

Assessment of Community Awareness and Participation Approaches in Natural Gas Management in Songosongo Island

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Abstract- Literatures pertaining to community awareness to natural resources management have revealed that there is inadequate community awareness towards natural resources management in Tanzania. However, data to indicate factors influencing community awareness and the main approach of participation in natural gas exploitation and management in Songosongo Island is missing. A study to assess community participation in natural gas management was conducted in Songosongo Island in Kilwa District. Specifically the study assessed community awareness and the approaches for local community participation in natural gas exploitation and management. A sample of 61 respondents, two Focus Group Discussions of 10 participants each and 12 key informants were consulted. An analysis of quantitative data was involved Statistical Package for Social Sciences (SPSS) while qualitative data were analysed by thematic and content analysis. Results revealed that, community awareness in natural gas management is inadequate and the approach employed was top down due to lack of formal communication from leaders to the community, hence the decision was centrally made by organization that were remote from the project area. The study recommends Tanzania and other Less Developed Countries to use the available knowledge systems to learn the bottom up approach to participate the community in development projects.

Index Terms- Bottom up, Community Participation, Natural gas, Top down

I. INTRODUCTION

Despite the importance and emphasis placed by the government on community awareness and participation in project and activities implemented in their residential areas, Tanzania has been facing challenges of inadequate community participation in development projects and the situation has resulted into conflicts among interest groups (Ndimbwa, 2014; URT, 2013b). Community participation in development programmes and projects have far-reaching consequences for development, influencing ownership and sustainability of projects (Ltumbesi, 2015). When the community is participated, it becomes aware and feel they have responsibility to preserve the project, hence sustainability of the project (Iddi & Nuhu, 2018;

Olajuyigbe, 2016). Similarly, when the community is unaware of development project implemented in their surroundings, they will feel that, they are not part of the project; hence they always unvalue the project and in most cases leads to failure of the projects (Ltumbesi, 2015). Thus, community participation is critical for the achievement of projects, ensuring sustainability and to provide local people with a great amount of experience and insights in planning, implementing and monitoring and evaluation of projects (Ltumbesi, 2015; Olajuyigbe, 2016).

However, the implementation of development projects in developing countries including Tanzania, have been facing shortcomings in the aspect of community participation, the situation that resulted lack of awareness among the community to the development project which takes place in their hamlets, villages and wards (Ltumbesi, 2015).

Lack of community participation was manifested in the exploitation and management of the natural gas in Mnazi Bay, Mtwara region. During the process of preparing a plan for exploitation of the natural gas there were inadequate community participation to natural gas management (Ndimbwa, 2014). This situation contributed by inadequate skills among the community as they lacked capacities needed to enable and facilitate competitive gas sector with provision of the necessary service (ESRF, 2013). Inadequate community participation and varied expectations of groups in community contributed to conflicts in the area of natural gas exploitation (ESRF, 2013). The conflicts in Mtwara region were also resulted due to unfulfilled promise of the government; natural gas transfer from Mtwara to Dar es salaam; lack of information on natural gas project and lack of commitment of the government that resulted youth and community of Mtwara to rally against the government after many measures taken to address the problem by the government failed (Ndimbwa, 2014).

In response to the situation, Tanzania government has been making some efforts to ensure community participation in natural resource management including natural gas in their area of jurisdictions. Some of the efforts made by Tanzania Government which drew attention of the community include the introduction of Opportunity and Obstacle to Development (O& OD) in 2001;(URT, 2004) and Participatory Forestry Management in 1990 which was formalized by Forest Act in 2002 (URT, 2008). Specifically, in the gas sector the efforts are formulation of the National Natural Gas Policy of Tanzania in 2013 which calls for community participation in gas sector to ensure benefits to nation

and citizens (URT, 2013b) and the introduction of Local Content Policy of Tanzania for Oil and Gas Industry in 2014 focusing on ensuring local benefits to the community where oil and natural gas companies operate (URT, 2014). These are few government efforts and their purposes are delineated as follows:

O&OD is a Community Participatory Planning Methodology with the purpose of empowering people in making decisions on their development endeavor. In order to attain the Participatory Planning Methodology the government of Tanzania emphasized the same in various periods including 1961-1966; 1967-1992 and 1992-2002 (URT, 2004).

