

**NATURAL GAS EXTRACTION AND GENDERED ACCESS
TO BENEFITS AMONG HOST COMMUNITIES IN
KILWA DISTRICT, TANZANIA**

SARAH ESIL MWAKYAMBIKI

**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF SOKOINE
UNIVERSITY OF AGRICULTURE.
MOROGORO, TANZANIA.**

EXTENDED ABSTRACT

Since adoption of the Convention on Biological Diversity (CBD) of 1992, demand for access and benefits sharing that arise from utilisation of natural resources have gained unprecedented momentum. Unfortunately, researchers have been examining potential benefits sharing of natural gas much more at nation level, excluding communities living close to extraction sites. The study on which this thesis is based addressed the gap by using a gender lens whereby the analyses were framed to understand whether benefits sharing were gendered. The research examined gendered sharing of benefits that arise from utilisation of natural gas resources among communities living close to the extraction sites. A cross-sectional study design was employed to collect quantitative and qualitative data from 373 households in Kilwa District. Qualitative data were analysed using content analysis. Descriptive statistics and inferential statistics were used to analyse quantitative data including socio demographic characteristics, division of gender roles and distribution of benefits. Binary logistic regression was used to examine factors influencing extractive companies that share benefits with communities. An index scale was constructed to gauge gendered access to direct and indirect access to benefits. Moreover, host communities' attitudes were measured on a five-point Likert scale, and factors influencing community's attitudes were assessed using ordinal logistic regression. It was found that, generally, the majority of men and women had opinion that their gender roles were not changed by extractive companies. However, gradual shift of women's and men's roles was observed: women were engaged in paid work created by extractive companies other women were engaged in fish business, fish storage and ice blocks making business due to availability of electrical power produced by natural gas. Men's workload increased due to restriction of access to fishing areas by extractive companies. It was evident that factors influencing extractive companies to share benefits with communities included distance, education and

legitimacy ($p < 0.05$). It was found further that communities had higher expectations in getting employment opportunities and improvement in health, water and electricity services. The majority of respondents had low level of access to direct benefits. On the other hand, communities had higher level of access to indirect benefits, due to availability of education opportunities and electricity power which enabled them to be engaged in various income generating activities. Community in the study area had negative attitude towards benefit sharing. Sex, distance from home to extraction activities, access to electricity, and relationship between community and extractive companies were found to be important predictors of community attitude ($p < 0.05$). It is recommended that the Government and extractive companies should improve social wellbeing of host communities through evaluating the essential roles that women and men perform. Labour saving support including fishing gears, use of electricity to establish fish processing factories, supply of enough water, utilising local markets and improving health services would reduce workload. The extractive companies and the Government should take into consideration host community expectations as starting points for improving access to benefits. Government, in collaboration with extractive companies, should establish a foundation/organisation which would ensure sustainable utilisation of service levy. Extractive companies and Policy makers should prepare strategies to overcome communities' negative attitudes towards sharing benefits in order to minimize chances of resource curse.

DECLARATION

I, **SARAH ESIL MWAKYAMBIKI**, do hereby declare to the Senate of Sokoine University of Agriculture that this thesis is my own original work, done within the period of registration and that it has neither been submitted nor being currently submitted in any other institution.

Sarah Esil Mwakymbiki

(PhD Candidate)

Date

The above declaration is confirmed by:

Prof. Anna N. Sikira

(Supervisor)

Date

Dr. Fatihya A. Massawe

(Supervisor)

Date

COPYRIGHT

No part of this thesis may be reproduced, stored in any retrieval system, or transmitted in any form or by any means without prior written permission of the author or Sokoine University of Agriculture in that behalf.

ACKNOWLEDGEMENTS

First and foremost, I thank the Almighty God for helping me to reach this level. I understand it is the grace of God to fulfill my dreams.

Secondly, I acknowledge my employer, the Mwalimu Nyerere Memorial Academy (MNMA), for granting me a study leave which enabled me to pursue the PhD programme. I am further indebted to the Mwalimu Nyerere Memorial Academy (MNMA) through Higher Education Students Loans Board (HESLB) for financing this research work.

Thirdly, I express my sincere gratitude to my supervisors, Prof. Anna N. Sikira of the Department of Development Studies (DDS) and Dr. Fatihya A. Massawe of the Department of Policy, Planning and Management both of Sokoine University of Agriculture for their supervision, guidance, encouragement, constructive ideas, criticisms and diligent attention during research work which made possible the successful completion of the PhD programme. I feel privileged to have had a chance of being supervised by them.

I am also indebted to the Kilwa District Commissioner (DC) and District Administrative Secretary (DAS) for giving me clearance to undertake the research in the villages in the district.

I also thank all respondents from Somanga South, Somanga North, Somanga Simu, Marendengo, Namatungutungu and Songosongo villages for their hospitality, kindness and time devotion to answering my questions. Special thanks go to men and women who participated in the study.

I highly appreciate the logistics given by the Songas' Social Responsibility Officer, Mr. N. Chipakapaka, Corporate Responsibility Coordinators, Mr. Samson and Ms Y. Abba of PanAfrica Energy Tanzania Limited, Human Resource Officers, Mr. D. Lwambano of TPDC and G. Komba of PanAfrica Energy Tanzania Limited.

I also extend my sincere acknowledgements to the following SUA academic staff, Prof. C. I. Nombo, Prof. K. A. Kayunze, Prof. J. K. Urassa, Dr. G. Nzalayaimisi, Prof. K. M. K. Bingesi, Dr. John N. Jeckoniah, Dr. Juma S. Kabote, Dr. E. E. Chingonikaya, Dr. Farida S. Salehe, Dr. J. V. Msinde, Dr. G. D. Massawe, Dr. E. T. Malisa, Dr. R. J. Salanga, Dr. J. J. Ringo and Mr. Mikidadi I. Mhanga for constructive comments, cooperation, tolerance and tireless efforts to shape this work to this level. You are wonderful people I have ever met.

