



# **Relationship between Demographic Factors and Community Participation in Environmental Education Activities in Tanzania**

**Dr. Joseph Manase**

(PhD Ed, MA Ed, BSc AEE, Dip in Education)

Department of Educational Foundations and Continuing Education, College of Education, the University of Dodoma

## **ABSTRACT**

Environmental problems such as climate change, urban wastes, and water and air pollutions have become increasingly a great global challenge. Due to this fact, literature suggests environmental education as one of the mitigating factors. This study sought to investigate the relationship between demographic factors and community participation in environmental education programmes in Morogoro region, Tanzania. It employed the partnership model by Reddy (2002) in guiding this study. Cross-sectional research design and quantitative research approach were employed. It used systematic sampling technique to select 121 respondents. Questionnaire was used to gather relevant data. Multiple logistic regression models were used in data analysis. Findings show that, there is a significant relationship between age, location, and income and education level. However, sex and marital status were found to have weak relationship with community participation in environmental education programmes. It was therefore recommended that, agencies involved in environmental education programmes should consider demographic factors as one of the environmental education intervention strategy.

**Key Words:** *Relationship, Demographic Factors, Community Participation, Environment Education*

## **1. INTRODUCTION**

Community participation in EE and conservation activities has become a global environmental concept (Kimario, 2011). It is also a tool for formulating and implementing EE projects with the belief that such projects will become sustainable (Ngwano, 2010). Therefore, community members are the important stakeholders that are supposed to participate in EE campaigns taking place in their local communities Mohammed (2010). It is also seen that local communities do differ on the way they participate in environmental education programmes due to their variation in their socio-economic, cultural and political orientations (Ahenken et al., 2008). Likewise, Anderson et al (2006) points out that, the goal of any environmental education programme cannot be achieved unless its primary stakeholder meaningfully participate in various stages of educational ventures.

Moreover, community participation is also found to have an impact in other areas. The study conducted in China by Park and Wang (2006) revealed that, China's poor village investment programme was based on participatory village planning between the China's government and households from poor villages including different groups, especially women groups. Therefore, the programme dealt with many projects; schools' construction was among them. In these projects, the poor village communities were involved through their village leaders, village committee, the main decision making body in the village and through frequent meetings of all villagers. However, the decisions and concerns of poor villagers were

considered less important, the situation that generates poor benefit to poor communities.

Globally, shared conversation, negotiation, contribution and decision making between EE agencies and community on environmental concerns is believed to yield positive influences towards improvement of respective environmental conditions (Domson, 2007). Thus, educational managers should strive for effective environmental conservation agencies - community relationship to facilitate applicability and sustainability of environmental educational programmes for the improvement of the environment. Obviously, the idea of effective community relationship with the surrounding conservation agencies is more strengthened by most World Educational Forums such as Dakar agreement (2000), whereby, most countries had addressed their national interests to give local communities power in controlling and providing education, while donors use it as a factor of acceptance to finance educational projects.

Therefore, community participation is seen as the keystone of achieving long term human development and sustainability, among its rationales is to give local communities power and authority in projects ownership to have full commitment towards achievements of project objectives (UNESCO, 2007). Therefore, despite the intensive propagation of community participation in various environmental education programmes evidence show that environmental problems, especially those

related to forest degradation and deforestation continues at a local, national and global level Ngwano (2010).

This study sought therefore to investigate the relationship between demographic factors such as age, level of education, sex, location of the community, marital status as well as income level of respondent. More specifically the study aimed at investigating how demographic factors relates to community participation in environmental education and conservation. It is also set to establish a basis for the intervention strategy.

Different empirical studies stress on the influence of community participation in various educational campaigns. For example the study by Appiah (2009) and Asamoah et al., (2007) found that communities which live near to the forests have a high dependency on the forest resources for their livelihoods. They directly or indirectly use forests as a source of food, shelter as well as energy for cooking. In this way such communities found themselves subjected to different environmental education programmes with the purpose of enabling them to use forest resources sustainably. Results by Appiah (2009) points out that, in the course of educating such communities participation in EE programmes and implementation of EE education remain the major challenges.