In 1961-1966; development activities were implemented under independence vision that aimed to attain high standard of living by fighting illiteracy, diseases and poverty. The purpose was to vest decision making power to the people in their development endeavor. During the period of 1967- 1992; Arusha Declaration was the main direction of community development with the philosophy of socioeconomic liberalization based on socialism and self-reliance as a long-term national development goal. The strategy for implementing the Arusha Declaration was also to devolve powers to the people to enable community participation in decision making. The period: 1992-2002 was emphasized on the reforms in the public sector. The government of the United Republic of Tanzania Mainland carried out the reforms in order to increase efficiency and capacity of the public sector to deliver quality services including community participation in development activities (URT, 2004).

The government of Tanzania was also formulated the National Natural Gas Policy for guiding development and growth of the gas industry to ensure optimal benefits to the nation and citizens (URT, 2013b). The policy emphasizes community participation in natural gas industry for the purpose of industrial stability, integration of local community into local economies and poverty reduction (URT, 2013b, 2014). The community is considered to participate when awareness creation on the availability of resources to the community surroundings will be given priority.

The introduction of the Local Content Policy of Tanzania for Oil and Gas Industry was also another government effort aimed at among other things, ensuring local benefits to the community where oil and natural gas companies operate. Local content means “the added value brought to the country in the activities of the oil and gas industry in the United Republic of Tanzania through the participation and development of local Tanzanians and local businesses through national labour, technology, goods, services, capital and research capability (URT, 2013b, 2014). In this regard, the local content policy emphasizes community participation in Oil and Natural Gas industry with considerations of possession of requisite skills and knowledge in the gas industry by the community (URT, 2013b).

The main aim of the government efforts was to ensure community participation in development endeavor in a manner of

bottom up approach instead up top down approach. This form of participation inculcates the sense of project ownership by the surrounding community, community participation in management and sustainability of the project.

However, the results of these efforts have fallen far short of government expectations. Top down approach as a means of community participation in development projects in Tanzania is still persisting resulting in conflicts among interest groups (Ndimbwa, 2014). In some areas, such as Mtwara in Tanzania, Kitui in Kenya where natural gas was being exploited severe conflicts resulted by weak governance, social tensions, corruption and unfulfilled promise of different interest groups (DAILY NEWS, 2013; Muigua, 2014; Ndimbwa, 2014). This study intended to examine the challenges of community participation in natural gas exploitation and management and the type of participation in Songosongo natural gas field of Kilwa district in Lindi region.

II. MATERIALS AND METHODS

2.2 The Study area

The study was conducted at Songosongo Island which is located at Latitude 8°30.00'S and Longitude 39°30.10' E with an area 5.66 sq km coverage (PMO-RALG, 2011). Songosongo Island has a dual status of a village as well as a ward. The Island is located approximately 25 kms off shore from Kilwa district (ESRF, 2008). The Island had a total population of 3,026 in which 1,634 were male and 1392 were females with 759 households (ESRF, 2008; URT, 2013a). In recent years, it was reported that, there was varying number of population due to influx of many people to undertake fishing and the discovery of natural gas in Island (PMO-RALG, 2011).

The main economic activities of Songosongo Island were fishing 90% employment in public and informal sector, Seaweed and coconut farming and small scale lime making practiced by 5% of the villagers (PMO-RALG, 2011). Other economic activities are small shops/kiosks, bars and guest houses, street vending and selling of food ‘Mama lische’, which have increased in recent years and are making significant contributions to household incomes (ESRF, 2008).

Songosongo Island has a Tropical Monsoon East African Coastal Climate (Kebede, Brown, & Nicholls, 2010). The climate is influenced by the seasonal winds called the Monsoon Winds. The rainfall is high ranging between 1000mm and 1800mm per annum. Due to its location at a lower altitude the Island experiences high temperatures ranging from 25°C-30°C in almost throughout the year (Kebede *et al.*, 2010 and Darwall *et al.*, 1997). From November to March the North East Monsoon blows. The rains begin as the wind decrease in March and continue for two to three months until the starting of South East Monsoon.