I am most grateful and indebted to the Pastors, C. Chikoti, Julian Mwawindi and H. Nelson for their spiritual guidance and prayers during my study. Also, thanks are due to Sister Matrida Okeyo for hospitality, kindness and time devotion for type-setting and arranging my work.

I am most grateful and indebted to Mr. and Mrs. C. Gama and other members of my family for their prayers, tireless encouragement, patience, understanding, cooperation and moral and material support. Thank you very much and God bless us!!

In the same way, extended thanks are given to my PhD colleagues at Sokoine University of Agriculture (SUA), namely Tatu Nyange, Regina Maunde, Regina Malima, Regina

Sanga, Willy Maliganya, U. Lwena, S. Lunyelele and E. Akyoo for their cooperation and encouragement during the entire study period.

Lastly, I wish to assure all those who have rendered me assistance in this work that they are not accountable for any imperfection which may appear in this thesis. I remain solely responsible for any errors, omissions or short comings therein.

DEDICATION

To the Almighty God for keeping me alive, blessing, strengthening and guiding me throughout my studies at SUA. Thanks Lord!!

I dedicate this work to women and men living close to natural gas extraction sites, who are in need of protection from Governments in order to access different benefits from natural gas mining.

To my lovely sons, John and Francis Kisyungu (Gwamaka and Ntuli). The nature of their tribal names always gives me extra strength to work hard in every task ahead of me.

To my lovely sisters and brothers: Anna, Lawrence, Suma, Clement, Ntuli, Ipyana, David, Bertha, Jane, Simion, Rodger Mwakyambiki and Happy Kijolo for their invaluable contribution towards my success.

To the family of the late Col Esil S. Mwakyambiki and Lydia E. Mwansasu (Kisale).

May fruits of my studies be greatly rewarding to you all!

TABLE OF CONTENTS

| | |
|---|--------------|
| EXTENDED ABSTRACT..... | ii |
| DECLARATION..... | iv |
| COPYRIGHT..... | v |
| ACKNOWLEDGEMENTS | vi |
| DEDICATION..... | ix |
| TABLE OF CONTENTS | x |
| LIST OF TABLES | xvi |
| LIST OF FIGURES | xviii |
| LIST OF APPENDICES | xix |
| LIST OF ACRONYMS AND ABBREVIATIONS | xx |
| | |
| CHAPTER ONE | 1 |
| 1.0 INTRODUCTION..... | 1 |
| 1.1 Background to the Problem..... | 1 |
| 1.2 Statement of the Problem | 6 |
| 1.3 Justification of the Study | 7 |
| 1.4 Objectives of the Study | 9 |
| 1.4.1 The overall objective | 9 |
| 1.4.2 Specific objectives | 9 |
| Specifically the study aimed at: | 9 |
| 1.5 Hypotheses | 10 |
| 1.6 Theoretical Framework | 10 |
| 1.6.1 Social learning theory..... | 10 |

| | | |
|------------|--|-----------|
| 1.6.2 | Stakeholder theory | 11 |
| 1.6.3 | Ecofeminism theory..... | 12 |
| 1.6.4 | Theory of attitude | 13 |
| 1.7 | Conceptual Framework | 14 |
| 1.8 | Structure of the Thesis..... | 17 |
| | REFERENCES..... | 17 |
| | CHAPTER TWO | 29 |
| 2.0 | Extractive Companies Investment and Changing of Gender Roles: Opinion from Communities living close to extraction sites in Kilwa District, Tanzania | 29 |
| 2.1 | Abstract..... | 29 |
| 2.2. | Introduction | 30 |
| 2.3 | Theoretical Framework | 33 |
| 2.3 | Methodology..... | 35 |
| 2.3.1 | The study area..... | 35 |
| 2.3.2 | Research design, sampling procedures and sample size..... | 36 |
| 2.4 | Data Collection..... | 39 |
| 2.5 | Data Analysis..... | 42 |
| 2.6 | Results and Discussions | 43 |
| 2.6.1 | Socio-Demographic Characteristics of Respondents | 43 |
| 2.6.1.1 | Sex of respondents | 43 |
| 2.6.1.2 | Age of respondents..... | 43 |
| 2.6.1.3 | Household size | 44 |
| 2.6.1.4 | Marital status..... | 45 |

| | | |
|-------|--|---------------|
| 2.7 | Social Services Provided by the Extractive Companies in the Study Area..... | 45 |
| 2.8 | Production Roles and Time Spent Per Day | 48 |
| 2.8.1 | Agriculture | 48 |
| 2.8.2 | Fishing and seaweed farming..... | 50 |
| 2.8.3 | Physical reproductive roles | 53 |
| 2.8.4 | Community managing roles..... | 55 |
| 2.9 | Communities' Opinion on Gender Roles with Respect to Extraction Companies Investment | 57 |
| 2.10 | Conclusions and Recommendations..... | 59 |
| | REFERENCES..... | 61 |
| | CHAPTER THREE | 70 |
| 3.0 | Factors Influencing Benefits Sharing from Mining Companies to the Host Communities in Kilwa District, Tanzania..... | 70 |
| 3.1 | Abstract..... | 70 |
| 3.2 | Introduction | 71 |
| 3.3 | Theoretical Framework | 78 |
| 3.4 | Conceptual Framework | 79 |
| 3.5 | Methodology..... | 80 |
| 3.5.1 | The study area..... | 80 |
| 3.5.2 | Research design, sampling procedure and sample size | 81 |
| 3.5.3 | Data collection..... | 81 |
| 3.5.4 | Data processing and analysis | 82 |
| 3.6 | Results and Discussion..... | 84 |
| 3.6.1 | Respondents' characteristics..... | 84 |

