PERCEIVED EFFECTS OF GAS FLARING ON SOCIO-ECONOMIC WELL-BEING OF FARMING HOUSEHOLDS IN OGBIA LOCAL GOVERNMENT AREA, BAYELSA STATE

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ABSTRACT

This study assessed the perceived effects of gas flaring on socio-economic wellbeing of farm households in Ogbia Local Government Area of Bayelsa State, Nigeria. The targeted population was the farm households. A multi-stage sampling technique was used for the selection of 150 respondents from the three administrative districts while a structured questionnaire were used as an instrument for primary data collection as well as interview schedules. Descriptive statistics tables, percentages, means, rank and frequency distribution were used to analyze the data. The results reveals among others that, majority (60%) of the respondents had an age range between 31 years and above, 52% were males while over 68% were married, 53.32% had vary household sizes ranging from 9 to 11. Farm sizes were found to range from 0.1 to 0.5ha represented by over 58%, income was averaged at N25,000 per month with a modal range of N10,000 to 30,000 per month represented by 70% while farming was also found to be the predominant occupation among the households in the study area represented with 58%. Over 70 percent of the respondent showed strong perception that gas flaring has negatively impacted on their well-being over time and posses serious effects on the livelihood activities. Farm households were found to developed different coping and adaptation measures to avert the effects of gas flaring. Advocacy, implementation of social corporate responsibilities as well as continuous review of gas flaring injection Act by the government among others were strongly recommended.

Keywords: Perceived, Effect, Gas Flaring, Well Being of Farm Households.

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INTRODUCTION

The exploitation of crude petroleum by various oil companies accounts for the pollution of the atmosphere globally. Odiong *et al* (2010) posited that one of the problems associated with crude oil exploitation is gas flaring. In Nigeria for instance, it is estimated that about 180 billion cubic feet of proven natural gas making it the ninth highest concentration in the world. Due to unsustainable exploration practices coupled with lack of gas utilization infrastructure in Nigeria, the country flares 75 percent of the gas it produces and re-injects only 12 percent to enhance oil recovery. Evoh (2002) estimated that about two billion standard cubic feet of gas is currently being flared in Nigeria and the highest of

Petroleum Exporting Countries (OPEC). The current statistics shows that, Nigeria accounts for about 19 percent of the total amount of gas flared globally. Gas flaring started at the end of colonial rule in Nigeria during the 60s as Shell/BP started exploring for oil in the Niger Delta region in the 1930s (Asume*et al,* 2002). Odiong*et al* (2002), defined gas flaring as burning of gas widely used in disposing of natural gas (e.g.$C0_2$, C0, $N0_2$, and $S0_2$) liberated during oil exploitation and processing where there are no infrastructures to support the production and storage of natural gases. These activities are crystal clear in the Niger Delta region of Nigeria especially in Bayelsa state.

Gas flaring is a major contributor to the stock of green house gases in the atmosphere thus adding to the climate change chaos and by far the main source of carbon dioxide emissions in sub-sahara Africa (ERA, 2008). The turning of these liberated gases vented or flared in Ogbia local government area of Bayelsa state has a lot of implications to the socio-economic well-being of farm households. Flared gas contained hazardous substances which are methane, prophane, ethane, iso-butane, n-butane etc, when combine with the atmosphere moisture formed an acid rain which falls on roofs and farmlands where farm households sources of livelihood are sourced thereby causing serious health hazards and damages to crops as well as live stocks in Bayelsa state, specifically Ogbia Local Government Area.

Akpojivi*et al* (2005) submitted that, gas flaring results in the release of emissions rich in $C0_2$, C0, $N0_2$, $S0_2$ etc carried soil and water bodies in communities close to the flare sites. ERA (2008) reported that communities located close to gas flares may have serious health impacts on the form of respiratory illness, asthma, blood disorders, cancer, painful breathing and chronic bronchitis.