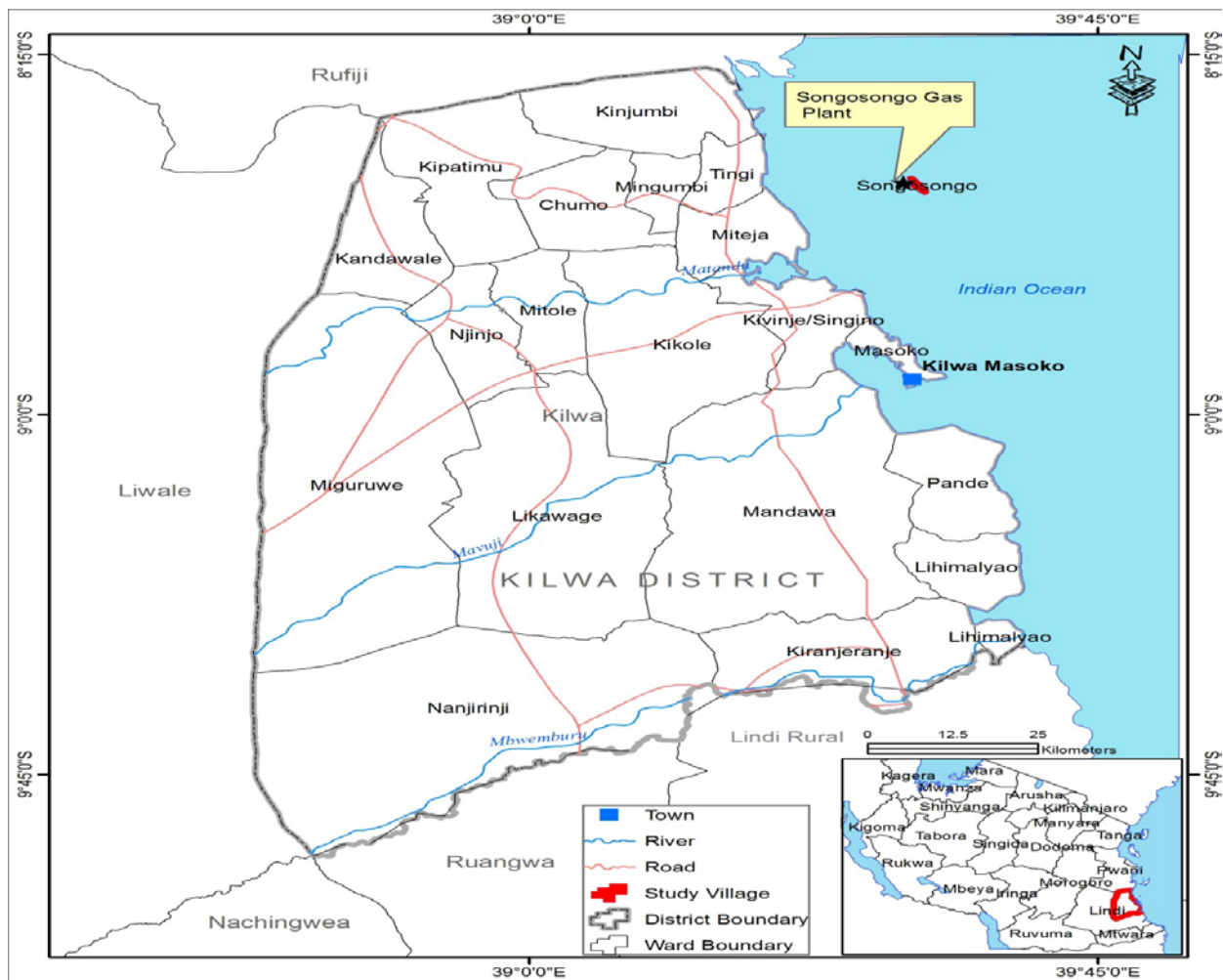


Figure 1: Map of Kilwa district showing location Songosongo ward.
 Source: IRA, University of Dar es Salaam, 2015

2.3 Data collection

Simple random sampling technique was employed to draw the sample size in order to ensure equal chance of inclusion of each household in the study area (Kothari, 2004). The study area had a total of 759 households (URT, 2013a), in order to ensure representativeness of sample at least 5% of the total population is required according to Boyd, (1981) in Malugu (2007). For this study 8% of households, equivalent to 61 households were included for data collection. This sample size was appropriate to ensure validity and minimal financial resources use. Data were collected by questionnaire survey, key informant interviews and focus group discussion. The mixed approaches brought together the different strengths of quantitative and qualitative methods, while offsetting the weaknesses of using a single tool and expanding the set of collected data.

Household interviews were administered to 8% of households in the study area which are 61 out of 759 households were included. The interview was conducted with the head of the household who was selected by the criteria of being a man or woman or any person with 18 and above years old having responsible for the family. The household questionnaire of both structured and semi structured questions for one-to-one interviews method was administered to the respondents in order to collect

data pertaining to community awareness, approach used to natural gas exploitation and management in Songosongo ward.

