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Impacts of the Expansion Project of the Nigeria Liquefied Natural Gas on the Wildlife Status of Bonny Island

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ABSTRACT
This research study "impact of the expansion project of the Nigeria Liquefied Natural Gas on the wildlife status of Bonny Island" was carried out at Bonny Island in Rivers State to determine the impact of the expansion project of the Nigeria Liquefied Natural Gas on the wildlife status as well as the entire ecosystem in the Island. Data were collected using a specially designed questionnaire, analysis and presentation were done using descriptive statistics. The research presents overview of the people's response to the Nigeria Liquefied Natural Gas expansion project on the Island.The result shows that loss to NLNG project was 70%, Impact on wildlife, 75% of the respodents fill NLNG impacted negatively on the Bonny people. Also 65% of the respondents suggest that the NLNG project impacted negatively on the socio-economic well being of the Bonny people.The conservation measures adopted by NLNG include,use of reserved areas (40%) and the least youth employment and trainings of about indiscriminate extraction of species (5%) respectively.The result also shows that 16 species of mammals,50 species of reptiles,250 species of insects and 188 species of birds occurred before the expansion project. However, in 2012 during this research only 4 mammal species , 8 reptiles,30 insects and 20 birds were sighted after the expansion project. The high level of species extraction and extinction was as a result of the poor management of the multinationals in the Island and their insensitivity to the plight of the people. Therefore the multinationals and the government should look into the plight of the people through employment creation to reduce species extraction and to reserve more areas for species conservation.

INTRODUCTION
The rapid increase in human population and rate of development in Bonny Island is placing significant stress on the native wildlife populations.Land that was once habitat for wildlife species is being converted into residential and commercial subdivisions, roads and other uses.The development of land and related activities impact both the quality of wildlife habitat. This fact sheet provides an over view of those impacts and offers some strategies for developers and towns to reduce the impact of development on native wildlife. This fact sheet is part of a two –part series: a second fact sheet focuses on habitat sensitive site design and development practices.According to Duerksen *et al* (1997), a habitat is a place where animals live and function.The loss of habitat through the conversion of land from its natural state to a developed landscape represents the single greatest impact of increased human activity on native wildlife. (Stone, 2001). All animal species require certain habitat features to survive. Development typically eliminates or significantly changes many important habitat features found in a natural area, thus reducing or eliminating the habitat value of that area. For example, a diverse wildlife population depends upon the natural diversity of native plants found in most undeveloped areas. Development often changes the vegetative community, making it more difficult for many native species to survive. (Boyel, 2001). Those species able to survive in urban settings may thrive, but the rest are forced to find new territory or perish. Habitat fragmentation is a less obvious consequence of development, reducing both the quantity and quality of habitat. Fragmentation according to Benedict *et al* (2001), is a process whereby large tracts of the natural landscape are gradually developed and sub-divided until only patches of original habitat remain. The patches are often to small and two far to support the basic survival and reproductive needs of the many wildlife species during various stages of their life cycle or in different times of the year. When a species habitat is separated by distance that make easy movement from one patch to another impossible, the impacts on the genetic health of the population are significant and reduce a species ability to reproduce and with stand stress.In addition, smaller habitat patches and the wildlife that depend on them are more vulnerable to the catastrophic efforts of natural disturbances such as fire and ice storm. Fragmentation also results in higher populations of generalist predators, resulting in increased predation on those species that attempt the use the remaining habitat blocks (Benedict *et al* 2001).The impact of human activity on wildlife according to Kanter (2001) extends beyond the actual area of development. When evaluating the impact of human activity on wildlife, we should consider a "disturbance zone'' the entire area where habitat value has been meaningfully reduced. The encroachment of human activity into a natural area creates more ''edge effects''. Edge effects are changes in environmental conditions and animal behaviour and well being that result from being in close proximity to the border between habitat areas. Unlike natural borders, human disturbances often create ''harder'' edges with greater detrimental impacts on wildlife. Even seemingly small man made disturbances, such as power line easements, can have major consequences for wildlife. Landscape disturbance caused by development can also