| | | |
|------------|--|-----------|
| 3.6.2 | Years of schooling (education level) | 84 |
| 3.6.3 | Respondents' proximity to the natural gas project | 86 |
| 3.6.4 | Communities' expectations from natural gas extraction | 86 |
| 3.7 | Perceived Benefits Sharing by Host Communities | 87 |
| 3.8 | Factors Influencing Benefit Sharing | 88 |
| 3.9 | Conclusions and Recommendations | 90 |
| | REFERENCES | 91 |
| | CHAPTER FOUR | 99 |
| 4.0 | Gendered Access to Benefits from Natural Gas Mining in Kilwa District, Tanzania | 99 |
| 4.1 | Abstract | 99 |
| 4.2 | Introduction | 100 |
| 4.3 | Theoretical Framework | 103 |
| 4.4 | Research Methodology | 104 |
| 4.4.1 | Description of the study area | 104 |
| 4.4.2 | Research design, sampling procedure and sample size | 104 |
| 4.4.3 | Data collection | 105 |
| 4.4.4 | Data analysis | 105 |
| 4.5 | Results and Discussions | 106 |
| 4.5.1 | Gendered expectations from natural gas extraction | 106 |
| 4.5.2 | Direct benefits from natural gas development | 109 |
| 4.5.2.1 | Energy for lighting | 109 |
| 4.5.2.2 | Employment opportunities in the extractive companies | 110 |
| 4.5.2.3 | Service levy payment benefits from extractive companies | 112 |

| | | |
|-------------------------------|---|------------|
| 4.5.2.4 | Market of goods and services from local communities | 115 |
| 4.5.2.5 | Level of access to direct benefits | 117 |
| 4.6 | Indirect Benefits from Extractive Companies | 118 |
| 4.6.1 | Indirect employment opportunities..... | 118 |
| 4.6.2 | Educational benefits | 119 |
| 4.8.3 | Level of access to indirect benefits..... | 122 |
| 4.9 | Conclusions and Recommendations..... | 123 |
| REFERENCES..... | | 125 |
| CHAPTER FIVE | | 135 |
| 5.0 | Host Communities' Attitude towards Benefit Sharing from Natural Gas Extraction: Insights from Kilwa District, Tanzania | 135 |
| 5.1 | Abstract..... | 135 |
| 5.2 | Introduction | 136 |
| 5.3 | Theoretical Framework | 138 |
| 5.4 | Conceptual Framework | 139 |
| 5.5 | Methodology..... | 141 |
| 5.5.1 | The study area..... | 141 |
| 5.5.2 | Research design and sampling techniques..... | 142 |
| 5.5.3 | Data analysis..... | 144 |
| 5.6 | Results and Discussion | 146 |
| 5.6.1 | Respondents' attitude towards benefit sharing..... | 146 |
| 5.6.2 | Community attitude towards benefit sharing from extractive companies | 150 |

| | | |
|------------|---|----------------|
| 5.6.3 | Determinants of host community members attitude towards benefit sharing | 151 |
| 5.7 | Conclusions and Recommendations | 154 |
| | REFERENCES..... | 155 |
| | CHAPTER SIX | 162 |
| 6.0 | CONCLUSIONS AND RECOMMENDATIONS | 162 |
| 6.1 | Findings and Conclusions of the Study | 162 |
| 6.2 | Recommendations | 164 |
| 6.3 | Study Contributions..... | 166 |
| 6.3.1 | Knowledge contribution | 166 |
| 6.3.2 | Theoretical contribution | 167 |
| 6.4 | Suggested Areas for Further Research | 170 |
| | APPENDICES..... | 171 |

LIST OF TABLES

| | | |
|------------|--|-----|
| Table 1.1: | Percentage of Respondents Selected for survey in each village (n = 373) | 37 |
| Table 2.2 | Selected Key informants..... | 41 |
| Table 2.3: | Socio-demographic characteristics of respondents (n = 373)..... | 44 |
| Table 2.4: | Social services provided by three the extractive companies | 48 |
| Table 2.5: | Gender roles Distribution among respondents (n = 373) | 50 |
| Table 2.6: | Time spent per day in triple gender roles (n = 373) | 53 |
| Table 2.7: | Respondent's opinion on extractive companies and changing gender roles | 58 |
| Table 3.1: | Description of variables used in the binary logistic regression model | 83 |
| Table 3.2: | Communities' expectations from natural gas development (n = 373)..... | 87 |
| Table 3.3: | Perceived benefits-sharing index (n = 373)..... | 88 |
| Table 3.4: | Factors influencing community sharing benefits with extractive company..... | 90 |
| Table 4.1: | Gendered expectations from natural gas extraction (n = 373)..... | 108 |
| Table 4.2: | Source of energy for lighting (n = 373)..... | 110 |
| Table 4.3: | Gendered access to direct employment (%) | 111 |
| Table 4.4: | Service levy paid to Songosongo and Somanga Fungu from 2012 -2015 | 113 |
| Table 4.5: | Direct access to benefit Index (n = 373)..... | 118 |
| Table 4.6: | Indirect employment opportunities (n = 373)..... | 119 |
| Table 4.7: | Gender distribution of scholarships beneficiaries | 120 |
| Table 4.8: | Constructed and renovation schools in study area..... | 121 |

| | |
|---|-----|
| Table 4.9: Other educational benefits | 122 |
| Table 4.10: Indirect access to benefit index (n = 373)..... | 123 |
| Table 5.1: Descriptive statistic and reliability analysis for attitudinal scale | 144 |
| Table 5.2: The variables used in the ordinal logistic regression question | 146 |
| Table 5.3: Respondents' perception towards benefits sharing..... | 147 |
| Table 5.4: Factors influencing respondents' attitude towards benefit sharing (n = 373) | 152 |