In addition key informant interviews involved the DNRO, two workers of the Songosongo natural gas project, one staff from TPSF, six TPDC staffs, the councilor, the village chairman and VEO of Songosongo. Through key informants, the data collected were community awareness on availability of natural gas and the means on how the community got knowledge on availability and type of natural resources in their residential areas.

Moreover, focus group discussion was conducted through consultation made with a range of stakeholders in the study area. The selected group constituted local people and village leaders of Songosongo Island who were grouped together for discussions. In this regard there were two FGD with ten participants, five participants from each group namely local people and village leaders from Funguni and Makondenii villages in Songosongo ward. The inclusion of local people and village leaders helped to gather the valid information and avoid bias which could happen if homogeneous group participated. The data collected were about community awareness on the availability of natural gas in Songosongo and the approaches used to involve the community of Songosongo in natural gas exploitation and management.

2.4 Data processing and analysis

The data processing and analysis was undertaken through compilation of information collected from questionnaire survey, key informant interviews and focus group discussions. Quantitative data which were gathered by questionnaires were analyzed using Statistical Package for Social Sciences (SPSS) version 20 and Microsoft excels 2007 while qualitative data from focus group discussions and key informant interviews were analyzed using thematic and content analysis. The presentation of data was made using tables and figures in order to facilitate the comparison of the data sets collected while each table was organized below each research theme to ensure easy complementarity of the explanations in the preceding related theme (Kothari, 2004).

III. RESULTS AND DISCUSSIONS

3.1 Types of Natural Resources in Songosongo Island

Songosongo Island is one of the Islands which is endowed with varieties of natural resources ranging from natural gas (35%), ocean (35%) land (18%), forest (10%) and wildlife (2%). These resources are sine qua non for supporting the livelihoods of the community of Songosongo. The natural gas and ocean are known by many respondents because the natural gas exploitation in Songosongo was the main project going on in the area and thus the community considered that, natural gas was one of the abundant resources in the area.

Ocean on the other hand was one of the resources supporting the livelihoods of the community as the majority of the Songosongo community depended on fishing. In addition, land was considered by the community because some depended on crop production in small farms. This study focused on the natural gas and the community awareness and approach for participation on natural gas management and challenges constrained community participation. Table 1 show the type of natural resources available in Songosongo and the factors constrained the community to participate in natural gas exploitation and management.

Table 1: Types of natural resources in Songosongo Island

Type of natural resource	(% Response)	Source of information (%)				
		Villagers	Village Leaders	District Leader	Media	Total
Natural gas	35	64	18	12	6	100
Ocean	35	68	15	10	7	100
Land	18	70	14	12	2	100
Forest	10	69	13	12	4	100
Wildlife	2	65	17	13	5	100
Total	100	-	-	-	-	-
Factors constrained Community Participation in Natural Gas Management						
Factor	Percent response					
Inadequate awareness	25					
Low capital	30					
Low Technology	45					
Total	100					

Source: Field survey, 2015

3.1.1 Community Awareness on the Availability of Natural Gas

Community awareness on the availability of natural resources in their surrounding is important to enable effective participation in exploitation and management. According to URT (2013b), it was a responsibility of the Local Government Authorities to provide awareness to the public on natural gas project in Songosongo.

However the investigation that was made revealed that, there was inadequate community awareness on natural gas project in Songosongo. For the respondents who were aware, the source of information was villagers. Other resources which supported the livelihoods of the Songosongo community were the ocean, land, forest and wildlife. These resources were known by the village community, because they were used by the ancestors for a long time hence, passed the knowledge of their importance to the next

generation as they were supporting livelihoods. Through long time use of the resource the community became aware that they are the resource for them. Other sources of information were village leaders, district leaders, and media (Table 1).

The assessment was also shined light on the meetings which were conducted quarterly in Songosongo. These meetings were headed by the Village Executive Officer (VEO). In search of community awareness on natural gas project at Songosongo, issues related to whether there was information disseminated to the community during meetings were assessed. The results showed that during the meetings there was no information about natural gas project disseminated to the community. Issues which were under discussion were not related to the natural gas project. As a results the community, saw the project being carried out and that was the time when they realised the availability of natural gas in their residential area (Table 2).