According to World Bank (2009) it was estimated that, more than 100 million cubic metres of gas is flared annually around the globe, despite the incentives to capture the associated gas and bring it to market; that the quantity of gas flared in the Niger Delta region is enough to cover the annual gas consumption needs of Germany and France put together. Consequently, more attention is focused on the oil sector by the Nigerian government resulting in the neglect of the agricultural sector of the economy and ignores the link between oil extraction and environmental impact as well as social and health problems it has created. IFC (2009), reported gas flaring wastes destroyed resources in the natural environment and thus deprived the rural poor in developing economies cleaner and cheaper source of energy resources. However, farm households in the Niger Delta region especially in Bayelsa state firmly perceived that gas flaring affects virtually every aspects of their livelihood (Odiong *et al,* 2008).

Farm households in Bayelsa state especially Ogbia local governments are impoverished. Over 30 thousand people are being affected by gas flaring thereby resulting in diverse health abnormalities. Despite the various incentives given to farm households in Ogbia, their poverty status (incidence) increased geometrically in recent times while household food insecurity becomes a major challenge. Available records from the health institutions shows that over 50% of the farm households suffer from various respiratory diseases (asthma etc) (Smoh, 2011).

Oil exploitation has left the indigenous farm households of Ogbia community with less fertile farmlands as well as clean water from rivers and streams and weaken the family and communal bonds causing social tensions among various groups and institutions in Bayelsa state. The effect of gas flaring is multifaceted causing undesirable ecosystem disequilibrium. Odiong*et al* (2008) stressed that, gas flaring contributes maximally to climate change, food insecurity, low income, lost of vegetation, pollution of water bodies etc.

Objectively, the study focused on the integral assessment of perceived effect of farm households in Ogbia local government area of Bayelsa state. A review of related literature exposes the role of agriculture to human existence. Ebiyegbagha (2010) and ISS (2007)

described agriculture as the pivot in the development of human civilization. Many countries across the globe have subsidized as well as invested in agriculture for raw material benefits as well as ensuring food security to her citizenry among others. Despite these efforts, there are some inherent problems affecting the development of the sector in developing economies. One of such problems is the gas flaring in the Niger Delta region in Nigeria.

ERA/FOE (2008), reported that, routine gas flaring has been illegal since 1984 as stated in section 3 of Nigeria's Association Gas Reinjection Act of 1979. Gas flaring is a widely used practice by oil companies especially in the Niger Delta region of Nigeria for the disposal of natural gas in petroleum producing areas where there is no infrastructure to make use of the flared gas. DMSP *et al* (2006), stated that, gas flaring is recognized as a waste of energy of carbon emissions to the atmosphere.

Gaffer (1996) added that Nigeria exports about 12 million barrels of oil daily and this comes from 12% of the country's landmass, located in indigenous people a community who's economic and livelihood activities are derived. Households in such areas especially farmers are actually impoverished due to the effects arising from crude exploitation mostly gas flaring. Apart from the release of green house gases into the atmosphere, gas flares are said to release about 45.8 billion kilowatts of heat into the atmosphere Etiosa and Matthew (2007). Gas flaring raised the temperatures and rendered large area of land inhabitable and uncultivable by farm households. Bassey (2008) emphasized that, due to increased temperature, climate variability proliferation of pests and widespread disease these have seriously affected agricultural activities causing serious negative effect (impacts) of well-being of farm household.

MATERIALS AND METHODS

The study was carried out in 2010 at Ogbia local government area of Bayelsa state. Ogbia is located east of the Delta shore and shares common boundaries with Yenogoa, Iyaw Brass in Bayelsa and Ahoda in Rivers state. Geographically, Bayelsa state lies within the rain forest zone with a humid equatorial climate and annual rainfall ranging between March to November while the dry season lasts between December to February. The temperature peaks at 30^0c with a relative humidity ranging between 55 and 90 percent, Moffat *et al* (2011). Ogbia community has an estimated population of 179,926 (NPC, 2006). The three administrative districts are, Oloibiri, Ayama and Emeyal. The community is endowed with enormous mineral deposit mostly crude oil. A multi-stage sampling technique was used to select the samples. Firstly, was the purposive selection of the five farming communities from each of the administrative district were gases are being flared. Secondly in each of the communities ten (10) farm households were randomly selected using simple random sampling technique. A total of 150 farm households were successfully selected for the study.