Furthermore, the study by Mitinje (2007) comments that, EE can become a critical solution to environmental and more specifically forest conservation if individuals in the most active age, and communities were to be educated to participate in forest conservation of the Uluguru Mountains in Morogoro. Moreover, the study by Eccles and Barber (1999) and Sherrod et al., (2002) reported that, participation in EE is linked with different attitudes among adolescents. Again the study by Flanagan and Van Horn (2001) stress on the value of involving young people especially the youth so as to boost the youth self-esteem.

Chan and Elder (1999) points out that, involvement of parents in EE programmes will be more likely to pass the same culture of participation to their children. They also insist that youth whose parents do not take part in EE programmes are less likely to participate in EE programmes. Parke and Ladd (1992) suggest that parents may play an important role in linking their children to the world around them, that is enculturing the young generation with the sense of taking part in different EE programmes. The study by Scales and Leffert (1999) and Sherrod et al (2002) identified key barriers that keep people from participating in community activities, which include lack of interesting programmes, transportation problems, lack of knowledge about the programmes, and cost among many others.

Based on the reviewed studies it can be pointed that, high community dependency on environmental resources has a high

contribution in environmental degradation. Also, parents' involvement of the youth and children in environmental education activities is assumed to have the positive impact to environmental conservation. Culture in the real sense is seen to be the factor in conservation or degradation of the environment.

### **1.1. The Partnership Model by Reddy (2002)**

In the light of this study, the partnership model by Reddy (2002) (see appendix 2) was employed to guide the study. The partnership model emerges as an alternative of Top – Down model of community participation in developmental projects. Through partnership approach, both, the EE and community work together in planning and making decision that effect long lasting results. In this model, participation of community is viewed as a means and an end process. It is regarded as a means because of being a form of mobilizing people to get things done. And an end process since its outcomes is an increasingly meaningful participation in the development process. Hence, community participation in this model is used to achieve material benefits from initiated projects or leads to social development of the people such as empowerment, ownership, and independence.

### **1.2. Statement of the Problem**

Environmental education is an effective tool for ensuring sustainable environmental management. Therefore, to address the problem of environmental degradation on the Uluguru Mountains, in Morogoro the government through various organizations both governmental and non-governmental organizations have organized EE programmes to communities and schools. Despite these efforts, the problem continues (URT, 2007, 2005). Many studies have been conducted, in addressing EE and conservation problems; however, little has been done in addressing the relationship between demographic factors and community participation in environmental education. This is because, environmental education can be made more effective if individuals age, sex, marital status, income level, education level and their specific locations are taken into consideration.

## **2. METHODOLOGY**

The Design considered appropriate for this study was cross-sectional survey design. The study employed quantitative approach with the purpose of establishing numerical facts about the relationship between demographic factors and community participation in EE programmes. The study was carried out in Morogoro Municipality whereby four wards were involved. Systematic random sampling technique was employed to draw a sample of 121 respondents (i.e.

$$K = N/Sn$$

Whereas **K**= Sample intervals  
**N** = the total number of the wider population

**Sn** = the supposed sample number required

Adopted from Mlaki (2012).

Using the above formula, the total number of households for the four selected villages was 1210; divide by the number of sample households (121) required. In that case 1210/121=10. Therefore, every 10<sup>th</sup> house was selected to form the sample. About thirty (30) households were sampled from each village to make an average of 121 respondents).

Respondents were drawn from the community, and structured questionnaire was used during data collection. Data were analyzed quantitatively whereby multiple logistic regression model for employed. That is, Logistic regression analysis was used to assess the relationship between independent (explanatory) variables and response (dependent) variables. Examination of each covariate with the response variable provided a preliminary idea on how important the variable was. Consequently, a univariate logistic regression model was fitted and variables with p-value < 0.25 were considered as candidates for the multiple logistic regression model. Statistical significance is not the only reason to keep a covariate in a model. Therefore other variables known to be important but not significant were included in the model.

