



SOCIO-ECONOMIC IMPLICATIONS FOR SWAMP RECLAMATION IN ABONNEMA, NIGERIA

Michael. Didia¹, Stewart.S. Owukio²

*¹ Rivers State University Coastal Research Group,
Department of Geography and Environmental Management, Rivers State University,
Port Harcourt, Nigeria*

*² Rivers State University, Department of Urban and Regional Planning, Rivers State University,
Port Harcourt, Nigeria*

ABSTRACT	KEYWORDS
<p>Abonnema, a riverine domain is a large town in the Kalabari Kingdom in Akuku-Toru Local Government Area Rivers State, Nigeria is surrounded by water; the town is located in the southwest of Rivers State founded in 1882, with a population of 74468. Abonnema keyed into land reclamation because of its overcrowded condition and to satisfy the need for new homes. This research was aimed at evaluating the positive and negative implications of swamp reclamation on livelihood and infrastructural delivery in Abonnema. In this study, field observations, questionnaire surveys, land-sat imageries, and sky-view lifetime drone photographs were achieved from the Rivers State Ministry of Works and perspective. Supervised classification of the image processing was adopted to determine the percentage of land cover in the study area. Findings showed that land reclamation activities have caused the destruction and displacement of organisms and species; and on the other hand, most populations have benefited from land reclamation activities. These advantages include the development of infrastructure and access to employment opportunities, an extension of land capacity, improved living standard for citizens. The study, therefore, recommends that the Rivers State Government should not relent on reclaiming more land, especially in other islands in Rivers State, so such islands will experience the benefits of infrastructural development and the State Government should also put in place more laws and strategies to regulate reclamation activities across the state. Educational organizations should also carry out environmental awareness and perception of the environment, as part of their duty.</p>	<p>Swamp reclamation, Abonnema, Wetlands, Hydrology, Socio-economics</p>

INTRODUCTION

Abonnema, originally known as Nyemoni (which means "covet your own" in the Kalabari dialect of the Ijaw language), is a large town in the Kalabari Kingdom that was founded in 1882. Its territory was discovered by an expedition of eleven independent chieftaincy houses from the Kalabari city-state (Elem Kalabari). Abonnema grew to become a flourishing major Nigerian seaport during the colonial era. It was host to many European companies. One such company was the Royal Niger Company. Abonnema is the headquarters of Akuku-Toru Local Government Area of Rivers State in Nigeria, which is largely surrounded by wetlands.

Wetland is an important ecosystem for fish and loss or degradation of wetland will have a direct consequence on sustainable fisheries^[3]. Whenever a source of freshwater meets a floodplain that has no steep out-flow, the water builds up to standing level. This is known as a swamp and is a productive ecosystem, although difficult for humans to live in Niger Delta mangroves are the largest in Africa, but uncontrolled anthropogenic activities had reduced their population size. The reduction from large to small mangrove stands has some ecological implications on species populations. For instance, stochastic events such as flooding, landslides, sea-level rise, high temperature, and humidity affect small populations. Human-mediated actions of random deforestation for firewood production, canalization, and de-silting of waterways and also artisan refinery, lead to the complete elimination of mangrove stands in specific locations. The cumulative effect of these actions can result in local extinction and loss of genetic variation of mangroves. Destruction of mangroves over the years is detrimental to other species that inhabit the mangroves in the Niger Delta such as fishes, crabs, etc. Mangrove forests provide a wide range of services, such as the provisioning of timber, medicines, fish, and shellfish. Good catches of fish and shellfish, especially crabs and shrimp, rely on good ecosystem health, including proper flushing by seawater, dense and productive stands of trees, and ecological connections with adjacent ecosystems such as sea grass meadows. Hence, managing mangrove forests to enhance fisheries provisioning implies enhancing ecosystem health, with concomitant benefits for other services such as coastal protection and carbon sequestration. Positive interactions between individual trees raise the prospect of synergies for timber production and other services as well (Huxham et al., 2010). Due to the high demand for land, the local people have indulged in swamp reclamation through the local means of sand filling such as filling with swamp mud, while other modes of reclamation involve the use of swamp buggies. The entry of big machinery into the swamp causes a negative impact on the coast such as destroying many soil-dwelling and benthic organisms. Although Land reclamation can be classified as a process of acquiring land from wetlands coast or sea-land, reclamation activities destroy the habitat of organisms and species

