

Environmental Knowledge and Policy Sustainability: A Study of Pro Environmental Policy Support among the Southeast Nigerian Rural Communities



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ABSTRACT

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Environmental policy sustainability as part of the Sustainable Development Goals (SDGs) agenda has appeared as one of the challenges to most developing nations such as Nigeria. This inadvertently has affected (SDG) agenda in Nigeria. Although many scholars have given attention to other dimensions of socio-economic policies/natural environment, the case of environmental policy sustainability has received virtually no attention in some regions such as southeast Nigeria. The study aptly captured the context of human behavioural disposition towards environmental knowledge and policy sustainability among the rural population in southeast Nigeria in the framework of Symbolic Interactionism/Environmental Responsible Behaviour, with the support of survey data. The study involved 1200 respondents from rural communities, while data collected through questionnaire instrument were analyzed using inferential statistics. The findings show strong positive correlation between familiarity with ecological harmony and support to pro public environmental policy ($\rho = .84$, $n = 1200$, $p < 0.01$), knowledge of the natural environment and support to pro public environmental policy ($\rho = .87$, $n = 1200$, $p < 0.01$), while environmental policy sustainability can be predicted by some crucial socio-demographic factors ($p < .000$). By implication, knowledge of the operation of the natural environment and government policy approaches and dimensions should be encouraged among the rural communities in the region.

1. INTRODUCTION

One of the big differences between the higher infra sentient being (man) and the lower infra sentient beings (other animals) is, the ability to accumulate and retain knowledge. This of course sets the stage for development from simple to more complex appearance of the human beings both in material and non-material aspects. Knowledge in its own respect, apart from being documented and domicile with cultural norms and folks of a social group, can be acquired through rational, empirical, intuition, revelation or authority [1]. Whichever way through which knowledge appeared, the major interest is the implication to the whole gamut of human society. Among other things, knowledge is grouped based on the recognition of the dominant phenomenon among a social group as well as a generation. While human beings in each historical epoch, are limited to the dominant phenomenon of the time and fluid interactions with others, natural phenomenon exist as *Sui generi* [the concept in Durkheim's sociology capturing the existence of social fact] to human knowledge and classifications. As such, physical environment as a natural phenomenon has existed as *Sui generi* to human knowledge of our surroundings.

The need for environmental knowledge and knowledge of the extant policies as well as sustainability actions cannot be

over emphasized in view of the value of such to healthy living and sustainable development. Equally, the negative implication of unhealthy environment has over the time surfaced among different populations world over warranting, the aspiration for environmental sustainability [2-7]. The symbiotic relationship between the natural environment and man, which reinforce the healthiness of the natural environment as well as the carrying capacity to sustain man, has been certified through empirical substantiation as the unseen conduit for sustainability [8]. However, the knowledge of this among the human populations across the globe and historical epochs seems to be inconsistent and heterogeneous with some incompatibilities in the quest for global environmental sustainability agenda. From as much as global climate change disasters, to some environmentally induced epidemics, unhealthy environment has proven to be anti-human existence and therefore, calls for the knowledge and consciousness of the human existence for sustainability of the symbiotic relationship between man and the natural environment for the protection of the natural environment by man and a sustainable carrying capacity of the natural environment [9, 10].

Meanwhile, environmental literacy captured in this study as generic concept for environmental knowledge, ecoliteracy and ecological literacy [11-14], is pointing to the disposition of the

human agents across the classes in the society, to the understanding of the physical and natural environment including other living things in them for ecological harmony [15]. Equally, ecological wisdom as encapsulated in the whole gamut of environmental knowledge, is the trajectory for human comprehension of the surrounding environment, socio-ecological harmony, effective knowledge and application of environmental consciousness, and guiding principle for sustainable environment and development [16, 17].

The knowledge and attention to the healthiness of the natural environment, which almost became salient from the early part of 19th century, surfaced not as new phenomenon but a phenomenon that has been in existence but unpopular to some segments of the human population world over because of the extent of human knowledge across historical epochs. However, the relevance of the knowledge and understanding of the natural environment in the sustainable development agenda eventually highlighted the inalienability of environmental knowledge in the sustainability of the planet earth. The relevance of environmental knowledge can be observable on the ability and capacity it creates among a population to sustain the healthiness of the natural environment covertly and overtly. By implication, beyond policy persuasion, the knowledge of the natural environment and how to save it from pollutions can empower the inhabitants to be instrumental in keeping the natural environment from destruction and hence, pro environmental policy behaviour. Equally, the understanding and sustainability of the natural environment prepares the ground for sustainable development, which is obtainable via individual and collective environmental consciousness in their socioeconomic activities. Studies have proved that knowledge of the natural environment can positively affect pro environmental behaviour [18-20]. As a matter of fact, policy design and implementation cannot be possible without the proper knowledge of what the policy seems to be protecting for, among the population in question. This has been equally proven by a number of empirical investigations on the causes of anti environmental behaviour obtainable among a segment of the population [21-24]. One of the facilitating factors to successful public policy administration among the developed nations has been the average level of enlightenment among the population, which enables the general public to understand the phenomenon in question and their obligation towards same beyond moral and amoral disposition towards the natural environment [25-29].