Since the response variable (Community participation in EE activities) was dichotomized (Yes or No), multiple logistic regression model was used to identify demographic factors and predict the probability of success. This model belongs to a family of generalized linear model under the assumption of binomial distribution of the responses. Various link functions such as logit and probity e.t.c were found to be permissible.

Therefore:

$$\log it(\pi) = \log it(p(result = Yes))$$

$$= \log \left( \frac{\pi(x)}{1 - \pi(x)} \right) = \beta_0 + \beta_1 * Bigwa + \beta_2 * Misongeni + \beta_3 * Tangeni + \beta_4 * Age +$$

$$\beta_5 * education\_level + \beta_6 * Age * Bingwa + \beta_7 * age * Misongeni + \beta_8 * age * Tangeni$$

### 3. RESULTS OF THE STUDY

The study sought to investigate the relationship between demographic factors such as age, sex, location, level of education and income level of the respondents in the studied area. The analysis revealed that, there is a significant

Letting  $y_i$  be the binary response and  $x_i = (x_1, x_2, \dots, x_p)$  as the explanatory variables  $\pi(x) = P(y_i = 1 | X = x_i)$  is the probability of success in this case (Yes) was success. The model is thus given by:

$$g \{ \pi(x) \} = \beta_0 + \beta_1 x_1 + \dots + \beta_p x_p .$$

Where  $g(\cdot)$  is the link function and  $\beta_p$ 's model parameters.

The backward selection procedure was used to build the model to identify the primary important risk factors. Finally, variables with p-value < 0.05 were retained for further statistical analysis. The statistical packages (Statistical Analysis System (SAS) version 9.3) and SPSS (version 16) were used to analyze the data. A 5% level of significance was used throughout the statistical analysis. That is a p-value less than 5% indicates significant effect of the covariate.

Building logistic regression models when there are many possible covariates was found to be confusing. So it was useful to work hierarchically, looking at increasingly more complex structure of nested models, using test statistics such as likelihood ratio or wald test in deciding which covariates were important or not in predicting the response, a univariate logistic regression was used to select first candidate variables among many unidentified possible explanatory variables.

Different link functions existed for logistic regression but the most popular were found to be logit (AIC value, 110.859) and probit (AIC value, 110.629). Based on the smaller Akaike Information Criterion (AIC) value a probit model was a candidate, however it had no much improvement in AIC when compared to logit link. Hence the logit link was used with its nice interpretability. One advantage of the logistic regression model over the probit model is that the logistic regression effects can also be interpreted using odds ratios. The final logistic regression model was:

relationship between education level and ward or location with community participation in environmental education (see appendix 1). Although the main effect of the age variable was not significant (p= 0.495), it was retained in the model since its interaction effect with ward or location was significant at (p=0.0436). Controlling the other covariates in the model the

odds ratio of participating versus not participating in EE activities for a unit increase in education level equals exponential  $(0.3881) = 1.474$ . That is, those respondents with high level of education are more likely to participate in EE activities as compared to those with low level of education.

Again, Keeping the other covariates in the model, the respondents sex showed ( $p= 0.5292$ ), and marital status showed ( $p= 0.5253$ ). That means sex and marital status were found to have no significant relationship with participation in EE activities. Hence, participation in EE campaigns in Tanzania and more specifically in Uluguru Mountains is not affected by sex and marital status.

#### 4. DISCUSSION OF THE RESULTS

Data presented in appendix 1 indicates the levels of significance of the relationship between education level, income level, location, and age of the respondents with community participation in environmental education. The findings show that formal education has significant relationship with people's participation in EE activities. Environmental education is therefore more likely to yield positive outcomes if formal education will be used as an intervention strategy. This implies that, the more the community is educated; it is more likely to take care of their surrounding environment and enhance sustainable development. Mitinje et al., (2007) supports these findings by stating that majority of the people in Uluguru Mountains had low level of formal education, and this was associated with their poor participation in forest conservation. Because of this reason communities along the Uluguru Mountains have continued to engage in forest degradation which eventually results into deforestation.