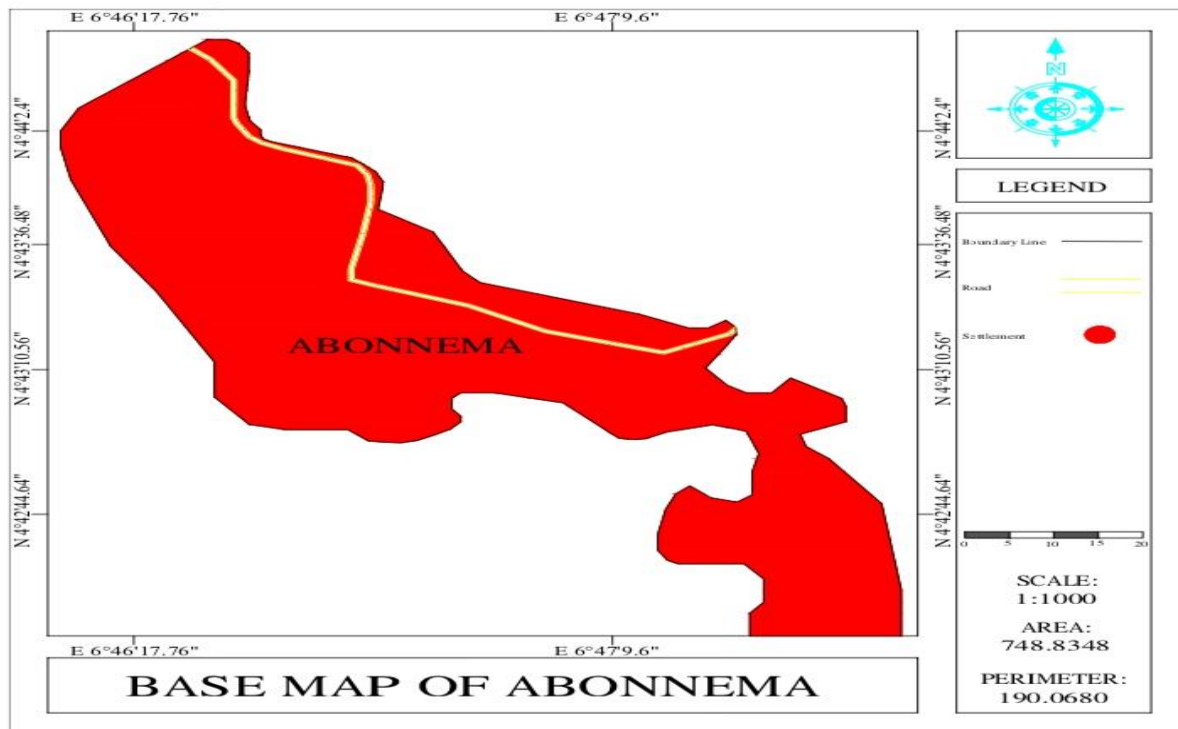


Figure 1: Base Map of Abonnema

FACTORS OF SWAMP RECLAMATION

Swamp reclamation is the process of recovery of wetlands due to the lack of habitable land space in a wetland region, turning it into a beneficial purpose. In other words, it is a method of turning a wetland into good land for residential, social, commercial, and industrial purposes. It is very common in the southern parts of Nigeria where there seems to be plenty of land, especially along the coastline.