LIST OF FIGURES

Figure 1.1: Conceptual framework used for the research 16

Figure 2.1: Map of Kilwa District showing the study area. 38

Figure 3.1: Conceptual framework for benefit sharing from EC to the host
Community 80

Figure 3.2: Respondents years of schooling 85

Figure 4.1: Market for goods and services from local communities..... 116

Figure 5.1: Conceptual framework for Attitudes of host communities towards
benefit sharing 141

Figure 5.2: Overall host community members’ attitudes towards benefit sharing..... 151

LIST OF APPENDICES

Appendix 1: A household questionnaire.....171

Appendix 2: A checklist used for key informants in extractive company.....190

Appendix 3: A checklist used for female worker in extractive company.....193

Appendix 4: A checklist for key informants from higher learning institutions.....194

Appendix 5: A checklist used for TPDC key informants195

Appendix 6: A checklist used for Ward Executive Officers (WEOs) and
Village Executive Officers (VEOs)197

Appendix 7: An interview guide for men198

Appendix 8: A Check-list for NGOs and CBOs.....199

LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-------|--|
| AFDB | African Financial Development Bank |
| AWO | Arakan Oil Watch |
| AU | African Union |
| BG | British Gas - Tanzania |
| BPFA | Beijing Platform for Action of 1995 |
| CBD | Convention on Biological Diversity of 1992 |
| CEDAW | Convention on the Elimination of All Forms of Discrimination Against Women of 1979 |
| CMI | Chr. Michelsen Institute |
| CNG | Compressed Natural Gas |
| CRS | Corporate Social Responsibility |
| DAS | District Administrative Secretary |
| DC | District Commissioner |
| EC | Extractive Companies |
| EEVT | Enhancing Employability through Vocational Training |
| EI | Extractive Industries |
| EU | European Union |
| FAO | Food and Agriculture Organisation of the United Nations |
| FGD | Focus Group Discussions |
| GDP | Gross Domestic Product |
| HESLB | Higher Education Students Loans Board |
| JKT | <i>Jeshi la Kujenga Taifa</i> (National Service) |
| KDC | Kilwa District Council |

| | |
|-------|--|
| LHRC | The Legal and Human Rights Centre |
| M | Mean |
| MEM | Ministry of Energy and Minerals |
| MNMA | The Mwalimu Nyerere Memorial Academy |
| NGOs | Non-Governmental Organisations |
| NOC | National Oil Company (formally known as TPDC) |
| NORAD | Norwegian Agency for Development |
| OLR | Ordinal Logistic Regression |
| PAC | Percentage Accuracy Classification |
| PAT | PanAfrican Energy Tanzania Limited |
| PWYP | Publish What You Pay |
| REPOA | Research on Poverty Alleviation |
| PURA | Petroleum Upstream Regulatory Authority |
| SADC | Southern African Development Community |
| SBS | Small Business Services |
| SD | Standard Deviation |
| SIDA | Swedish International Development Agency |
| SNAL | Sokoine National Agricultural Library |
| SPSS | Statistical Package for Social Sciences |
| SUA | Sokoine University of Agriculture |
| TCM | Trillion Cubic Metres |
| TEIT | Tanzania Extractive Industry Transparency Initiative |
| TPDC | Tanzania Petroleum Development Corporation |
| TZS | Tanzanian Shilling |
| UN | United Nations |

| | |
|--------|--|
| UNDP | United Nations Development Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| URT | United Republic of Tanzania |
| VETA | Vocational Education and Training Authority |
| VIF | Variance Inflation Factor |
| WEO | Ward Executive Officer |
| ZLSC | The Zanzibar Legal Services Centre |

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Problem

The importance of benefit sharing in oil and gas extraction as an engine for economic growth and help for host countries to reduce poverty has been documented by different authors (Ross, 2008; Kojima *et al.*, 2010; Peprah, 2011; UNED, 2013). However, there have been concerns that benefits from natural resources have not been shared equally by men and women at community level; hence they have not translated local development to equitable livelihood improvement. It has been argued that Hydrocarbon fuel provides about 34% of the world's energy needs and contributes to the budget, Gross Domestic Products (GDP), power generation, contingent liabilities and power the world agricultural industry (Kojima *et al.*, 2010). Furthermore, the oil and gas industry impacts livelihoods through provision of employment, ownership of shares in the companies using petroleum products for lighting, cooking, heating, and transport (Songas, 2002; Kojima *et al.*, 2010). In this regard, discovery of oil and gas carries a sense of hope and expectation in relation to the government's revenue; improvement of people's livelihoods and socio-economic well-being of communities living around mining areas (Shanghvi and Jingu, 2013) .

However, large extractive companies have not always created enough employment opportunities for local community. In this way they have not contributed significantly to poverty alleviation. Host communities feel that they are excluded from sharing benefits and the wealth created from natural gas extraction (Okereke, 2011). One of the major challenges of companies is to embrace the principle of equity in sharing benefits with communities around production areas, most of which are found in rural areas (Moshi,

2013). Failure to distribute resources fairly with communities where production takes place may reduce expectations for various benefits sharing and hence cause social and political instability leading to resource curse as observed in Congo and Nigeria (Akabzaa, 2010; Moshi, 2013)

The Convention on Biological Diversity of 1992 indicated that host community should access and sharing benefit in terms of monetary and non-monetary, in a way that has equitable outcomes and is procedurally fair. In this view, a common expectation from local communities is to access benefits such as employment, education opportunities, service levy and social services (Rio Tinto, 2009; Simbakalia, 2011; URT, 2013). However, most of the benefits from many oil and gas producing countries are not gendered. It has been argued that men tend to gain greater access to opportunities from oil and gas industry than women (Darkwah, 2010; Gyan, 2013; Akabzaa, 2013). The main reasons are that oil and gas extraction is a male dominated industry and reinforces the patriarchal power relationship. Moreover, women possess low level of education with regard to skills required for the industry. They are also excluded from decision making processes. This affects gender based relations by reducing the presence of women in the workforce (Darkwah, 2010). This reduces the ability and capacity of women to get equal access to opportunities and decent living standards compared to men (Peprah, 2011).