Therefore, from this argument it can be stated that education should be viewed as a tool for the community to participate in environmental conservation programmes. This is also related to the study by Hymas (2005) who affirm that learning can better be implemented in a community in a practical way such as the use of EE in conserving natural resources such as forests. The findings are like those of Kimaryo (1995) who argues that for the community to participate in environmental conservation activities, it needs some kind of formal education orientation. Education in that case can be used by conservation agencies in implementing community participatory environmental management.

Results in appendix 1 reveal that, there was a significant relationship between the age factor of the respondents and community participation in environmental education programmes. This kind of relationship implied that age had an effect on community participation in environmental conservation programmes. Since majority of the population were found to be those of age between 21 and 50 years old

(appendix 3), which is assumed to be an economically active age group, it could therefore be interpreted that this age group wouldn't secure time for active participation in EE programmes because of being occupied with other productive activities. These socioeconomic activities might also be related to those resulting in environmental degradation such as deforestation. This dependence might have become the hindrances to the proper implementation of EE. Therefore, EE initiatives should take part in educating people of all age groups because they all together affect and become affected by the environment in one way or another.

Similar results are shown by Appiah (2009) and Asamoah et al., (2007) who confirm that people of the more active age group must participate in environmental education activities in order to stop deforestation. If EE provided does not involve the most active individuals of the population who are the majority group, deforestation activities will be likely to continue. However, EE initiatives in the Uluguru Mountains had not shown emphasis on the provision of EE in regard to different age groups. Elders who were the minority for example, had not been very much considered in the provision of EE as facilitators. They were the ones who would become potential educators through folklores which was an informal approach of EE. Folklores were the most effective method of delivering EE as a traditional approach to forest conservation.

In regard to the same findings, Ahenkan and Boon (2008) claim that causes and effects of deforestation can be stopped to some extent, if most citizens participate towards the EE, reduce emissions by avoiding use of cars and bikes indiscriminately, make factories cleaner and monitor emissions, develop better ways of farming that help to increase the yield without having an impact on the neighbouring forest areas. Again, Mitinje (2007) supports these findings by making a critical point that EE can become a critical solution to deforestation if individuals in the most active age and communities in Uluguru Mountains were educated about the fate of deforestation. Also, Eccles and Barber (2010) challenge that participation in community activities such as EE for environmental conservation is associated with behavioral well-being among adolescents. Also, it is supported by Sherrod et al., (2002) that other factors had been reported by youth as influencing their need for and willingness to be a part of a greater good through involvement in EE programmes.

Similar results are again presented by Flanagan & Van Horn (2001) on the feelings of efficacy, the need to be valued and taken seriously by others in the community, increasing youths own self-esteem, and having a responsibility to the society by performing EE duties. Similarly Chan and Elder (1999) argue that, factors such as parental involvement can facilitate influences on youth involvement in EE. Youth (or young people) whose parents are actively involved in EE programmes will be more likely to become active themselves in EE while

youth whose parents do not participate in EE activities may still become active in their communities; however, a supportive and reinforcing parental relationship may have a greater contribution to participation in EE programmes.

Findings also show that, the active age group who were the majority in the Uluguru Mountains also would become active in EE for self-actualization and social responsibility. Feelings of efficacy, having responsibility on leadership, and the need to be taken seriously emerge as important reasons for youth involvement in EE as suggested by (UNESCO ,2007; Sherrod et al., 2002; Kubisch, 2005; Flanagan & Van Horn, 2001). This implies that people of young age group should also be involved in environmental stewardship (EE leadership) in the community. The findings are also in line with the study conducted by Luloff and Swanson (1995) which asserts that activeness in the forest conservation should be facilitated by youth participation in community-based groups. Interaction between social groups would promote awareness of needs and help to identify volunteer opportunities. In the context of the this study the situation was found to be contrary to the above where youth involvement and interaction between social groups was minimum.