Table 2: Meetings conducted in Songosongo village in 2014

Meetings conducted Quarterly	Did the issue pertaining to exploitation of natural gas discussed?		
	Yes	No	Total
Quarter one meeting	-	100	100
Quarter two meeting	-	100	100
Quarter three meeting	-	100	100
Quarter four meeting	-	100	100

Source: Field survey, 2015

3.3 Approaches for participation

3.3.1 Community Participation in natural gas exploitation and management

Community participation in natural gas activities is important for industry stability, integration into local economies and poverty reduction, (URT, 2012a). This study assessed the participation of Tanzanians, especially local communities in natural gas exploitation and management in Songosongo Island. The study assessed how the local community was being participated in natural gas exploitation and management and the criteria used to give opportunity to the community to participate. The findings revealed that, the community mainly participated in

low wage employment (20%) such as guard, cook and other low wage employment activities. In addition few of the community (8%) were involved in decision making pertaining to benefits from natural gas. These were mainly famous people in the village and district leaders. Moreover, (72%) were not participated in any process of natural gas exploitation and they saw the process going on at the Songosongo natural gas field. These findings are more or less similar to ERSF (2008) that communities were not consulted enough at the inception of the project. This implies inadequate participation in natural resource exploitation and management by the local community.

Table 3: Community Participation in Natural gas Management

Participation	(%) Response	Participation Criterion	(%) Response	Decision Marker for Natural Exploitation and Management	(%) Response
Low wage employment	20	Education	39	Central Government	91
Decision making	8	Capital	30	TPDC	7
Not participated	72	Technology	30	Village Leaders	2
		Indigenous knowledge	1		
Total	100		100		100

Source: Field Survey, 2015

When the professionals gave opportunity to the community to participate in the exploitation of natural gas, they had some criteria to consider. In Songosongo natural gas field the criteria used for community participation were education (39%), capital (30%), technology or technical education (30%) and indigenous knowledge (1%). Education, capital and technology were crucial criteria for natural gas exploitation although many Songosongo communities did not meet the criteria. The native people who were employed in different areas of the natural gas exploitation were those who had education in carrying out a particular activity. Capital and Technology were the main constraints of natural gas exploitation because majority of Songosongo community and Tanzania in general have no enough capital and technology.

Furthermore, the assessment was made to reveal the levels of education among the community of Songosongo. The assessment revealed that majority of the community had low level of education ranging from secondary education (10%), those without formal education (13%) and (77%) had primary education. In this context, the awareness of the community on availability, exploitation and management is expected to be low. Consequently, the community must be guided by professionals and community leaders on what should be done in exploitation and management of natural gas. This type of participation is top down which in most cases results to occurrence of conflicts between the community and professionals. This scenario was manifest by the conflicts at Mnazi bay natural gas field in Mtwara region (Ndimbwa, 2014).

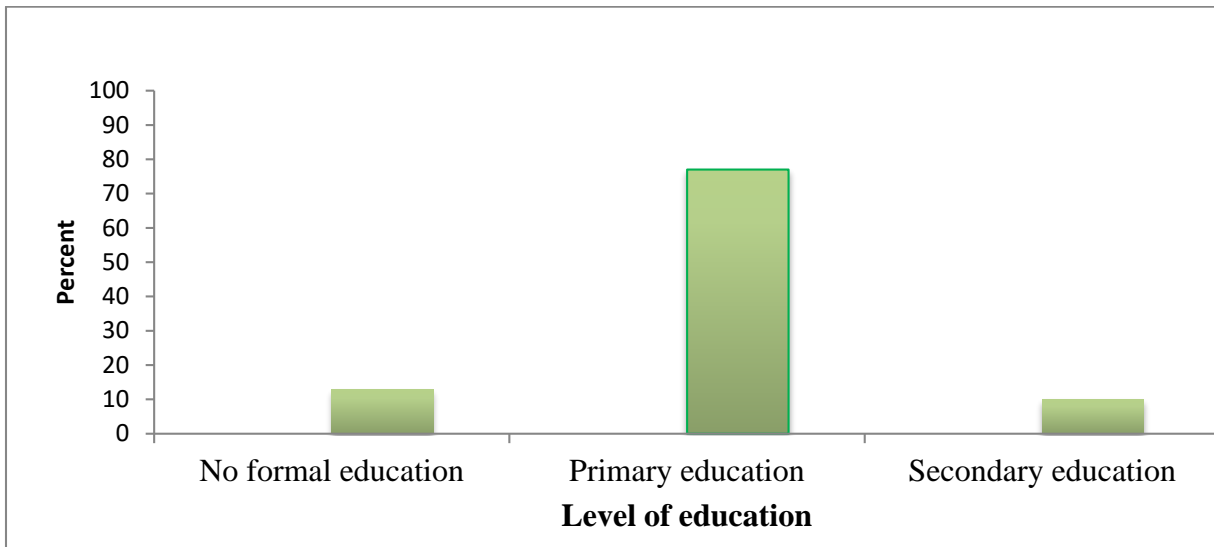


Figure 2: Level of education of Songosongo community
Source: Field Survey, 2015

3.3.2 Decision Making on Natural Gas Exploitation and Management

Participation in decision making by the communities is minimal since the government planners, and donors are the dominant of the decision making (URT, 2004). This study aimed at identifying how the Songosongo community participated in decision making on the natural gas management. The study revealed that, (91%) of respondents reported that the decision was made by the government, (7%) reported village meetings while (2%) reported TPDC.