Different literature has documented down how women are excluded in access to various benefits in the oil and gas sector, for example Strongman 2008. A report by Rigzone (2013) and Glorioso (2013) shows that women working in oil and gas industry are only 3000 professionals, which account for 18% of all roles on the industry in the globe. Women also are only 11% of the executive committee members of top oil and gas

companies (Scott *et al.*, 2013). In the United Kingdom, women expatriates in oil and gas industry are 5% (Shortland, 2012). In developing countries, women's low representation in extractive industry also has been observed in Pakistan and South Korea (Ross, 2008). In Africa, only 14% of the workforce in oil and gas industry is occupied by women in South Africa, (Rigzone, 2013). Women's low participation in the oil and gas sector has also been observed in Cameroon and Nigeria where they account for only 5% (Omorodionde, 2004; Darkwah, 2010), while in Tanzania only 0.4% of the total mineral mining workforce are women (REPOA, 2010). In this regard, more than 90% of employment goes to men and less than 10% goes to women (Ward *et al.*, 2011).

Again, extraction companies came with different job opportunities supporting mining activities including hotels and restaurants, insurance, banking, transportation, health care and many more allied services that enable local communities to benefit. In every direct job created by oil and gas companies, there are 1 to 4 indirect jobs created, but most of them are within women domestic roles like catering, laundry, clothing, uniforms supply and repair, supply of agricultural produce and clerical support which do not offer them good income (Scott *et al.*, 2013). However, few women with the required educational backgrounds are employed in such business (Peprah, 2011).

In Tanzania, oil and gas exploration dates as far as 1952. The first natural gas discovery was made in 1974 at Songosongo, followed by the second discovery at Mnazi Bay in Mtwara Region in 1982. Evidence on record shows that commercial production of natural gas at Songosongo started in 2004, followed by Mnazi Bay in 2006. Both offshore and onshore gas extracted at Songosongo Island is transported to Dar es Salaam through a pipeline, and Somanga Fungu coast is a landing area, which is also located in Kilwa

District. Hence, natural gas extraction is at its infancy stage in Tanzania. In 2018, there were 26 exploration licenses granted to different multinational extractive companies, and 76 natural gas wells had already been drilled in different parts of the country including Kiliwani North, Mkuranga, Pweza, Chaza, Chewa, Jodari, Zafarani and Mnazi Bay. It is worth noting that both onshore and offshore wells have a total of 1.58008 trillion cubic meters (tcm) of reserved gas (URT, 2016). According to the Petroleum Act of 2015, Songosongo and Somanga Fungu are defined as host communities to indicate local areas in which gas activities take place. Natural gas extraction contributes 3.8% to the Gross Domestic Product (GDP) in Tanzania (URT, 2016). It is expected that by 2025, natural gas will contribute 10% to the GDP (Kojima *et al.*, 2010; PWYP, 2011). The gas produces 70% of the electricity and 49.7% of electrical, power distributed to 42 industries, installed for trial in 13 houses and used in cars to fuel through Compressed Natural Gas (CNG) (URT, 2016).

Kilwa District where this study was conducted has high potential for offshore and onshore natural gas wells found in rural areas, where approximately 40% of households live below the basic needs poverty line (Sarris and Karfakis, 2006; Aikaeli, 2010). The situation of poverty affects more women by 60% compared to men due to the fact that female-headed rural households have lower per capital income compared to men (Shanghvi and Jingu, 2013). Mining activities are also associated with environmental destruction, and operations take place in the areas where the government's capacity to develop communities has been limited where public services are weak, or lacking in capacity to come across social demand (Wall and Pelon, 2011). It was anticipated by men and women that the presence of natural gas extraction in their area would give opportunities to share different benefits as a way to improve livelihood and reduce poverty as opposed to

agriculture, fishing and tourism based economies through benefits sharing (Simbakalia, 2011).

In respect to the gender concept, it is widely accepted that gender comprises different social groups. In this study different social groups were considered when analysing the relationships between men and women with regard to age, gender roles, gender identity, and access to benefits, economic status, vulnerability and different strategies for change. However, the focus of the findings was primarily on men and women living close to extraction sites. Several studies have documented how women are denied access to resources like land, animals, water and plants for commercial use and access to education and employment opportunities (FAO, 2003; Ajadi *et al.*, 2015). Natural gas extraction being one of the resources that contribute substantially to the economy of Tanzania, it was expected that women from host communities would have an opportunity to share equal benefits from extraction companies, contrary to the world of natural gas economy where gender is skewed, favouring men with low women presentation (Peprah, 2011).

This thesis aimed at examining how men and women living close to extraction sites access benefits emanating from natural gas extraction. The motivation for doing the research on gender access to resource was derived from different reasons including researcher's academic background, Mtwara natural gas violence of 2013 and Natural Gas Policy. During Master's Degree programme in Women's Law, gender access to resources was the researcher's thematic area of study whereby different resources were analysed through a gender lens with exception to mining resource. Again, this study was motivated by Mtwara natural gas crisis whereby benefits' sharing from natural gas was a major source of violence against government. Further, there is a call under the Natural Gas

Policy of 2013 in section 5.1.7 for Academician and Research Institutions to research on the natural gas industry in order to promote education, training, knowledge and skills in the natural gas sector. In the wake of natural gas extraction in Tanzania and when she secured an opportunity for PhD research at SUA she was motivated to research on natural gas resource to establish whether natural gas benefits are gendered, especially from Songosongo natural gas. The research also compliments her teaching and professional career in gender and development at the Mwalimu Nyerere Memorial Academy.