Findings also revealed that geographical location of the respondents has a significant relationship with community participation in EE programmes. Therefore, location of the wards (Bigwa, Misongeni, Tangeni and Choma) had an effect on community participation in EE programmes in the Uluguru Mountains in Morogoro. In conducting spatial analysis of the variation in participation in EE programmes among wards, Misongeni Ward was found to have participated more in EE programmes followed by Tangeni and lastly Bigwa. Communities failed to participate fully in environmental conservation programmes because of various reasons. One of the reasons was the fact that EE has been practiced in these wards at different intensities. Other reasons could be lack of time for communities to participate in EE programmes, poor transport, and lack of awareness of community members.

Also, Misongeni and Tangeni were geographically located far from Morogoro town and the economic activities of these wards were heavily dependent on agriculture which is associated with deforestation activities. Therefore, environmental educators might have seen these locations as a potential threat to deforestation. On the other hand, Bigwa was located nearest to Morogoro town and, therefore, its residents were of highly mixed economic activities. Some are civil servants while others are peasants and businessmen. Their dependence on forest resources for their livelihoods was therefore considered by the researcher to be minimal and therefore less intensive EE practices in this specific geographical area. It is therefore evident that community participation in EE programmes is affected by the geographical area in which the particular community is located.

These findings differs with those by Scales and Leffert (1999) and Sherrod et al., (2002) who identified key barriers that keep people from participating in community activities. Such barriers include lack of interesting programmes, transportation problems, lack of knowledge about programmes, and cost. Henceforth, viewing young people as transient, participating in too many other activities, and having less predictable schedules, community organizations may marginalize certain groups. Again, it is likely that since people were located in different distances from the forest resources there might be a slightly different variation in economic activities that related to forests. This has an implication to the way the people saw and valued EE and therefore different participation in EE programmes.

Income level is a socioeconomic variable which is directly related to the wealth and poverty of an individual or community. Level of income was also found to have significant relationship with community participation in EE programmes in the study area. Therefore it is clear that level of income affects community participation in EE programmes in the Uluguru Mountains. Similar findings are presented in the study conducted by Izazola et al., (1998) that, the middle-income group reflected a wide participation in EE which encompassed physical conditions such as air pollution as well as less tangible factors relating to the overall “quality of life” for example; traffic, noise, distance to place of work and aggressiveness of city residents. This implies that the lower and high income earning groups show less participation in EE activities, this due to their over engagement in income generating economic activities.

## **5. CONCLUSION AND RECOMMENDATIONS**

Demographic factors such as level of education, location and age of the respondents were found to have significant relationship with Community Participation in the EE programmes. However, Community participation in EE programmes was found to have week relationship with marital status and sex of the respondents. It is therefore recommended that agencies involved in designing and implementation of EE programmes to develop EE interventions based on the demographic factors such as age, location, income level, sex and marital status as a strategy for solving environmental problems. If EE initiatives would be implemented based on demographic factors, environmental degradation would be reduced to a greater extent. Further researches therefore should be focused on a broader research area as well as the use of mixed approach method.