Sustainable development which in itself, is the development of the present without harming the future generation, within the domain of environmental sustainability, is obtainable through environmental literacy, especially among the urban and rural dwellers who are fast depleting the natural resources for socioeconomic sustainability. This of course will build a consistent environmental value that will eventually scale back the extent of damage to the lithosphere, hydrosphere and the atmosphere. Sustainable development as a matter of policy and human behavioural management is embedded in the ability of the government of the day to compel the citizens on the path of environmentally harmless socioeconomic development practices [30]. This is obtainable in the use of empirically generated information on the relationship between man and the natural environment by the government in making and implementing public policies. In the absence of sustainable environmental policy, sustainable development agenda will be scuttled among the population. However, the inclusion of the

populace in the public policy process through public enlightenment on the aspects of the policy and the implication to the average citizens will pave a way for a successful public policy design and implementation. This is obtainable as it concerns environmental and sustainable development policies, which go together in the general concept of sustainability [31-35].

Among the developing nations in the sub-Saharan African region, environmental policy is one of the late entrants into socioeconomic sustainability agenda [36, 37]. This is not unconnected with their colonial and other socioeconomic and political histories, which portray the region as epitome of instability in the socioeconomic and political outfit. While the socioeconomic and political histories of the region project a somewhat system with non indigenous policy agenda, the corrupt system of government emanating from their colonial histories eventually translated to policy instability and inconsistency [38, 39]. This of course has reflected on the outlook of their approach to environmental sustainability policies, which across the region lacks indigenous taste as well as home-grown empirical evidences in the policy making and implementations. One of the faultiness and evidences of laxity in the environment and sustainable development policy in this region of which Nigeria is involved, is the covert isolation of the poor masses in the policy development and implementation processes [40]. This as antithesis to sustainable development goals and modern civilization has generated interest from the scholarly community in the quest to unravel the challenges to United Nations' sustainable development goals among the developing nations through sustainable environmental policy.

Environmental policy in Nigeria since 1988 has appeared in different dimensions, levels, stages and contexts. While this policy has appeared to take care of the different dimensions of the natural environment such as the lithosphere, hydrosphere and atmosphere within the Nigerian geography [41], levels of policy design and implementations have included the federal government, state governments as well as the local governments across the nation. Equally, there are stages through which the environmental policies in Nigeria has reached the present stage such as, the colonial era of environmental policy, the post colonial era of environmental policy and the current stage of environmental policies in Nigeria. While each of these stages has its peculiar circumstances, there are a number of implications of these to the gamut of the ongoing environmental policy processes and implementations among the population. For instance, the colonial environmental policy wherever it existed in different parts of Nigeria, lacked the substance of indigenous pro environmental interest as well as popularity among the population as they exclusively served the interests of the colonial agents. Equally, the postcolonial environmental policy framework in Nigeria lacked the substance of empirically generated information as well as domineering circumstances among the population. More importantly, in the current historical epoch, environmental policies in Nigeria are hugely dependent on the foreign induced models, which are developed with empirical information generated from alien contexts, while the implementations follow the trajectory of colonialists and the colonized relationship between the government and the population. The contexts of certain environmental policies in Nigeria have towed the trajectory of the on-the-spot situation, capturable through environmental impact assessment, lacking a sound and testable empirical

knowledge capturable in behavioural and policy models.

According to the annual report of the Yale Centre for Environmental Law and Policy, Nigeria was one of the nations with poor environmental performance at the bottom of the list (151) with the score 31.0. According to the study, the policy objectives for the study focused on environmental health, ecosystem vitality, while the issue category included in the study were air quality, sanitation, drinking water, heavy metals, waste management, biodiversity/habitat, ecosystem services, fisheries, climate change, pollution emissions, agriculture and water resources. In general, high scorers in the environmental performance index (EPI) exhibit long-standing policies and programs to protect public health, preserve natural resources, and decrease greenhouse gas emissions. The low EPI score of Nigeria indicates the need for greater attention to the spectrum of sustainability requirements, with a high-priority focus on critical issues such as air and water quality, biodiversity, and climate change. According to CO₂ emission distributions, Nigeria shows cumulative of 86,694,435t, 0.48t per capita and 95.3 t/km² CO₂ intensity [42].