Therefore, this study on hand examined division of gender roles in the host communities to understand whether natural gas activities modify roles performed by men and women. The study also examined factors which force extractive companies to share benefits with host communities to unearth whether Kilwa District was among extractive company stakeholders or not. The study further examined gender distribution direct and indirect benefits accrued from natural gas activities. The study also evaluated community perception towards benefit sharing to understand the outcome of benefit sharing and highlights key areas to consider when designing pertinent interventions.

1.2 Statement of the Problem

Globally, women miss out having access to benefits from EC which affects women's responsibilities of taking care of children, household support and community development. Tanzania has undertaken several initiatives to promote equitable access to benefits through implementing: Beijing Platform for Action (1995), CEDAW (1979), URT Constitution of 1977 and National Gas Policy of 2013. Most of these initiatives focus on acknowledging government's will of equal access to resources through enactment of different laws and policies. Interventions that focus on understanding gender equality to

access different benefits and opportunities from natural gas extraction at community level are limited, hence it is not known whether Tanzania is following the global trend or not where access to benefit is gender skewed favouring men. This study was aimed at getting empirical evidence on how women and men living close to mining sites in Tanzania share benefits and how they experience gender disparities in accessing benefits from the natural gas industry.

Gender analysis on access to and sharing of benefits emanating from the extractive sector can inform strategies to increase gender equality, women empowerment, support equitable and sustainable economic growth and development of women (UN, 2016). However, women in mining areas experience unequal access to benefits, which has negative effects on women's responsibilities of taking care for children, household support and community development. Equitable access to benefits improves women's income for food, health, shelter and education. Moreover, it improves their livelihoods and gender relations. Greater attention to gendered analysis of natural gas benefits would improve the quality of life and socio-economic conditions of people living close to mining areas and shows Tanzania's commitment to the ratification of human rights instruments and protection of host communities. In view of the above, the aim of the research on which this thesis is based was to analyse the extents to which men and women in Kilwa District get access to benefits from natural gas extraction.

1.3 Justification of the Study

Studies on how men and women living close to mining sites access and share benefits from extractive companies are scanty (Rofle *et al.*, 2010). Most authors analysed benefits sharing at national level but excluded communities living around mining sites particularly

in Tanzania, Kenya and Malawi (Lange, 2006; Simbakalia 2011; Emel *et al.*, 2012; Shanghvi and Jingu, 2013; Kibendera, 2013; Nyamwaya, 2013; Kamlongera 2013; Kayumba, 2014 and UN, 2016). From the above review, there are deficient studies which have been done in Tanzania to analyse the extents to which men and women get access to benefits from communities living close to extraction sites. Therefore, there was an academic lacuna to generate empirical information about gender based distribution and nature of women's exclusion from engagement in sharing natural gas benefits at community level.

This study was crucial for implementation of the Convention on Biological Diversity (CBD) of 1992, Article 17(7) which calls for host countries of resources to access and share benefits, whether in monetary or non-monetary forms as substitutes for environmental destruction. The study contributes to the attainment of the sanctioned Sustainable Development Goals (SDG) to 2030 that aim to: end poverty, promote gender equality, and reduce inequalities as stipulated in SDGs No 1, 5 and 10. The study on which this thesis is based was also consistent with Tanzania Development Vision of 2025 which calls for achieving high quality of livelihood through promoting gender equality and empowerment of women as well as eradication of absolute poverty by 2025. In addition, the study is in line with Tanzania's Natural Gas Policy (NGP) of 2013 which calls for filling in knowledge and skills gaps on the gas and oil industry by researching on natural gas.

The findings of this study will add to the body of the existing knowledge on gender and natural gas resource which would be useful to academicians. They inform policy makers involved in planning and implementing development projects and programmes that aim at

changing gender roles and relations through accessing direct and indirect benefits from natural gas extraction. This study also generated information which can be used by planners, policy and decision makers to consider how best to balance the gender distribution of benefits to the communities around mining areas with the aim to transform natural gas resource into a blessing rather than a resource curse as observed in other countries of Africa. The communities living close to mining areas will also be made more aware of the situation on the ground which hinders equal access to benefits and thus facilitate positive changes in changing related behaviour and ways of thinking and attitudes and for better access to benefits.

Therefore, the study was valuable and timely as extraction of natural gas is an on-going economic activity in Tanzania which is expected to stimulate a wide range of opportunities to Tanzanians.

1.4 Objectives of the Study

1.4.1 The overall objective

The overall objective of the study was to examine how benefits emanating from natural gas extraction are accessed by men and women residing close to extraction sites in Kilwa District.

1.4.2 Specific objectives

Specifically the study aimed at:

- i. Analysing gender roles played by women and men in gas extraction areas,
- ii. Determining factors influencing benefit flow from extractive companies to the communities living close to natural gas extraction,

- iii. Examining gendered access to direct and indirect benefits from natural gas industry, and
- iv. Evaluating the community attitudes towards sharing benefits from natural gas extraction.

1.5 Hypotheses

1. Extractive company investments have effects on household gender roles.
2. Stakeholder factors have effect on host communities to share benefits from extractive companies as stakeholders.
3. Environmental destruction due to natural gas activities has influence on host communities to share benefits from extractive companies.
4. Access to benefits from extractive companies has influence on host community attitude towards benefit sharing.

1.6 Theoretical Framework

This study used four theories, namely social learning theory, ecofeminism, stakeholder theories, and theory of attitude.