serve to introduce invasive species into natural habitats, further degrading the quality of remaining habitat areas. Roads may be the ''single most destructive element of the habitat fragmentation process''. They can: Disrupt or prevent passage across the disturbed area.Provide an entrance for exotic species for predators.Increase mortality ,Increase unnatural disturbances from source such as pollution and fire. (Bennett 1991) as cited in Duerksen, *et al* (1997).Development also affects the quality and quantity of aquatic habitat. The more hard surface present after development, the less rain water infiltrates the soil. Rain water instead runs off the land at an increased volume and rate. This reduces the recharge of ground water and increases flooding, streambed erosion and sedimentation. Run off from developed areas also is often warmer and polluted with pathogens, (examples bacteria and viruses), household chemical, metals, fertilizers, pesticides, oil and grease. As vegetative buffers along water bodies are lost, sunlight can further warm water beyond threshold at which native species can survive and reproduce. The structural habitat of aquatic systems also can be significantly be degraded by modifications associated with roads and development. The quality and flow of rivers, streams and wetlands can be reduced by inadequate or inappropriate designed culverts, creation of new dams and channel straightening or modification. Human activity introduces changes to the surrounding environment that can negatively impact natural habitat. Changes in lighting in an area, for example, can significantly affect some species behavioral and biological rhythms, which are guided by natural cycles of light and dark. Nocturnal species particularly birds, can become disoriented by night –time lighting. Domestic pets, particularly cats, may pray excessively on wildlife, such as ground nesting birds. Human recreational activity in an area may directly impact wildlife and reduce the quality of the habitat provided. Human activities can disturb sensitive habitats, like wetlands and disturb or ''flush'' wildlife. Flushing wildlife raises an animals stress level and increases energy consumption. (Stone *et al* 2001). If repeated frequently, such disturbance can impact reproduction and survivorship.Wildlife include all non- domesticated plants, animals and other living organisms. (Duerksen *et al* 1997). There is need to know the wildlife status of an area, that is their population and species diversity.Also, because wildlife is part of natural food chain that is to say that without wildlife, the food chain is incomplete. And also, to document how industrial activities in Bonny have affected its wildlife per day. The general objective of this study is to determine the effect of the expansion of the NLNG project in Bonny Island on the wildlife status, this study intends to; Determine the various wildlife found in Bonny Island.Determine the impact of development on the wildlife status of Bonny Island. Suggest some solutions to challenges that accompany such development. Determine the socio-economic effects of industrial development on the Island.

MATERIALS AND METHOD

Geographical Location of the study area

Bonny Island is situated at the southern edge of Rivers State in the Niger Delta of Nigeria near Port Harcourt, which lies within the co-ordinate $4^{\circ}27^{'}22^{''}$ N and $7^{\circ}13^{'}53^{''}$E and has an annual rainfall average of 44oomm and temperatures of about $29^{\circ C}$ varying with $2^{\circ C}$ between dry and rainy season of the year. (www.finimanaturepark.org).Bonny Island is a local government in Rivers State and has satellite towns like Finima and total of one hundred and ten communities. The traditional occupation of the local inhabitants still remains fishing. In recent times, the discovery of oil and gas has placed Bonny Island in the forefront of Nigeria's economy, notably because of its strategic location and there are over thirty oil wells on Bonny Island.The population of Bonny is about two hundred and seventy thousand, made up of approximately two hundred and Fifty locals and approximately twenty thousand foreigners, the vast majority of which work on the oil and gas production plants. (Rivers State resource guide). The case study of this research was Finima, Bonny East, Bonny West, Bonny town, Abalamabie and Finima nature reserve all in Bonny Island. This was because Bonny Island is one of the Island's in Rivers State that inhabits more of the wildlife and its of a great importance, if the existence of these wildlife will remain.

DATA COLLECTION

Primary Data: The primary data were collected from the indigenes and visitors that stay in Bonny Island by conducting full structure interviews with them, using questionnaires. This was aimed at getting information on the wildlife status, as well as to get the perspective of each of these focus groups (the indigenes and visitors in Bonny Island on how the wildlife status of the area had been. This full interview structure was adopted so as to bring out the major impacts of the expansion project of the NLNG on the wildlife. This primary data was carried out by a checklist of open ended questionnaires which served as a guide for the full structural interviews. This interview was aimed at allowing respondents to clarify issues and also explain their point by using their own preferred words for the description of the issues. In general, open ended questions help to reveal the points that are of paramount importance to the respondents.(Ezenwaka 2002).

Secondary Data: The secondary data were obtained from the rangers that work in the Finima nature reserve. Also, some parts of the data were gotten from the internet, journals, textbooks, conference papers, and so on.

Personal observations were also taken into account while conducting this research. This involved going to the field that is Finima nature reserve for five days trying to enumerate wildlife and to get data which could give comprehensive information on: the status of the wildlife.

And the method used in doing this was prolonged walking from the beach side through the reserve area, walking along a predetermined tract for at least about five kilometers daily for five days.

RESULTS

SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

TABLE 1: Frequency distribution of respondents.

Gender	**Frequency**	**Percentage**
Male	45	45
Female	55	55
Marital Status		
Single	35	35
Married	45	45
Divorced	4	4
Widow	10	10
Widower	6	6
Age Range		
15-30	45	45
31-50	30	30
51-70	25	25
Educational Background		
Primary	15	15
Secondary	34	34
Tertiary	37	37
No education	14	14
Community Name		
Finima	35	35
Bonny East	15	15
Bonny West	15	15
Bonny Town	25	25
Abalamabie	10	10
Loss to NLNG Project		
Yes	70	70
No	20	20
Undecided	10	10
NLNG Project Impacted The Wildlife		
Yes	75	75
No	10	10
Undecided	15	15
Projects Effect on the Socio- Economic Life of the People		
Positively	30	30
Negatively	65	65
Undecided	5	5
Conservation Measures		
More Reserved Areas	40	40
Reduction in use of chemicals	15	15
Law enforcement	10	10
Spill control	25	25
Youth employment	5	5
Trainings about indiscriminate extraction of species.	5	5

Source: Field Survey, 2012.