Beyond the dimensions, levels, stages and contexts of environmental policies in Nigeria, the overall disposition towards the environmental policies among the population is an inalienable empirical investigation to be carried out for the understanding and reinforcement of sustainable environmental policy as well as sustainable development. This is required in the guide of behavioural models plausible in the context of human behavioural exchange between the individuals and the public institutions as well as between the elites (policy makers) and the poor masses. These as captured in the symbolic interactionism model and environmental citizenship models offer with projection, the understanding of the possible and covert exchange that take place in the fluid atmosphere of socioeconomic policies in the social system.

A number of studies have focused on the covert relationship that exists between the population and the public environmental policy [43-45]. However, there is yet to be information on the epistemological premise to pro environmental behaviour as well as factors to public environmental policy sustainability such as policy support, commitment to the protection of the natural environment as well as owning environmental protection responsibility among the population in the southeast Nigeria. While some factors such as education, age and occupation have been tested in relationship with pro environmental behaviour in different parts of the world and southeast Nigeria, environmental knowledge in its multiple dimensions with the aforementioned factors can create a platform for epistemological premise to pro environmental policy dimensions such as policy support, commitment to environmental protection as well as owning environmental protection responsibilities as this study verified in southeast Nigeria. Specifically, the study aims to answering the following research questions

- a) What is the relationship between environmental knowledge, familiarity with ecological harmony and support to pro environmental policy among the rural dwellers in southeast Nigeria?
- b) What are the predicting factors to pro environmental policy support among the rural dwellers in southeast Nigeria?
- c) What are the predictors of owning environmental protection responsibility among the rural dwellers in southeast Nigeria?

2. THEORETICAL FRAMEWORK: ENVIRONMENTALLY RESPONSIBLE BEHAVIOR (ERB) AND SYMBOLIC INTERACTIONISM

The Environmental Responsible Behaviour (ERB) as was proposed by Hines, Hungerford and Tomera, argues that possessing an intention of acting is a major factor influencing human behavioural response towards environmental matters. According to the model, intention to act, locus of control (an internalized sense of personal control over the events in one's own life), attitudes, sense of personal responsibility, and knowledge critically determine the possibility of someone acting in a context or not. This has been established by a number of studies on environmental behavior and policy elsewhere [46, 47].

Environmental Responsible Behaviour engages in the identification of the possible factors that likely bring individuals into action towards environmental protection demands. According to ERB, the internal locus control has a very considerable impact on the intention of acting, which determines an individual's ERB substantially. According to a number of studies, knowledge of public policy as well as the impact of human socioeconomic activities have scarcely translated to pro policy defense behavior among some population. Rather, a number of studies have shown that beyond knowledge, certain factors such as willingness to act, really played a role between knowledge and action. In view of the relationship between the control centre, attitudes of individuals and their intention to act, ERB proponents maintained that the control centre directly affects an individual's attitudes which can lead to an improved intention of acting and improved behaviour. According to Akintunde, ERB model concentrates more on existing interactions between parameters that influence a person's behaviour than on the singular impact of a single variable.

Meanwhile, Symbolic interactionism, rooted in the work of George Herbert Mead, appeared among social scientific theories designed to explain the interactions that take place among the population in the society in a number of factors such as social policies. Among other things, the theory is focused on the individual behavioural response towards the everyday social interactions that characterizes the social system. Rather than introspective approach to the understanding and characterization of the individual behaviour in the social system, which was dominant among the social scientists of his time, Mead took another strand, focusing more on the pragmatic understanding of the ongoing social interaction in the society involving, the careful observation of the stimuli to the individual action in a specific context rather than blanket summary of the individual behaviours as sui generi to time and context.

Peculiar to pragmatism (the root of Mead's social interaction theory), compared to other philosophical roots of other social scientific theories explaining individual action in the social system is that, pragmatism is founded on four dominant principles informing its belief about social system and human behaviour. Among these principles are, "truth and reality do not exist out there in the social world but are created by the ongoing human interactions"; "knowledge of the social system is based on the experience of what has proved useful to the individual members of the social system"; "the definition of social and physical object in the system among the individual members of the social system is informed by the importance of such to them" and, "the understanding of the

actors in the social system is a subject to understanding what they actually do in the social system". As such, Mead goes further to postulate that the social whole, proceeds the individual mind, the possibility of self-conscious individual outside a social group is in doubt, and that the social group leads to the development of self-conscious mental state. From the pages of current literature on policy and environmental protections, there are evidences of heuristic knowledge and subscription to public policy on the ground that such has practically worked. More importantly, researches have proved the workability of public policy when designed and implemented with efforts to carry the population along.