1.6.1 Social learning theory

The first objective was guided by the Social Learning Theory (SLT) as framed by Albert Bandura in 1997. Garrett (1987) and Carrasco and Domingues (2015) posited that gender roles are learned through a socialization process whereby parents play crucial roles in the process of child socialization through direct instruction or direct enforcement of gender roles. The theory asserts that parents use opportunities to stay with children to define culture, religion, or socially acceptable roles appropriate for girls or boys and punished if

they fail to comply (Garrett, 1987). In this way, gender roles are linked with a specific sex and perpetuates meanings that define what it means to be a man or woman, or masculine or feminine, which are always imbued with power (Nightingale, 2006; Fenstermaker and West, 2013). Children learned gender relations between men and women, as they exist in most societies, are characterised by the marginalisation of women in decision making and other forms of power sharing in the home and places of authority. The theory also affirms that gender roles are not static, but they are fluid entities which are continually formed in social interactions (Fenstermaker and West, 2013). Nightingale, (2006) also posits that theory is an important foundation for arguing that men and women have different opportunities and gender relation challenges in development. Therefore, the theory provides a framework to understand why an individual performs a particular role in the community and whether introduction of extraction activities with opportunities would change, gender roles across the community contrary to community expectations to the assigned roles.

1.6.2 Stakeholder theory

The second objective was guided by the stakeholder theory as propagated by Freeman (1984). Donaldson and Preston (1995) define stakeholders as any group or individuals who can affect or be affected by activities of a certain organisation or company. The stakeholder theory is based on the premises that without an element of “risk” there is no stake and stake is only something that can be lost; therefore stakeholders should be the ones who are likely to be affected by activities of the company. Basing on the study area, natural gas mining that is associated with drilling activities including flaring of excess gas, deforestation for natural gas operations, oil leakages, spill and pollution affects the natural life of the people in the area. Thus, women and men living close to mining activities sites

are at risk of losing the land, water, air and water pollution and economic activities like fishing or tourism (Sigam and Garcia, 2012). Extractive companies have the responsibility to consider social differences, roles, expectations and needs of close communities in mitigating the footprint of extractive industry activities (Le Masson *et al.*, 2015). In the same way, Lange and Kolstad (2012) and Rajablu *et al.* (2015) assert that communities living close to mining sites anticipate benefits from extractive companies production due to potential harm they experience from natural gas projects. In this study, the theory offers an insight to understand why despite extractive companies paying all statutory taxes, still they obliged to share benefits with communities living close to extraction activities. This study examined the effect of the stakeholder influential attributes namely power/urgency, legitimacy interests or expectations and community proximity to project to establish whether close communities were entitled to get benefits from natural gas projects or not (Rajablu *et al.*, 2015).

1.6.3 Ecofeminism theory

The third objective was analysed by applying the Ecofeminism or women and environment theory. This theory asserts that there is a correlation between oppression of women and oppression of nature in terms of construction of knowledge (Momsen, 2002; Okereke, 2011). The theory affirms that destruction of nature curtails roles of women who depend on natural environmental for survival (Neithammer, 1977). In this way, environmental damage is a major challenge arising from mining developments which are associated with loss of land for food production, air and water pollution. However, women's traditional role in providing food and clean water for their families is undermined during development of different infrastructure to support gas extraction. This subsequently leads to increased workload and time for women. On the other hand, men,

through patriarchal system, continue to dominate the environment as well as women (Lozeva and Marinova, 2010; Rao, 2012). Ecofeminists argue that the patriarchal tradition often exacerbates dominance over the environment similarly to dominance over women (Lozeva *et al.*, 2010). Again, Oluwaniyi (2011) affirms that men use values and norms to marginalize and subordinate women in distribution of benefits like employment by excluding them from decision making processes. Thus, the theory holds the views that, first women are responsible to curb gender disparity by participating in decision making, education and employment (Merchant, 1990). Second, there must be alternative livelihood strategies for environmental destruction (Lozeva and Marinova, 2010; Kibendela, 2013). Ecofeminism offers a theoretical inspiration in this study to examine whether mining development through construction of oil refineries, ports and laying of oil pipelines provide equitable benefits sharing either directly or indirectly as alternative livelihood strategies.

1.6.4 Theory of attitude

The fourth objective was guided by the Attitude theory as propagated by Fishbein and Ajzen (1975). The Theory of attitude underlines a basis to understand perception and predicts behaviour of an individual (Fishbein and Ajzen, 1975). An attitude can be defined as a positive or negative evaluation of people, objects, events, activities, ideas, or just about anything in one's environment (Zimbardo and Lieppe, 1991). The theory posits that an attitude is a learned predisposition of human beings. Based on this predisposition, "an individual would respond to an object (or an idea) or a number of things (or opinions)". According to Nathan and Eleanor (2011), an individual's tendency to evaluate an object can be positive or negative. The Theory of Attitude further argues that attitude is determined by the total beliefs, and changing the attitude must be due to changing beliefs.

In the study on which this thesis is based it was necessary to examine attitude of host communities as important basic stages of identifying areas which ECs required to improve local communities to access benefits. Hanafiah *et al.* (2013) argue that the perception of the local residents was the most accurate aspect in evaluating the current situation towards benefit sharing from ECs due to the closeness of the area. Existence of community positive attitude encourages community members to show satisfaction levels towards benefit sharing from natural gas extraction. Host community positive attitude for investment is necessary to ensure commercial, socio-cultural, physiological, political and economic sustainability of the industry (Hanafiah *et al.*, 2013; Kessy *et al.*, 2017). The theory is useful in this study because it lays down grounds to understand what shapes host communities to make decision of accepting or rejecting extractive companies' initiative of sharing benefits.