The results on table shows that loss to NLNG project was 70%, Impact on wildlife, 75% of the respodents fill NLNG impacted negatively on the Bonny people. Also 65% of the respondents suggest that the NLNG project impacted negatively on the socio-economic well being of the Bonny people.The conservation measures adopted by NLNG include,use of reserved areas (40%) and the least youth employment and trainings of about indiscriminate extraction of species (5%) respectively.

Table 2: Comparism of Species before and After Expansion

Wildlife	**Number of Species Before Expansion**	**No of Species Now (sighted)**
Mammals	16 species	4
Reptiles	50 species	8
Insects	250 species	30
Birds	188 species	20

Source: NLNG (1997) Environmental Inventory Report GAS Transmission System Bonny Nigeria.

Table 2 shows that 16 species of mammals,50 species of reptiles,250 species of insects and 188 species of birds occurred before the expansion project. However, in 2012 during this research only 4 mammal species , 8 reptiles,30 insects and 20 birds were sighted after the expansion project.

DISCUSSION

The results shows that in course of the expansion projects, forests where the wildlife use as their habitats were removed, this forced them to disperse and migrate to new habitats. In course of these movements, some died while some left to new habitats. This indeed brought a drastic decline in the number of wildlife present in the Island, example mammals like Elephant, Antelope and so on. Excessive noise from machines used in the project could also be the reason why the number of wildlife in the Island has declined as many of them could not inhabit a noisy environment example the crocodiles, big reptiles and causes birds to migrate. Influx of more people to the Island due to the project, equipment and other activities exerts pressure on the environment which affected the free movement of wildlife in the area. Many left to a less disturbed environment, which reduced the number of wildlife as most could no longer feed and reproduce freely.Spills on aquatic environments, air pollution as well as land pollution caused the exit of most wildlife. Most of the terrestrial species died due to air pollution example birds, fishes and so on. Pollution brought about by the expansion project reduced the number of wildlife on the Island to what we have now.Those that came down to the Island and could not get the desired job resorted to hunting and other means of survival. This affected the number of wildlife on the Island to the few numbers seen while in the field.The frequent sea encroachment on the Island could also be a reason for the decline of these wildlife on the Island.A comprehensive questionnaire was distributed round the communities in the Island. The result shows that the people are eager and prepared to follow the path that will help save and conserve their environment. An estimated 65% of the people agree that the NLNG project has impacted their environment, wildlife, crop produce, socio- economic lives as well as their health negatively, 30% agree that it has impacted them positively and 5% were undecided. In order to conserve the environment and lives, measures must be taken to check the operations of the NLNG in Bonny Island. From the survey, it was confirmed from the questionnaire answer that, there is much impact of the project on the wildlife in the Island.It was noted that before the expansion project in the Island, there were much wildlife around the Island, such as mammals, reptiles, birds and insects all of these listed were really available on the Island them but now due to much of the expansion project of the NLNG on the Island, these wildlife had been limited that is had reduced in number unlike before, because of the steady clearing of vegetation which serves as the habitat for the wildlife for sitting of different projects, the wildlife had no choice than to migrate to other areas where there is vegetation, while some slow ones die in the process of clearing the area. An example of such area is the large expense of land that houses much wildlife in the land that was cleared for building of the airport, the respondents noted that there were much wildlife found in this particular vegetation and that many of them died in cause of clearing the area as bulldozers were bulldozing them to death, there by causing their reduction.

CONCLUSION AND RECOMMENDATION

Bonny Island is an important Island in Rivers State and a home to multi-national corporations. The Island whose natural resources are enormous is under intense pressure from the activities of these multinationals which has grossly impacted the environment, wildlife and humans. There is therefore, imminent need for conservation efforts so as to sustain the environment.From the study carried out, there is evidence that the Island could be given the desired attention. Respondents noted that, there is daily impact on wildlife due to noise from equipments, daily impact on aquatic lives due to spills on rivers, reduction in farm produce due to exploration and exploitation activities on the Island, which affects the soil texture and so on. In conclusion the Nigeria LNG

expansion projects in Bonny Island has greatly impacted the Island, improved the socio- economic lives of the people also positively and negatively. But little is done to reduce the negative impact on the environment.

RECOMMENDADTIONS

The projects should not be stopped but there should be a check to gross activities of the workers and indigenes as people now use this opportunity to hunt and fetch wood indiscriminately.More reserved areas should be created to conserve the species that are left, example in Peterside or Ilome.Spills should be checked and controlled promptly and undiluted gases should not be released to the atmosphere. Government laws and regulations should be adequate and effective.More research on the impacts of the NLNG project in Bonny Island should be carried out to create more opportunity for recommendations.The multi-national corporations operating in the Island should employ the unemployed youths, to reduce indiscriminate extraction of species.Government agencies should help in training the villagers on the dangers of indiscriminate extraction of species on the Island.The use of hazardous chemicals should be reduced to the lowest minimum and a noise prove environment should be provided.Very tight pipes should be used by the company to avoid spillage and leakage.

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