Dominant in the Mead's symbolic interaction theoretical framework are what he characterized as the four stages of the "act". Among these are the impulse, perception, manipulation and consummation. While the impulse in Mead's theoretical parlance points to the individual's reception and internal response to social stimuli, perception in the same line, points to the fact that when the internal human thinking process receives external social stimuli, there are options in responding to these stimuli and the individual in question will be compelled to search for the nearest possible option for him in responding to the stimuli. This is what Mead classified as perception. More so, the next line of action is what Mead called manipulation, which in itself, is the possible physical effort informed by the skill and ability of the individual in question, in handling the outcome of the impulse and perception of the social stimuli. Specifically, at the stage of manipulation, the individual much as the hungry man will be sceptical about the clinical hygiene associated with a particular food item for safe consumption for instance, weighs the best practices and personal benefits, before he/she will participate in the ongoing social activity.

Finally, in the Mead's quadruple framework of analysis, the consummation points to the inner satisfaction of the individual to respond freely based on the chosen appropriate option towards the observed social stimuli. Beyond the four stages, Mead pointed out that for interaction between the individuals in the social system to take place, there is "a gesture" and "significant symbol", which facilitate this. What the individual observed at the first point of responding to social stimuli either from the corresponding individual or the gamut of the social system, informs the next line of action thus, making the social interaction an ongoing process rather than a static element. Significant symbol much like the gesture is the gesture, which elicit similar but not exactly gesture from the opposite direction in a particular context of actions. In any case, symbolic gesture facilitates the ongoing social interaction by keeping the dyadic interaction in a consistent trajectory. In the policy context, public policy which appear to be elite class phenomenon especially in the developing nations like Nigeria, elicits some level of reactions from the masses. In the ensuing exchange of interaction between the elites and the masses via public policy design and implementation, the inherent understanding of the policy objective becomes the cruising power of the policy into the socioeconomic activities of the populace. The concept of environmental pollution and its empirical reality, which elicits policy framework from the public institution, cannot be overemphasized in view of the emerging catastrophe from weakened natural environment. Environmental abuse appears at different degrees, making it more or less a problem that requires collective efforts both from policy option and individual commitment. Environmental pollution is a public policy and administrative

matter, which points to the relationship between the policy makers and the citizens in the management of the natural environment. This can be observable through the manner in which environmental pollution take place and the level of involvement of the citizens in the problem of environmental pollutions. Environmental pollution appears in two major ways such as micro and macro environmental pollution but with some fluid connectivity. While the micro environmental pollution appears as domestic and household activities by individuals and families or even a social group, affecting the health and sustainability of the natural environment, macro environmental pollution appears as large-scale activities usually on industrial scale, which affects the health of the natural environment.

More to the plausibility of symbolic interactionism and ERB theories is their capability in explaining the policy and administrative dimensions of environmental abuse/pollution in the developing nations especially in Nigeria. Although many cities among the African cities have the history of ancient cultures and empire building, the issue of attitude towards natural environment is more of pragmatic and self-paced, in different locations. Although there appeared to be some level of environmental consciousness among the pre-colonial population, which created more or less a minute environmental hygiene concern, on the sum total appearance of environmental issues in the pre-colonial and current historical epoch, the ongoing interaction in the social system really affected what came to be seen as the situation of the physical environment and sustainability. Having lacked such in the social logic framework of the indigenous people, and the empire builders cum colonialists, who ignored such in the quest for capitalist interest; environmental concern became insignificant and continue to appear as such in the subsequent individual interaction with the social system. By implication the colonial administration in Nigeria invariably did not allow for the concept of environment and environmental protection in the mindset of the citizens via government relationship with the citizens. In Mead's and Hines et al thematic analyses of the stages of human action, behavioural disposition toward the physical environment hangs on knowledge and locus of control of the individuals but can be managed through policy enlightenment and implementations. Through administrative structures, public policy design and implementation, behavioural exchange scene is created between the policy makers and the citizens with dominant sub social strand carrying in itself, behavioural expectation, which further elicits gesture from the citizens.

3. METHODOLOGICAL APPROACH TO THE STUDY

Southeast Nigeria as a geopolitical zone out of the six geopolitical zones of the federal republic of Nigeria is made up of five administrative states, which are also made up of local government areas and local communities. The local government areas are made up of rural and urban settlements however, the bulk of the local government areas are made up of rural communities. According to the Nigerian Demographic and Health Survey, the wealthiest households are concentrated in urban areas (38%); only 6% of the wealthiest households are in rural areas in southeast Nigeria. Educational attainment is higher in urban areas than in rural areas in the southeast Nigeria. The proportion of the population that has achieved any education varies among Nigeria's geopolitical regions.