There are many factors why people embark on swamp reclamation. Some of the reasons are:

1. Insufficient land: People embark on land reclamation because of the small size of their land. In other to expand the existing land, they, therefore, embark on land reclamation.
2. Population pressure: As the population increases, the need arises to reclaim existing lands that have been occupied by water.
3. For residential purposes: Due to the scarcity of land to build coupled with a high cost of accommodation, people embark on land reclamation to build houses for residential purposes.
4. For commercial purposes: Trade and other commercial activities are created when land is reclaimed. This is very common in Lagos State
5. For industrial purposes: Industrialists do engage themselves in land reclamation to site industries in the new area.
6. For agricultural purposes:

IMPACT OF RECLAIMING SWAMP

Land reclamation changes the quality of the surrounding areas of water. The material used causes the water to be more acidic and certain organisms are unable to adapt to this environment. This upsets the oxygen-carbon dioxide levels in the water, bringing about difficulty for organisms' survival. Reclamation of wetland destroys an underwater habitat by building over or enclosing a body of water. A high density of reclamations on small shallow bottom areas represents a major form of quantitative damage to the underwater environment and the destruction caused is irreversible.

Reclaimed land is also responsible for the rise of the water level on the bay which causes massive flooding and storm surges. They badly affect not just the lives of the residents but also, may shut down local economic activities, particularly those in low-lying cities. Besides creating a valuable resource where one didn't exist before; there are other advantages to reclaiming lands. Wetland reclamation provides development-obsessed Local Government's Areas, the option of avoiding the demolition of yet more rural villages and relocating tens of thousands more people, just like the case of Abonnema or any other island. There are hopes for creating more lands and land capacity expansions, due to the increase of population over time, which can be advantage to infrastructural developments and can also enhance road transportation within Abonnema and its neighboring communities.

THE RELEVANCE SWAMP RECLAMATION TO ROAD CONSTRUCTION

Transportation has a vital function in human daily life. Movement is a very necessary aspect of human existence; as things have to be moved around at different points in time. Due to this reason, transportation systems have developed over time, alongside evolving speed and efficiency systems. Currently, we cannot imagine a world without access to sufficient, effective, and adequate means of transportation. Continuous access to transport systems has influenced the economy^[6]. Many businesses and industries now require efficient and quick transport systems to enable fast delivery and provision of raw materials and products. To also maintain stable ventures that can generate revenue. The economy relies on access to dependable and effective transport systems that will bring about the possibility of speedy trading to spread across a broader range of stakeholders. Transport provides numerous employments and job offers within the employment sector. Traffic control, pilots, captains, delivery services, and drivers are some illustrations of the job opportunities that are provided through the transport industry. When individuals look for jobs or premises for their businesses, one of the main factors they consider is the commute. They usually find great access to transport and this is a major consideration that determines how good a location is. Improving transport links improves an area's popularity and subsequent development. This is why; several bridges and roads are constantly under construction^[6]. It is important to reduce costs incurred in traveling, which consumers and businesses are subjected to while making transportation easier. In developing and developed economies, transport continues to play a crucial role in the socio-economic lives of the people. When transport infrastructure is properly linked and efficient, the environment is conducive to economic growth. However, inadequate transport systems can limit economic growth or development, due to constraints that reduce opportunities. Transportation is one of the essential components of any business. Moving goods from areas where production occurs to areas where they are consumed requires links from companies to customers and suppliers. It is an important activity that provides a supportive framework for the

demand for goods and services while ensuring that customers can access what they need as soon as they need it.

METHODOLOGY

For this article, land-sat imageries lifetime drone imageries of Abonnema were achieved from the Rivers State Ministry of Works to review and evaluate the present infrastructural development and how it has impacted the life and environment in Abonnema and to also see the Degema to Abonnema link bridge constructed in 1999 and the newly constructed ring road linking Abonnema to her new site. Field observations and questionnaires were administered to get first-hand information on the socio-economic impact of swamp reclamation in Abonnema. supervised classification of the image processing were adopted to determine the percentage of land cover in the study area.

