(%)	O n(%)	R n(%)	N n(%)	O n(%)	R n(%)
(a)Journals	35(26.8)	57(43.5)	39(29.8)	4(25.0)	1(6.3)	11(68.7)
(b)Conference Proceedings	59(45.1)	51(38.9)	21(16.0)	5(31.25)	6(37.5)	5(31.25)
(c)World Bank Reports	75(57.2)	40(20.5)	16(12.2)	7(43.75)	2(12.5)	7(43.75)
(d)UNEP Publications	62(47.3)	30(38.2)	19(14.5)	6(37.5)	3(18.75)	7(43.75)
(e)World Resources	90(68.7)	31(23.7)	10(7.6)	6(37.5)	3(18.75)	7(43.75)
(f)UNEP Data Reports	74(56.5)	35(26.7)	22(16.8)	8(50.0)	3(18.75)	7(43.75)
(g)OECD States of Environment Reports	71(54.2)	42(32.1)	18(13.7)	8(50.0)	5(31.25)	3(18.75)
(h)UNICEP Publications	60(52.7)	43(32.8)	19(14.5)	8(50.0)	2(12.5)	6(37.5)
(i)UNDP Publications	60(45.8)	46(35.1)	25(19.1)	5(37.5)	4(25.0)	6(37.5)
(j)DEVINDEX Africa	91(69.4)	26(19.8)	14(10.7)	9(56.25)	3(81.75)	4(25.0)
(k)FEPA Publications	53(40.4)	41(31.3)	37(28.2)	7(43.75)	3(18.75)	6(37.5)
(l)ILED Publication	72(55.0)	41(31.3)	18(13.7)	9(56.25)	2(12.5)	5(31.25)
(m)UNESCO Publications	58(44.3)	55(42.0)	18(13.7)	4(25.0)	4(25.0)	8(50.0)
(n)WHO Publications	58(44.30)	55(42.0)	18(13.7)	4(25.0)	4(25.0)	8(50.0)
(o)UNICEF Publications	48(28.1)	48(36.6)	45(34.4)	5(31.25)	6(37.5)	5(31.25)
(p)UN centre for Human Settlement Publications	73(55.7)	46(33.1)	12(9.2)	5(31.25)	4(25.0)	7(43.75)

Key : N = Never, O = Occasion, R = Regularly.

It could be observed from table 2 that environment related journals appear to be the most consulted materials by both the policy formulators and implementers consulted more publications that emanate from international organizations such as UNESCO, WHO, UNICEF and UNDP. The preference for consulting these publications more regularly, may be largely due to more current information, which they provide. World Bank Reports and UNEP publications were also policy formulators and implementers,

publications from these agencies are considered very crucial to solid waste management in particular and environmental education in general.

Apart from the publications examined in table 2, it was also considered important to examine the documentary sources of information consulted by both the policy formulators and implementers for solid waste management.

Table 3 : Other Documentary Sources of Information Consulted by Policy Formulators and Implementers.

Sources	POLICY IMPLEMENTERS			POLICY FORMULATORS		
	N n(%)	N n(%)	N n(%)	N n(%)	N n(%)	N n(%)
Technical Reports	46(35.1)	64(48.9)	21(16.0)	7(43.7)	4(25.0)	5(31.3)
Text Book & Monographs	25(19.1)	47(35.0)	59(45.0)	5(31.25)	4(25.0)	7(43.75)
Conference Proceedings	47(35.9)	55(42.0)	29(22.1)	6(37.5)	3(18.75)	7(43.75)
Manuals, Handbooks & Data Compilation	38(29.0)	53(40.0)	40(30.5)	5(31.25)	2(12.5)	8(59.25)
Directories	68(51.9)	42(32.1)	21(10.0)	5(31.25)	6(37.5)	5(31.25)
Executive Briefs	77(58.8)	38(27.5)	18(13.7)	5(31.25)	5(31.25)	6(37.5)
Brochures	77(58.8)	36(27.5)	18(13.7)	10(62.5)	4(25.0)	2(12.5)
Abstracts & Bulletins	34(26.0)	72(34.9)	25(19.1)	4(25.0)	6(37.5)	6(37.5)
Bibliographies	59(43.1)	53(40.5)	19(14.3)	5(31.75)	6(37.5)	5(31.25)
Theses Dissertations	41(33.3)	62(47.3)	28(21.4)	8(50.0)	2(12.5)	6(37.5)
State Gazettes	41(33.3)	62(47.3)	28(21.4)	8(50.0)	2(12.5)	6(37.5)
Federal Gazettes Hansard / State House of Assembly	90(68.7)	30(22.9)	11(8.4)	8(50.0)	5(31.25)	3(18.75)
Hansard of House of Representative	90(68.7)	24(18.30)	17(13.0)	5(31.25)	7(43.75)	4(25.0)
Pamphlets, Posters, Leaflets, etc	33(23.2)	48(36.6)	50(38.6)	6(37.5)	5(31.25)	5(31.25)
Consultancy Reports	57(43.5)	44(33.6)	30(22.9)	9(56.25)	3(18.75)	4(25.0)
Personal correspondence	57(35.9)	42(32.1)	42(32.1)	8(50.0)	4(25.0)	4(25.0)
Government publications	45(34.4)	49(37.40)	37(28.2)	8(50.0)	3(18.25)	5(31.25)
Private Sector Bulletins	68(51.9)	38(29.0)	25(19.1)	7(43.75)	6(37.5)	5(31.25)
Newspaper & Magazines	51(38.9)	23(21.4)	52(39.7)	6(37.5)	5(31.25)	3(18.25)

Key : N = Never, O = Occasion, R = Regularly.

It could be seen from table 3 that whereas the policy formulators indicated manuals, handbooks, data compilation and federal gazettes as the documentary sources most regularly consulted (59.25%) respectively, the policy implements on the other hand indicted textbooks and monographs as the documentary sources they consulted more regularly (45.0%). It could also be observed from the table that the environmental policy formulators consulted more regularly conference proceedings (45.75%) as against their implementers, counterparts (22.1%). Furthermore, it is evidence from the table that a great majority of policy implementers never consulted some important government documentaries such as hansard State House of Assembly (71.7%); hansard of Senate and House of Representatives (58.7% respectively). On the other hand, it is interesting to note that the policy formulators. Actually consulted these government documents more than policy implementers. Documentary sources such as brochures and consultancy reports did not enjoy

consultation by both the policy formulators and implementers on solid waste management.

XIII. CONCLUSION

First and foremost, this study has been able to show that environmental information is very crucial in pinpointing environmental problem arising from improper solid waste management. Environmental information is also found to facilitate intervention for monitoring environmental policy concerning solid waste management as well as the general formulation of environmental policies and decisions. It is also apparent from the study that the concept of information as a resource for policy formulation is becoming more popular among the policy formulators and implementers.

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