The North West and North East have the highest proportion of persons with no education—seven in ten women and half of men—while the South East has the lowest percentage who have never been to school among females (18 percent) and South-South among males (9 percent).

The study applied Taro Yamane formula in developing the sample size for the study. This is expressed as:

$$N = \frac{N}{1 + N(e)^2}$$

where,

N = Sample size

l= constant

n = sample size required

N = number of people in the population

e = allowable error (%).

From the five states in the southeast region of the federal republic of Nigeria, three states were randomly selected for the study. Within the three states selected randomly for the study, quota sampling technique was adopted to select four local government areas from each of the selected states making, a total of 12 local government areas selected for the study. Quota sampling method is only applied at the first stage to accommodate all the three states involved in the study. However, in each of the selected states, a random sampling technique was adopted other levels to select communities/villages from the list of the local government areas in each of the states involved in the study. Systematic random sampling (balloting technique) was applied to select 5 communities from each of the randomly selected states and local government areas bringing together, 60 local communities for the study. In consideration of the nature of administrative units in the southeast Nigeria, which follow the trajectory of electoral wards, communities/villages, local government areas, states and the federal government levels, the study narrowed down to the electoral wards before the selection of the households. Down to the electoral wards, the study selected 5 electoral wards from each of the selected communities, local government areas and states bringing together, 300 electoral wards for the study. From the electoral wards selected for the study, 2 households were selected, while 2 respondents were selected from each of the household using modified random sampling technique observing, the inclusive criteria to the study such as age and residency. 1200 adult males and females from 18 years and above were selected from the 600 households, 300 electoral wards, 60 local communities, 12 local government areas and the 3states from the southeast region of Nigeria, using inclusive criteria such as individuals that have at least, lived in these rural communities for 5years and more. Also, their frequency and type of occupation in these communities were considered to capture only those who are regular and familiar with these communities.

The instrument for the study was survey questionnaire developed on nominal and ordinal scales with specific focus on the indices of individuals and group interaction on environment-related issues, and predisposition to public environmental policy in Nigerian context. The questionnaire instrument designed to capture such substantial issues to the study and indices of human behavioural disposition towards the natural environment, public environmental policy anchored on the government institution charged with the

protection of the natural environment in Nigeria. While the first section of the questionnaire focused on the socioeconomic and demographic variables of the respondents, the second section of the questionnaire focused on the substantive issues to the study. The overall consistency of the questionnaire items was tested with the Cronbach alpha (7.81). However, according to item by item analysis, the reliability values of the substantive variables are: public environmental policy support (8.01) as well as owning environmental protection responsibilities (7.50). The data collected were coded and analysed using Social Science Statistical Package (SPSS version23) while the research questions guiding the study were answered with inferential statistics such as correlation and linear models.

4. PRESENTATION OF THE FINDINGS AND DISCUSSIONS

The study, which utilized information from 1200 participants in the rural settlements, was carried out among the states south-eastern federal republic of Nigeria. Due to the nature of the residential structures and arrangement in these rural communities as well as the resolve by the study to maintain 1200 sample size and other criteria such as age, duration of residency, etc., the data collection included systematic and modified random sampling technique. The following presentations and discussions are based on the data collected from the 1200 respondents who participated in the study.

Table 1. Presentation of the socio-demographic information of the respondents

		N	Percentage
Respondents gender	Male	672	56.0%
	Female	528	44.0%
Respondents age	18-23	202	16.8%
	24-29	206	17.2%
	30-35	282	23.5%
	36-41	150	12.5%
	42-47	102	8.5%
	48-53	106	8.8%
Respondents education	54 and above	138	11.5%
	Primary/Secondary	352	29.3%
	NCE/Diploma	338	28.2%
	HND/Degree	482	40.2%
	MSc and above	28	2.3%
Respondents Occupation	Unemployed	256	21.3%
	Artisan/Trader	96	8.0%
	Civil Servant	448	37.3%
	Self-employed	400	33.3%
Duration of residency	5 to 9years	224	18.7%
	10 to 14 years	256	21.3%
	15 to 19years	160	13.3%
	20 and more years	560	46.7%
Total		1200	100.0

According to Table 1 above, majority of the study participants (56.0%) are males, while 44.0% of the respondents are females. According to the age categories of the respondents, majority (23.5%) are in the age categories of 30-35 years, 17.2% are in the age category of 24-29 years, 16% are in the age category of 18-23years, 12.5% are in the age category of 36-41 years, while 11.5%, 8.8% and 8.5% of the respondents are in the age categories of 54years and above, 48-

53 years and 42-47 years respectively.