RESULTS AND DISCUSSION

Over the years the population of Abonnema has multiplied which has triggered the need for the expansion of land capacity, especially after the construction of the Degema-Abonnema link bridge that has made it possible for residents to be based in Abonnema and work in other nearby Local Governments in Rivers State, during my interaction with some the stakeholders of Abonnema, it was deduced that that because of the small capacity of land they experienced a slow pace of infrastructural development such as roads, industries, new homes, hotels to accommodate residents and visitors coming in for events such as weddings, burial, and the famous Abonnema beach carnival. Figure 5 showed that Abonnema is surrounded by water and swamp making boats and canoes the only access into and out of Abonnema before swamp reclamation paved way for infrastructural development such as the bridge you see in figure 5

Figure 1: The supervised image classification showed that the built-up area covered 373,451sm, followed by the mangrove area which covered 286,345sm, while the un-built area covered 106,526sm, followed by the swamp area at 50,918sm, then the river which is the least with 2,852sm. It is predicted that as long as the population of Abonnema residents increases, the need for more land for infrastructural and agricultural activities is still on the high demand, land reclamation will be a continuous welcomed activity in Abonnema, which will lead to the increase in built-up area and a decrease in every other land cover area.

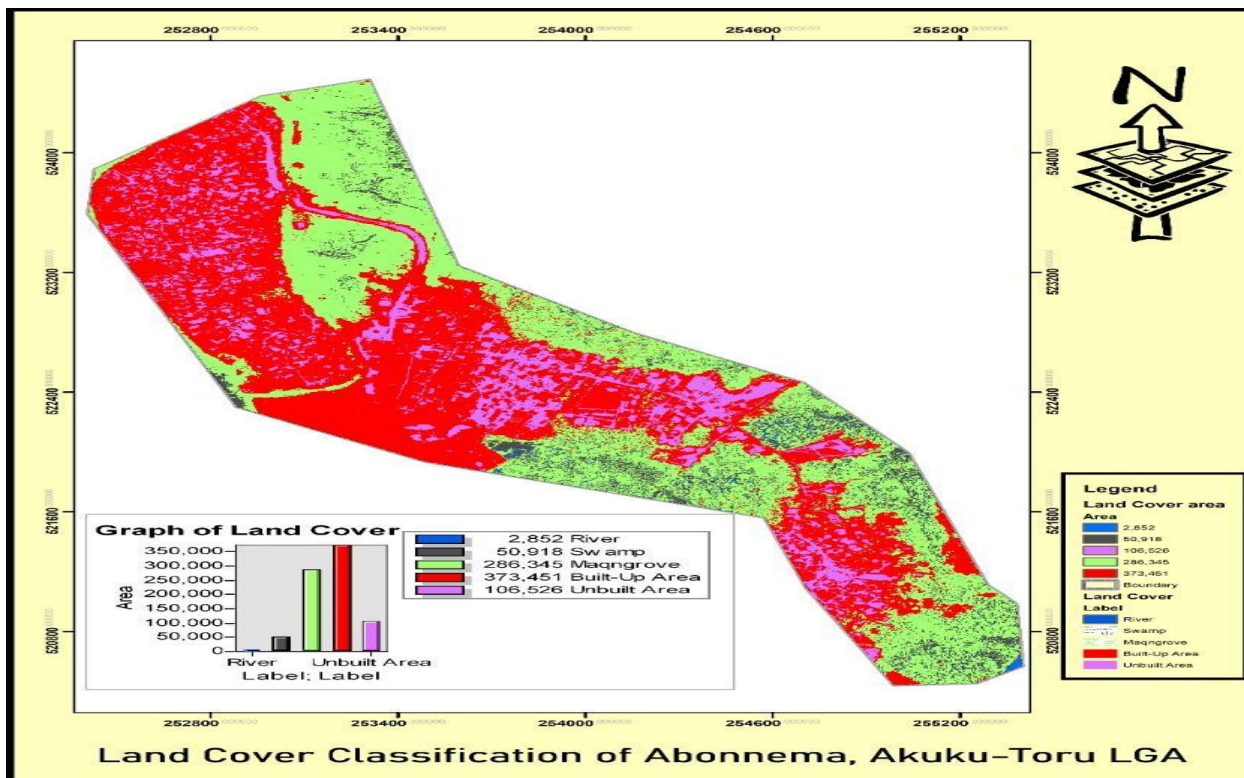