The study made use of both primary and secondary data collected from the farm households selected from the three administrative districts of Ogbia local government area of Bayelsa state. The target respondents were farm households in Ogbia local government area. The instrument for the primary data collection was structured questionnaire. A descriptive statistical tool (tables, frequency distribution and percentages) were used to analyzed the data obtained farm households in Ogbia community in Bayelsa State.

RESULTS AND DISCUSSION

AGE: The age distribution of the respondents as shown in Table 1 revealed that more than half (60%) of the sampled farm households have their age range between 31 years and above while 40% of the respondents have their age range less than 30 years. The mean age was

found to be 35 years, implying that the active populations are engaged in agricultural activities in the study area. The result is consistent with the findings by Udofia (2005), Olaniyi *et al* (2008), Ogunfiditimi (2005) and Ebiyegbagha (2010). They found that, people of this age range (category) 31-40 are active, agile and energetic for maximum production labour utilization.

Table 1: Frequency distribution of respondent based on socio-economics characteristics

Variables	Frequency	Percentage
Age (yrs)		
≤ 20	19	12.67
21-30	41	27.33
31-40	50	33.33
41-50	25	16.67
≥51	15	10
Sex		
Male	104	52
Female	96	48
Marital status		
Married	102	68
Single	18	12
Divorced/widowed	30	20
Education		
No formal education	29	20.59
FSLC	49	34.75
SSCE	46	32.62
OND/ND	15	3.55
HND/B.Sc	9	6.38
Higher Degrees	3	2.13
Occupation		
Farming	87	58
Fishing	23	15.33
Livestock Keeping	4	2.67
Trading	21	14
Artisans	11	7.33
Others	4	2.67
Farm Size (Ha)		
0.1-5	79	52.67
0.6 – 1.0	66	44
1.1 – 1.5	4	2.67
>1.6	1	0.67

SEX: The sex distribution from the sampled farm households in the study area shows that 52% of the respondents were males while 48% were females. This therefore implies that more males are engaged in farming than the females counterparts. The result further shows that, though male farmers were much more than the females, there is competitiveness in the agricultural activities by both genders in the study area. The result also reveals that, majority

of the farm households are male headed. This finding supports Faito and Supling (1992) that women are gradually taking over farming in the world especially in sub-Saharan Africa despite the risk and labour demands in agriculture.

Table 2: Distribution of Respondents according to perceived effects of Gas flaring on well-being of Farm households

S/N	Perception of Farm Households of Gas Flaring on Well-being Livelihood Activities	Mean Score	Rank Order
1.	Gas flaring reduces the quantity of farm produce of farmers.	4.28	1
2.	Gas flaring reduces the income of farm household.	4.12	2
3.	Gas flaring led to diversification of labour to non-farm activities of Farm households.	3.0	7
4.	Gas flaring affects the health status of Farm households in my community	3.12	6
5.	Gas flaring pollutes air and water in my community.	3.94	3
6.	Gas flaring lead to farm household food insecurity in my community	3.75	4
7.	Gas flaring discourages expansion of farm size	3.00	7
8.	Gas flaring affects building (roof) in my community	3.66	5

Source: Field Survey 2010.

Table 3: Distribution of Respondents according to coping and adaptation strategies

S/N	Coping and Adaptation Strategies	Frequency	Percentages
1.	Timeliness in cultivation and harvesting	22*	15.71
2.	Migration to other communities and towns	11	9.29
3.	Engages in non-farm activities	24	0.71
4.	Avoid drinking of rain water	47*	17.14
5.	Use of corrugated roofing sheets	23	16.43
6.	Avoid drying of foodstuffs in the field	13*	9.29

Source: Field Survey 2010. * = Multiple responses.

MARITAL STATUS: Table 1 shows that marital status of the sampled farm households in the study area. Result from the table revealed that over 68 percent of the respondents are married, while 12% are singles and 20% were categorized as divorced/widowed. This also implies that farm households with male headed households were more than the female headed households and households that engaged in agricultural activities were relatively very high in the study area.