Majority of the respondents (40.2%) have acquired formal education up to the level of Higher National Diploma (HND) and first university degree; 29.3% are educated to the levels of primary and high/secondary school certifications. 28.2% of the respondents have obtained training to the level of National Certificate in Education (NCE) and National Diploma while, only 2.3% have obtained training up to the level of Masters degree and above. Among the study participants, 37.3% are civil servants, 33.3% are self-employed, and 21.3% are unemployed, while eight percent are artisans/traders. 46.7% of the study participants have lived in their areas for 20 years and more, 21.3% have lived in their areas of residence between 10 and 14years, and 18.7% have lived in their area of residence between 5 and 9years, while 13.3% have lived in their area of residence between 15 to 19years.

Table 2. Familiarity with ecological harmony, knowledge of the natural environment and support to pro public environmental policy (Correlations)

	Familiarity	Knowledge	Support
Familiarity with ecological harmony	1.000	.886**	.835**
Knowledge of the natural environment	.886**	1.000	.868**
Support to pro public environmental policy	.835**	.868**	1.000

** Correlation is significant at the 0.01 level (1-tailed).

b. List wise N = 1200

Table 3. The coefficients of support to pro environmental policies and other factors

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	Std. Error	B	Beta			
(Constant)	.403	.031			13.059.000	
Gender	-.437	.048	-.284		-9.054.000	
Age	.062	.008	.119		7.695.000	
Education	.563	.036	.645		15.760.000	
Occupation	.026	.035	.037		.738.461	
Duration of residency	-.227	.033	-.354		-6.931.000	
Awareness of public environmental policy	.270	.035	.348		7.613.000	
Public media enlightenment	.207	.037	.267		5.533.000	
Institutional quality	-.051	.022	-.056		-2.288.022	
Knowledge of the natural environment	-.122	.035	-.155		-3.501.000	
Extant knowledge of climate change	.337	.031	.446		10.997.000	
Knowledge of climate change impacts	.240	.039	.327		6.138.000	
Owning environmental protection responsibilities	-.207	.044	-.290		-4.675.000	

R= 0.950 (95.0%); R²= 0.903 (90.3%); Adjusted R²= 0.902 (90.2%); F. value= 845.566 P=.001

The relationship between familiarity with ecological harmony, knowledge of natural environment and support to pro public environmental policy was investigated using Spearman's correlation coefficient in Table 2. The result showed a strong positive correlation between familiarity with

ecological harmony and support to pro public environmental policy ($\rho = .84, n = 1200, p < 0.01$), knowledge of the natural environment and support to pro public environmental policy ($\rho = .87, n = 1200, p < 0.01$).

Table 4. The coefficients of owning environmental protection responsibility and other factors

Model	Unstandardized Coefficients		Standardized Coefficients		T	Sig.
	B	Std. Error	Beta			
(Constant)	-.033	.020			-1.640	.101
Gender	.002	.032	.001		.073	.942
Age	-.007	.005	-.009		-1.267	.205
Education	-.047	.023	-.038		-2.012	.044
Occupation	.143	.022	.148		6.404	.000
Duration of residency	.140	.021	.156		6.630	.000
Awareness of public environmental policy	.048	.023	.045		2.092	.037
Public media enlightenment	-.109	.024	-.101		-4.488	.000
Institutional quality	.088	.014	.069		6.113	.000
Knowledge of the natural environment	-.008	.023	-.007		-.349	.727
Familiarity with ecological harmony	.068	.017	.056		3.999	.000
Extant knowledge of climate change	.034	.020	.032		1.677	.094
Knowledge of climate change impacts	.678	.016	.660		41.527	.000

R= 0.989 (98.9%); R²= 0.979 (97.9%); Adjusted R²= 0.978 (97.8%); F. value= 4541.813; P=.001

Table 3 presented the predictors of support to pro environmental policy among the study participants. The predicting power of the model is 95.0% with adjusted R² of 90.2%. From the model, a number of factors appeared as positive predictors of pro public environmental policy such as, education, age, knowledge of public environmental policy, public media enlightenment, extant knowledge of climate change and knowledge of climate change impacts. Spectacular in the finding here is the position of the factors such as gender, duration of residency, knowledge of the natural environment and owning environmental protection responsibilities on the table. Although further investigation is needed, the above factors cannot be explained away from certain realities domicile with the developing nations especially in the rural communities where, public environmental policy appears in an unspecified dimensions. For instance, what an individual understands and follow as environmental policy in one locality and how the government agencies follow up may be quite different from what is obtainable in another locality. Equally, the public perception of the institution charged with environmental protection in different localities affects the likelihood of appealing to the public on environmental protection as more than one state in the region are involved in

the study. Occupation of the respondents appeared to be insignificant and non predictor of support to pro environmental policy. In essence, majority of the respondents are civil servants and this may account for the position of the occupation as a factor in the model. Equally, owing environmental protection responsibility surfaced in the model in the negative direction showing perhaps, the insufficiency of the public institutions managing environmental protection, in satisfying the expectations of the pro environmentalists in the system.