Figure 1: Land Cover Classification of Abonnema



Figure 2: Land-sat Imagery of Abonnema showing the link road to Ogoin piri

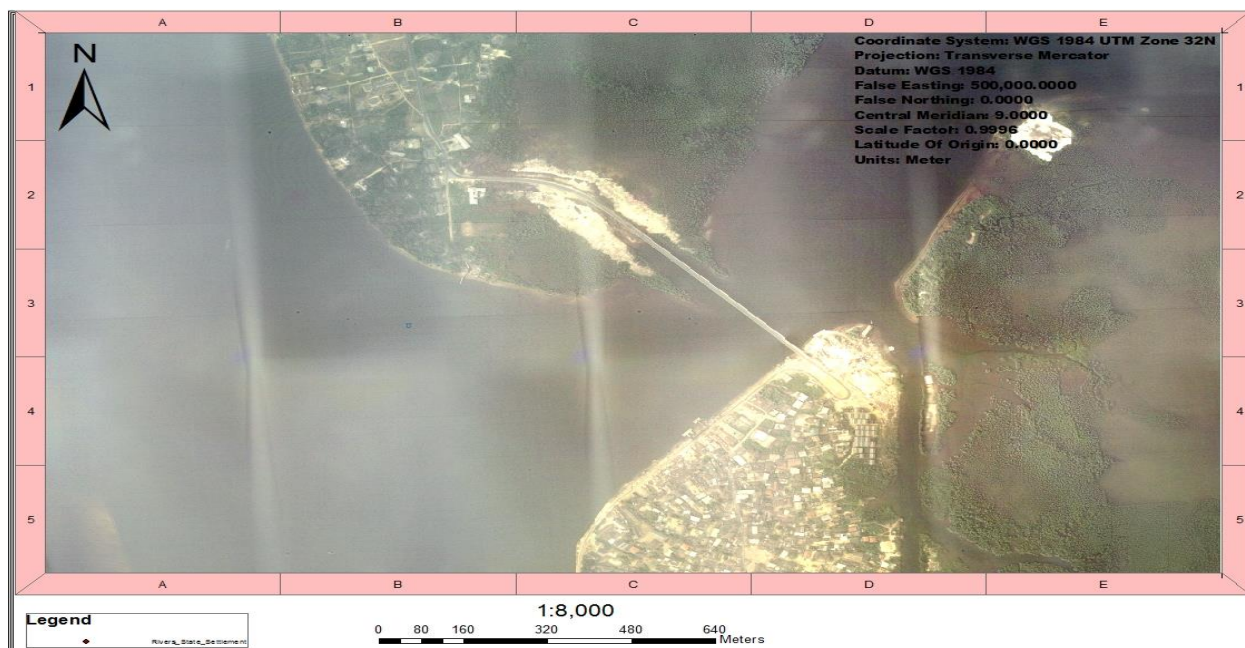


Figure 3: Land-sat imagery of Abonnema and Degema

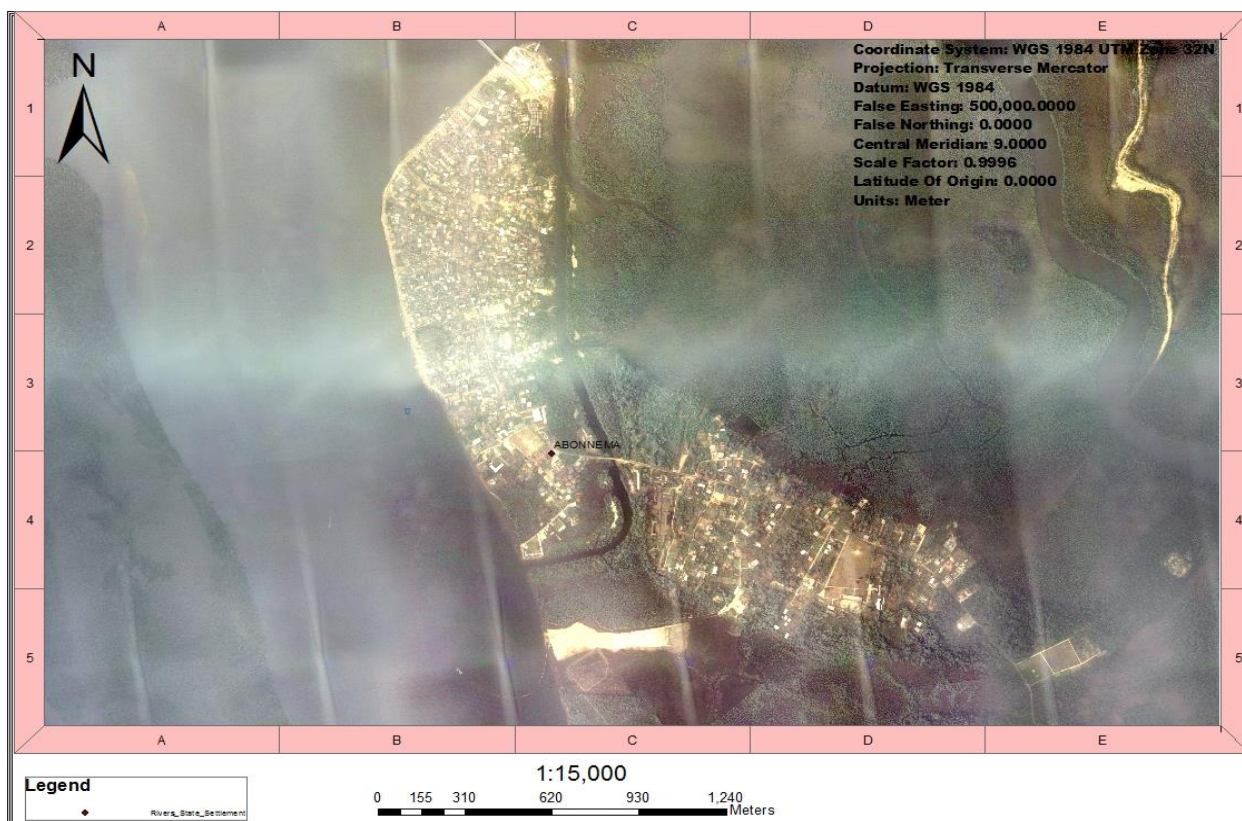


Figure 4: Land-sat imagery of Abonnema



Figure 5: Abonnema drone view



Figure 6; Abonnema Ring Road drone view
Source-Rivers State Ministry of Works

Figure 6 showed one of the socio-economic benefits of swamp reclamation in Abonnema which is the recently constructed ring- road that links you directly to the New Site (OgoinPiri) through the back of the Abonnema Cemetery without having to drive through the main town.

Figure 7 marital status of respondents showed a high percentage of married residents and a low percentage of single residents in Abonnema