## REFERENCES

- Anderson J, Benjamin C, Campell B, Tiveau D (2006). Forests, poverty and equity in Africa: new perspectives on policy and practice. *Int. For. Rev.* 8(1):44-53
- Ahenkan, A. and Boon, E. (2008). Enhancing food security, poverty reduction and sustainable forest management in Ghana. *Ghana Journal of Forestry*, Vol. 27: 6-30.
- Asamoah, N (2007). Access and utilization of forest products in Ghana. *Ghana Journal of Forestry*, Vol. 27: 50-54.
- Appiah, O.D. (2009). Personifying sustainable Rural Livelihoods in Forest Fringe Communities in Ghana: A historic rhetoric? *Journal of Food, Agriculture and Environment*
- Chan, C. G., & Elder, G. H., Jr. (1999). Family influences on civic involvement. Unpublished manuscript cited in Fletcher et al, 2000.
- Clary, E., Snyder, M., & Ridge, R. (1992). Volunteers' motivations: A functional strategy for the recruitment, placement, and retention of volunteers. *Nonprofit Management and Leadership*, 2(4), 333-350.
- Hymas, O. (2005). Assessment of the remaining forests on the Ulugurumountains and the pressures that they face. CARE & Wildlife Conservation Society of Tanzania. Dar es Salaam.
- Kimaryo, L. (2011). Integration of environmental education in primary schools in Tanzania. Stockholm University Press, Stockholm.
- Kimaryo, L. (1995). Assessment of the extent of women participation in environmental conservation in Tanzania. Morogoro. Mzumbe Publishers.
- Luloff, A. E., & Swanson, L. (1995). Community agency and disaffection: Enhancing collective resources. In L. Beaulieu and D. Mulkey (Eds.) *Investing in people: The human capital needs of rural America*. Boulder, CO: Westview Press
- Mohammed, S.N (2010). People's Participation in Development Projects at Grass – Root
- Mitinje, E., Kessy, J., Mombona, F. (2007). Socio-economic Factors Influencing Deforestation in Uluguru Mountains. *Discovery and Innovation* Vol. 19 (1&2): pp. 139-148.
- Ngwano, N. J. (2010). Community participation in secondary education Development in Tanzania, Case study of Manyoni District Council, UDOM, Tanzania.
- Parke, R. D., & Ladd, G. W. (1992). *Family-peer relationships: Modes of linkage*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Park, A. & Wang, (2006). *Community Based Development and Poverty Alleviation: An Evaluation of China's Poor Investment Program*. World Bank.
- UNESCO (2007). *Education Sector – Wide Approaches (SWAs), Background, Guide and Lessons*, Division of Education Strategies and Field Support, Paris, France.
- Sherrod, L. R., Flanagan, C., & Youniss, J. (2002). Dimensions of citizenship and opportunities for youth development: The what, why, when, where and who of citizenship development. *Applied Developmental Science*, 6(4), 264-272.
- Simelane, Z. D. (2006). *Community response to environmental education initiatives in South Africa*: University Press.
- Flanagan, C., & Van Horn, B. (2001). *Youth civic engagement: Membership and mattering in local communities*. Focus. Davis: 4-H Center for Youth Development, University of California.
- Kubisch, A. C. (2005). *Comprehensive community building initiatives—ten years later: What we have learned about the principles guiding the work. Putting youth at the center of community building*. *New Directions for Youth Development*. No. 106: Summer 2005.
- URT (2005). *Tanzania: Country Study on Biological Diversity*. UNEP, Nairobi.
- URT (2007). *National Strategy for Growth and Reduction of Poverty*. Dar es Salaam: Government Printers.

**LIST OF APPENDICES**

**Appendix 1**

**Table Indicating Parameter estimates and standard errors for multiple logistic regression model Indicating Significance of Demographic Factors Vs Community Participation in EE Programmes**

Parameter	Estimate	S.E	t-value	P-Value
Intercept( $\beta_0$ )	-2.9414	1.4307	2.6	0.0398
Bigwa( $\beta_1$ )	0.2906	1.2827	0.23	0.8208
Misongeni( $\beta_2$ )	-4.4981	1.777	2.53	0.0114
Tangeni( $\beta_3$ )	3.1986	1.4276	2.24	0.0251
Age( $\beta_4$ )	0.1785	0.2615	0.68	0.495
Education_level( $\beta_5$ )	0.3881	0.1598	2.42	0.0152
Age* Bigwa( $\beta_6$ )	-0.4007	0.3814	1.05	0.2934
Age* Misongeni( $\beta_7$ )	r0.8443	0.4334	1.95	0.0514
Age* Tangeni( $\beta_8$ )	-0.8668	0.3831	2.26	0.0236

Income level has been set as an intercept (Intercept  $\beta_0$  )

**Appendix2**

The Conceptual Partnership Model for Community Participation