Table 4 presented the predictors of support to pro environmental policy among the study participants. The predicting power of the model is 98.9% with adjusted R^2 of 97.8%. From the model, a number of factors appeared as positive predictors of owning environmental protection responsibilities (environmental citizenship) such as, occupation, duration of residency, institutional quality, familiarity with ecological harmony and knowledge of climate change impacts. However, in the opposite direction (negative predictors of owning environmental protection responsibility), we have public media enlightenment.

5. DISCUSSIONS AND CONCLUSION

Environmental policy anywhere in the world is majorly, the responsibility of the poor masses in terms of implementations. While the development and initiation of the environmental policies at different degrees are the responsibility of the elite or rather the ruling class, the designing and implementation of such without the poor masses (the electorates) may create some level of hitches as can be found in the developing nations such as Nigeria. More importantly, the global quest for harmony in environmental protection via policies at the national and other local levels across the globe cannot be a reality in the absence of the local communities, especially the rural communities across the globe. In Nigeria, the situation is becoming clearer with the available empirical information that, the undue isolation of the poor masses in the policy generation and implementation processes is evident in the unseen botched environmental policy implementations. As a matter of importance, the present study was focused on the understanding of the implication of knowledge of the natural environment, biodiversity/ecological harmony and public environmental policy on the willingness to support the public environmental policy as well as, owning of the environmental protection responsibility among the population of the rural communities in southeast Nigeria.

Specifically, the study was designed to understand the interactions between certain factors and some basic elements of environmental policy sustainability such as support to public policy and ownership of the public policy intentions. From the major findings of the study, two layers of environmental knowledge were found to be positively correlated with willingness to support public environmental policies among the rural citizens in the southeast Nigeria. Among other things, general knowledge of the natural environment was found in this study to be positively correlated with public support to public pro environmental policies ($\rho = .87$, $n = 1200$, $p < 0.01$; see Table 2 above). In support of this finding, a number of studies have proven the relationship between knowledge of the natural environment and pro environmental behavior [48]. However, the further step taken by the current study was to probe specifically, the direct

relationship between the general knowledge of the natural environment and the willingness to support the extant environmental policy known to the population. Although there are other studies, which erstwhile proved the positive relationship between the knowledge of natural environment and support to pro environmental policies elsewhere, the novelty of the present study is found in the nature of the population of the study from the rural communities and the developing nation such as Nigeria, where such study has not been given attention. As a matter of importance, the study contributes to the ongoing literature build up on environmental, policy and rural studies.

On the correlation model table capturing the above discussed finding, is the relationship between familiarity with ecological harmony and willingness to support pro environmental policy. From the finding, there is a positive correlation between familiarity with ecological harmony and support to pro environmental policy ($\rho = .84$, $n = 1200$, $p < 0.01$; see Table 2 above). A number of studies have been carried out on pro ecological behavior [49], which showed elements of relationship between pro ecological behavior and pro environmental protection behavior. However, there is yet to be study on the direct relationship between familiarity with ecological harmony and pro environmental policy support especially in the rural communities in the developing nations such as Nigeria as this study observed earlier. The familiarity with ecological harmony or biodiversity if you like, is one of the major layers of environmental knowledge, which is often ignored or treated under the blanket of environmental knowledge by most scholars. However, as a novel idea pursued in this study, the separation of the familiarity with ecological harmony from the general environmental knowledge was to further dig into the nature of environmental knowledge and pro environmental behavior that can be found among the rural population in this part of the world, which by implication, gives a clue into the possibility of protection of the ecological balance among this population as part of pro environmental protection behavior as well as environmental policy sustainability.

In further investigation of the above factors as the study was designed to probe the hierarchical structures of the relationship of certain factors of socio-demographic information and the support to pro public environmental policy and the ownership of environmental protection responsibilities among the population, the relationship between support to pro environmental policy and other factors was tested on linear model table. First, there are factors indicated on the table as positive predictive factors to pro environmental policy support as well as, factors indicated as negative predictive factors to pro environmental protection policy. Each of the factors in their dimensions of contributions has implication to the overall understanding of policy sustainability among this population. Among the positive predictors to pro environmental policy support among the population, the model table revealed factors such as education, age, awareness of public environmental policy, public media enlightenment, extant knowledge of climate change and knowledge of climate change impacts while in the other dimension the table revealed gender, duration of residency, knowledge of the natural environment and owning environmental protection responsibilities.