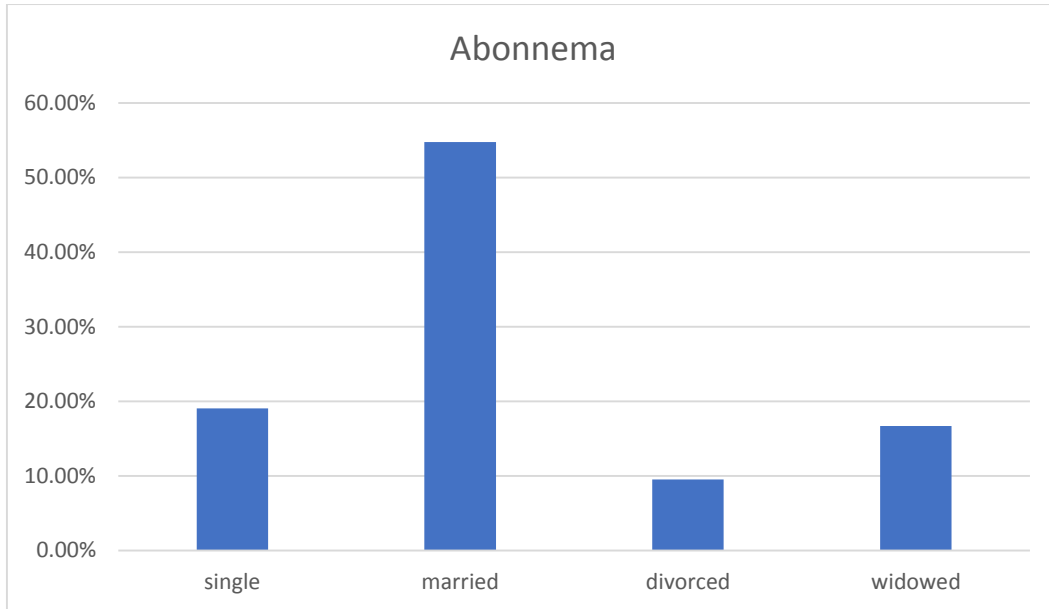


Figure 7 Marital Status of Respondents

Figure 8 showed that a very high percentage of residents are comfortable with swamp reclamation and a very low percentage of residents are not happy with reclamation activities in Abonnema

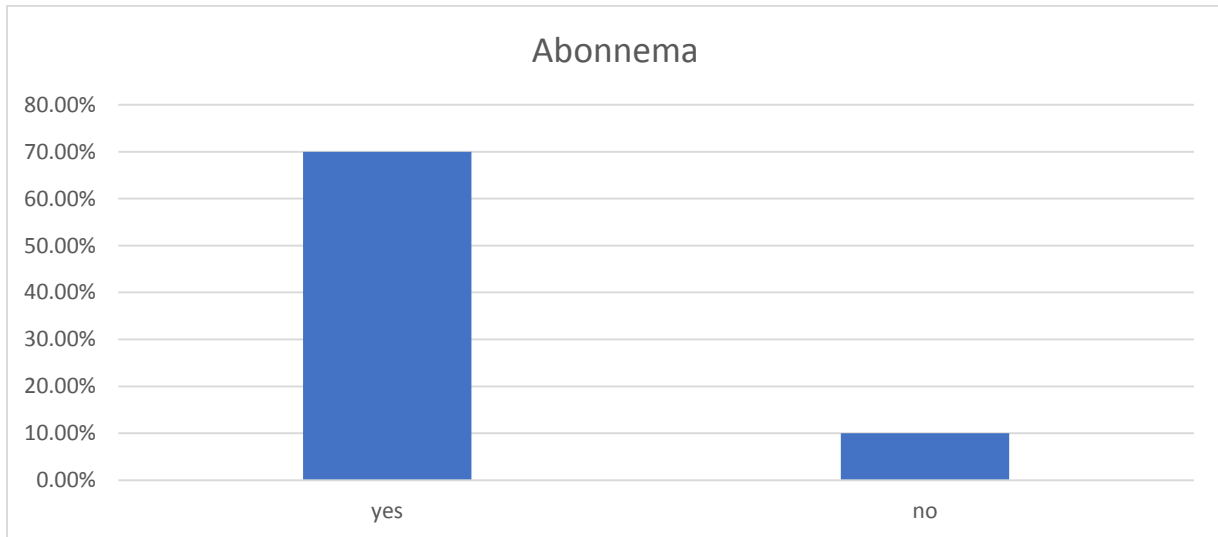


Figure 8 Respondents Comfortable with swamp reclamation

Figure 9 showed a very high percentage of residents that have not attained any level of education and a very good percentage of respondents that have attained primary, secondary, and tertiary education in Abonnema