EDUCATION: Respondents with no formal education were found to be 20.57 percent. Those with first school leaving as well as senior secondary school certificates were 34.75 and 32.62 percent respectively. Farm households with Diploma Degrees and Higher Degrees were represented with 3.55%, 6.38% and 2.13% respectively. The implication is that, majority of the farm households (55.32%) are at the level of education very inadequate to

adopt new techniques (innovations in agriculture) and coping strategies in a gas flared agricultural area due to their literacy level. This result is in line with Olaniyi *et al* (2008).Meizen-Dick (2001) substantiating the fact, that, farmers in Sub-Saharan African countries has a very low level of education.

INCOME: The average monthly income of the respondent was N25,500.00. Majority of the respondents (70%) earned between N10,000 to N30,000.00 per month. While respondents whose monthly income falls between N31,000 and above was represented by 15.33 percent. This implies that, the farm households earned very low income from farming activities partly because of the polluted farmlands by flared gas or a combination of other factors affecting agricultural activities. This low income status of the farm households has serious negative effects on the well-being of the farmers in the study area. This result support the findings by AK-BASES; (2005), that rural-based farmers in Akwa Ibom State earned very low income of about N10,000 to 15,000 per month.

HOUSEHOLD SIZE: Over 70.67 percent of the respondents have household size between 5 to 8 persons per household. This study shows that in sub-Saharan African countries have household sizes greater than the recommended number by the United Nations. Respondents whose household sizes were ranged between 9 to 11were represented with 24.67 percent while a household whose size was greater than 12 was represented by 4.67%. The higher concentration of household size in the studying area has a lot of negative implications on the consumption expenditure as well as the income and overall well-being of the farm households.

A long-run effect may be observed by households diversifying into other non-farm income activities as an alternative means of livelihood. The findings of Ebiyegbagha (2010) supports the result obtained from this study stated that, majority (58%) of the farm households in the Niger Delta region has a household size varying between 6 to 8 people.

OCCUPATION: Table 1 shows the various income generating activities of the respondents. The result revealed that, majority of the farm households engages in farming and other agriculture related activities such as fishing and livestock keeping as represented by 58 percent and 18 percent respectively. Trading, artisans as well as other activities are also part of the livelihood activities engaged by the farm households in the study area, as represented with 14, 7.33 and 2.67 percent ,respectively.

FARM SIZE: More than half of the respondents (52.67%) have farm sizes ranging between 0.1 to 0.5ha. This result is in line with related farm household studies in the Niger Delta region and Nigeria; those farm households' small holders' farmers whose farm sizes are relatively very small. Respondents with farm sizes ranging between 0.6 to 1ha was represented with 44% and those greater than or equal to 1.1ha and above was represented with 3.67%.

PERCEIVED EFFECTS OF GAS FLARING: The result presented in Table 2 revealed that, over 40 percent of the respondents perceived negatively, the effects of gas flaring on their socio-economic well-being. A mean score of 4.28 ranked as I was obtained from the strong, stating that, farm household perceived that, gas flaring by oil companies in Ogbia Local Government Area reduced the level of agricultural output by the farmers, while the reduction in their income from farming activities was ranked 2 with a mean score of 4.12. This result is similar to the study carried out by Olaniyi *et al* (2008) which stated that, over 54.2% of farm households in an oil spill community in Akwa perceived that, the spillage has negative effect on their agricultural output as well as their household income.

Also, about 27 percent of the respondents perceived that, gas flaring pollutes the air and water in the study area. This was represented with a mean score of 3.94 and ranked three (3). Other respondents perceived that, gas flaring lead to household food insecurity, affects building and health as represented with mean shares and ranked as follows 3.75(4) and 3.66(5) respectively. Diversification of labour to other non-farm activities as well as reduction in cultivable farm size were also perceived to be the effects of gas flaring and is represented with mean scores of 3.00 and ranked as 7. The result showed that over 80 percent of the farm household has strong perception that flared gases have negatively affected their well-being in the study area.

COPING AND ADAPTATION STRATEGIES AGAINST GAS FLARING: The study revealed that 64.28 percent of the respondents resorted to avoidance of drinking rain water, engagement in non-farm activities as a means of coping strategy, while timeliness in cultivation and harvesting was used as measures of adapting to gas flaring in the study area. Other measures adopted by the respondents to cope with gas flaring includes, use of corrugated roofing sheets, avoidance of drying farm produce in an open field as well as migration to nearby communities and towns were adopted by the farm households. This is collectively represented with 33.72%.