While the above positive predicting factors in the model have been confirmed in other studies as positive predictors of pro environmental behavior [50], the further step in this study on such factors, is the direct investigation of the relationship

of these factors with categorical government pro environmental policies. As an innovative idea, in certain contexts, some citizens prefer a free life style in terms of how they relate to what they appreciate at the surface such that, some specific guidelines seem to be unacceptable to such people. In any case, a comprehensive guideline through policy over some phenomenon properly keeps expected behavioural atmosphere to achieve a specific policy objective. As a matter of fact, the surface knowledge of the natural environment ($b=.155$, $t=3.501$) and ownership of environmental protection responsibility ($b=-.290$, $t=-4.675$) could not surface as positive predictor of support to pro environmental policy indicating that, what may be general knowledge of natural environment may not be sufficient for someone to take proper action as the theoretical framework of environmental citizenship by Hungerford and Volk (1990) proposed. This is affirmed by the position of extant knowledge of climate change ($b=.446$, $t=10.997$) and knowledge of climate change impacts ($b=.327$, $t=6.138$) on the regression table, which appeared as a positive predictor of support to pro environmental policy. In other words, the layers of knowledge of the natural environment have an implication on the possibility of the citizens making a step towards policy observation and implementation. Salient also in this regression table is the awareness of the public environmental policy. In essence the study proved the public support of pro environmental policy a factor which has an epistemological premise and by implication affirms the same as a factor in environmental policy sustainability.

On the probe of the relationship between ownership of environmental protection responsibility (a factor of environmental policy sustainability) and support to pro environmental policy, the following factors appeared as positive predictors on the model, occupation, duration of residency, institutional quality, familiarity with ecological harmony and knowledge of climate change impacts. Studies on pro environmental behavior have pointed to the positive relationship between pro environmental behavior and environmental protection. However, narrowing down to the environmental policy sustainability indices and commitment to such was the main focus of the present study, to further probe the practicability of this behavioural display in the face of organized directives and objectives guided by policy design. As the study observed, few factors were observed as predictors of ownership of environmental protect responsibilities. Specifically, ownership of environmental protection responsibilities as it appeared in this study was designed to capture the disposition of the respondents towards the understanding that the protection of the natural environment is obligatory to every citizen in the system. Of course, the finding here is a further clarification on the possibility of sustainable pro environmental behavior and environmental policy sustainability. More importantly in the findings, occupation and duration of residency pointed to the plausibility of symbolic interaction model, which maintained that individuals tend to exchange behaviours with the obtainable in the system.

Specifically in the southeast Nigeria, there are some levels of divergence in the domestic environmental policies below the federal government of Nigeria overall policy design in the order of appearance and function in the concurrent list. For instance, below the federal government of Nigeria ministry of environment policy posture, the five states in the southeast region have their various sub policy structure embedded in the state ministry of environment such as ESWAMA, ASEPA, etc., domicile with the state government. As such, different

residents are facing different situations as the states across the region have some level of differences in their approach to environmental policies, which reflect on the forms policies and manner of implementations. For instance, some states in the region do have their general environmental on every last Saturday of the month while others do this once in a while depending on, the perceived needs. Equally, some states exhibit some level of consistency and coherence in approaching this while others are carefree about such. This also gives a glimpse of the relationship between institutional quality and ownership of environmental protection responsibilities among the population. In the model, the institutional quality represented the perception of the performance and relevance of the public institutions charged with environmental management among the rural population.

The findings above displayed essence of human behavioural disposition towards knowledge of the surrounding phenomenon and the institutional infrastructures designed to manage these phenomenons. While the natural environment is a phenomenon (which is sui generi to the individuals in it) the public policy institution designed to manage this element such as the ministry of environment (as can be captured in Nigerian setting), is a bunch of rules made to manage the relationship between the human inhabitants and the elements of the natural environment. As such, the key elements here such as knowledge of the natural environment, knowledge of the public environmental policy and policy sustainability are very important if the agenda of sustainable of healthy environment must be achieved. This reflected on the findings above pointing to, the plausibility of the symbolic interactionism and environmental citizenship models in the explanation of the human relational issues in the public policy context. Nevertheless, the strategic information revealed through this study is that, environmental policy sustainability among the rural dwellers in the developing nations such as Nigeria is obtainable through encouragement of the factors such as environmental policy education, environmental knowledge, knowledge on ecological harmony, public institution quality, and extant knowledge of climate change as well as public media outreach on environmental knowledge.

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