These results implied that, the community was not adequately participated in decision making on natural gas management. Views from focus group discussions showed that, the community had a little opportunity in decision making compared to village leaders. In this context, where decisions were imposed by the government to the community, resulted to lack of transparency, awareness hence the community lacked sense of ownership of natural resource gas project which was taking place in their surrounding area.

3.4 Factors Constrained Community Participation in Natural gas Management

3.4.1 Inadequate awareness

There was inadequate awareness among the community of Songosongo Islands on the availability of natural gas in the study area. This situation was caused by lack of formal process of dissemination of information to the community by villager and district leader. As a result the community was not fully participated in management of the natural gas at Songosongo. Some members of the community, who participate in the process, were employed in low wage employment activities. The lack of awareness was caused by community leader who principally have the responsibility to disseminate information about community matter occurring in the area where they are working (URT, 2013b).

3.4.2 Lack of capital

Lack of capital among the community of Songosongo was another factor which constrained the community to manage natural gas in Songosongo Island as presented in Table 1. The capital was required to invest in the exploitation of the natural gas. The community of Songosongo and Tanzania in general lack capital which could help the exploitation of the natural gas. This situation necessitates the developing countries to hire expertise from developed countries with adequate capital to support the exploitation of resources. The hiring of these expertises is accompanied by arrangements on how the obtained resources will be shared among the two parts. In this juncture is where the problem of misunderstanding due to unequal distribution of what is obtained happens. Developing countries accuse the developed ones as they take big share compare to what real they required. The developed countries on the other they claim that, they have right to do that because of the capital they use in the process. Therefore, the exploitation of resources in developing countries has been causing misunderstanding between the developing countries and the developed ones due to how they can share the obtained resources.

3.4.3 Low level of technology

Technology is the application of science in dealing with novel problems (ESRF, 2013). The community of Songosongo like other communities of Tanzania is facing a problem of low level of technology. This situation has constrained the community in exploitation of natural resources in their surroundings. Consequently, this situation has necessitated the nation to call for experts from abroad to provide support in exploitation the resources under Production Sharing Agreement (PSAs). When companies come to the country they required to cooperate with the community in the activities they carries out. Natural gas exploitation is one of the areas which require technological expertise from developed countries. The cooperation between experts from developed countries and those in developing countries in the resources exploitation sometimes is unsatisfactory. The companies usually come with their experts

which they employ in the activities leading to deprivation of employment to the native people. This problem always results to misunderstanding between the foreigners and the native.

In practice lack of capital and low level of technology has necessitated the country to adopt the Production Sharing Agreement (PSAs) that allows the International Oil and Gas Companies to transfer their technology, knowledge and finance in Tanzania. The foreign companies hired for Oil and Gas were taken on merit of their capabilities in technology and finance (ESRF, 2013).

IV. CONCLUSION AND RECOMMENDATIONS

The study observed that, the main type of natural resources found in Songosongo Island were Natural gas, ocean, land and wildlife. However, community had inadequate awareness on the availability of natural gas in Songosongo because there was no any formal information disseminated to the community about the availability of natural gas. The community of Songosongo and Tanzania at large was partly participate in natural resources exploitation and management because they constrained with inadequate awareness, lack of capital and low level of technology. This situation necessitated the country to adopt the Production Sharing Agreement (PSAs) with international companies to collaborate with Tanzanians in exploitation of natural gas.

The approach used to involve the community of Songosongo was to large extent the top down because the majority of Songosongo community (72%) did not participate in decision making pertaining to natural gas exploitation and management. The decisions were made by leaders and organizations which were in remote to the project area. The community participated in low wage employment such as guard and cook.

The study recommends the following measures to be put in place so as to ensure community awareness in development endeavor in their area of jurisdictions. There should be formal system of communications from district and village leader to the community. In addition development practitioners have to consider a system of participation that allows bottom up approach to ensure full participation of the community.

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