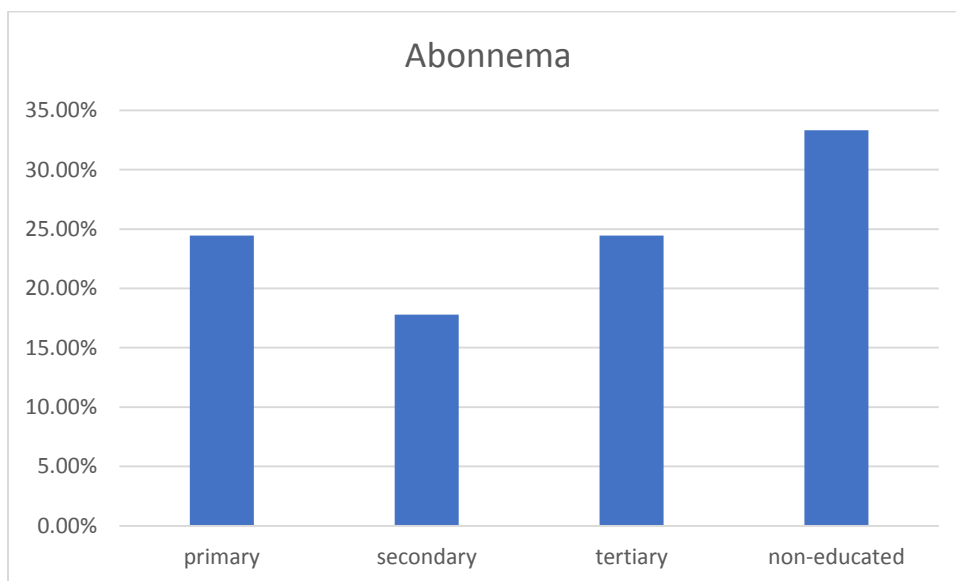


Figure 9 Educational Attainment of Respondent

Figure 10 showed the socio-economic implications of swamp reclamation in Abonnema

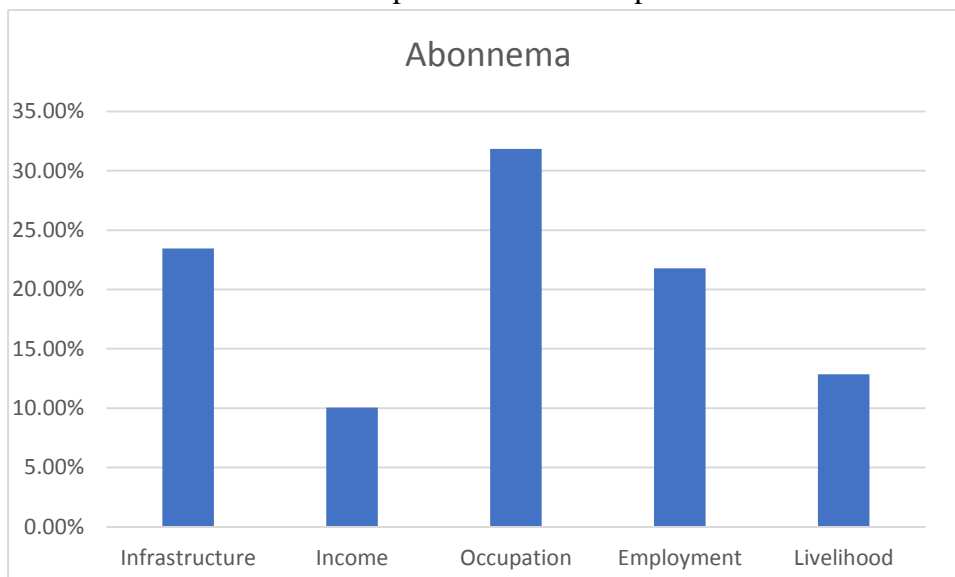


Figure 10 Socio-economic implication of swamp reclamation in Abonnema

CONCLUSION

Transportation plays a very major role in urban and rural development because it aids the movement of humans, animals, and goods from one location to another which is essential for the development of civilization. Transport is the foundation of any society. Economies thrive on having the right infrastructure that consists of features such as proper road links and modern airports. Many industries require transport to improve their businesses. Workers depend on transport to fulfill their obligations. Good transportation promotes business ventures by enabling the workforce to move around safely and quickly.

Before swamp reclamation took place in Abonnema, the only available mode of transportation was water. This article revealed that one of the major benefits of swamp reclamation in Abonnema is the construction of the Degema to Abonnema link Bridge, which has on the other hand improved their livelihood. The second benefit of swamp reclamation in Abonnema is the newly constructed ringroad

that links you directly to the New Site (OgoinPiri) through the back of the AbonnemaCemetery as you can see in figure 4. Swamp reclamation in Abonnema has triggered the expansion of land capacity, created more land for infrastructural development such as roads, hotels, schools, and residential buildings in return for creating easy access in and out of the town and new jobs opportunities for the residents.

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