CONCLUSION

Majority of the farm households in the study area perceived strongly that gas flaring by oil companies has negative effects on their well-being in diverse areas; farm outputs, income, health, assets (building), migration as well as labour diversification from farming. Several coping and adaptation measures are developed by the farm households to avert the effects of gas flaring on their well-being at the household and community levels. The study recommended that farm households as well as the community should carry out an advocacy visit to the relevant institutions responsible for the flaring of gas, corporate social responsibility policies should be implemented by oil companies operating in the area, government should review and implement gas flaring infection acts to avert gas flaring in the study area, farm households should practice improved farming techniques among others.

REFERENCES

Akpojwi, R. E. and Akumagha, P. E. (2008), Impact of Gas Flaring on Soil Fertility" SPE Petroleum Institute Effurum.

AK-BASES (2005), AkwaIbom State Socio-Economic Study Report. A Publication by the Ministry of Economic Development, AkwaIbom State, Nigeria.

Assume, T and Gvoh, V., (2002). The History of Crude Oil Exploration and Exploitation. A documentary

Bassey, N. (2008). "Gas Flaring: Assaulting Communities and Jeopardizing the World". A paper presented at the Environmental Rights Actions in Conjunction with the Federal Ministry of Environment, Abuja (2006).

Defence Meteorological SateliteProgramme and Boulder R. Global Gas Flaring Estimates. Annual Year Book, 2006.

Environmental Rights Actions/Friends of the Earth Nigeria, (2008). Gas Flaring in Nigeria: Human Rights Environmental and Economic Monsterosily. htt://www.foe.co.ck/resource/reports/gas_flaring_nigeria.

Ebiyeghagha, G. (2010). Gas Flaring and its Impacts on Socio-economic Livelihoods. An Undergraduate Project of Niger Delta University, Nigeria.

Evoh, C. (2002). Gas Flares, Oil Companies and Politics in Nigeria.Milano School of Public and Urban Policy.New School University, New York. http.//ngrguarviannew.com

Facito, C. and Spurling, T. (1992).“Developing Agricultural Extension for Women Farmers’.World Bank. Washington D.C.

Gaffer, E. N. (1996).Exploring the Earth.Introduction to Physical Geology.Strahler Publishing Company. Third Edition. California, USA.

Institute of Science Society (2007), Gas Flaring and Its Impacts. A Documentary.

Meinzan-Dick, R. S. and Quniscunbing, A. R. (2011): Empowering Women to Achieve Food Security: Overview, International Food Policy Research Institute, Washington D. C. focus, Policy Brief of 12 August 2001.

Moffat, E, Angela, C., Peter, O. and Rachael, T. (2001).Investing in Bayelsa State.A Report of Bayelsa State Investment Survey.A publication by the Bayelsa State Government Nigeria.

Nick, A. J. (1988). The Human Ecosystem of the Niger Delta Region.An ERA/FOE Handbook.Pp. 137.

National Population Commission (2006) Published 2006 census figures.

Olaniyi, O. A., O. D. Adebayo, A. R. Ayoade and m. A. Okoma, (2008).Women Perception of Effect of Oil Spillage on Farming Activities in South Eastern Nigeria.Implication for Household Food Security. Agricultural formal 3(5): 357-361.

Odiong, A. U., O. O. Orimwogunje, A. Ayanlade and T. A. Akinkwolie (2010).Perception of Effect of Gas Flaring on the Environment Research Journal of Environment and Earth Sciences 2(4) 188-193.

State Ministry of Health (SMH) Bayelsa, First Quarter Health Report, 2011.

Udofia, O. (2005). Effects of Oil Spillage on Small Scale Fisheries Farmers in AkwaIbom State.Department of Fisheries and Aquaculture, University of Uyo, Nigeria.

World Bank (2009).Global Gas Flaring Reduction (GGR). Report on Counsultations with Stakeholders. www.worldbank.org.