1.7 Conceptual Framework

The conceptual framework presented in Fig. 1 below is in line with the ecofeminism, stakeholder, and attitude theories. This framework has been used to analyse access and benefit sharing of other resources like coastal resources and forests (Wegner and Pascual, 2011; Pereira and Hauck 2014; Mbatha and Wynberg 2014). The conceptual framework shows the process which enables host communities to gain access to and control over natural gas resource and through which benefits are shared (Ribot and Peluso, 2003). The contexts of benefit sharing of resources depend on a wider range of interrelated components; in this study the components are environmental destruction, legal framework and stakeholder attributes.

The key actors who were identified included government officials, extractive companies as well as communities close to mining sites. Actors prepare processes for host communities to access benefits from natural gas by using guidelines, principles and laws outlined in the context of benefit sharing as presented in Fig 1. Actors also determine processes of intervention by formalizing instruments and tools for host communities to access benefits through Corporate Social Responsibility (CSR) and distribute funds through levies as presented in Fig 1. CSR accommodates various demands to make host communities access profit and systematizing corporate contributions to development (Merino and Valor, 2011). Benefit sharing intervention is used as a practical tool for host communities to access different benefits through which local livelihoods are improved and reinforces social equity between men and women and promotes social sustainability (Mokorosi and Van der Zaag, 2007). This study analysed two ways of benefit sharing interventions which are monetary and non-monetary or direct and indirect benefits whereby men and women access benefits. However, power and gender inequality are two challenges which obstruct or assist host communities to access benefits. Power from politics or local government hampers effectiveness of extractive companies to share benefits with host communities when there is lack of accountability and transparency, elite capture of benefits and misuse of power (Wynberg and Hauk, 2014).

Context of benefit sharing

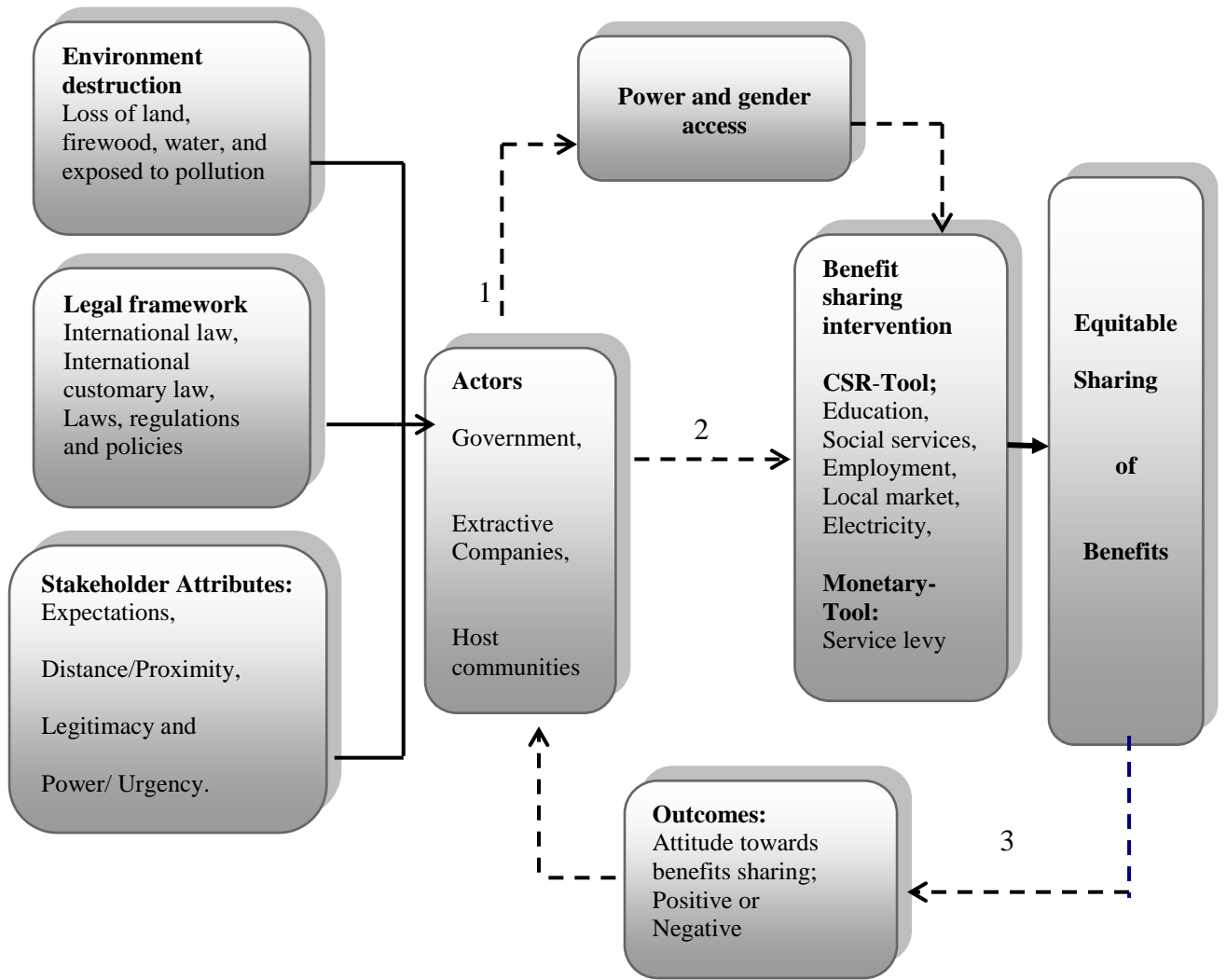


Figure 1.1: Conceptual framework used for the research

Source: Adopted from the works of Wynberg and Hauk (2014)

- Key:**
- 1. Process to determine access
 - 2. Process to determine nature of intervention
 - 3. Process to determine outcomes
 - 4. - - - - - Process
 - 5. —————> Direct link

1.8 Structure of the Thesis

The thesis is organized in four publishable manuscripts and has six chapters. The first chapter presents introduction to the research. Chapter 2 covers gender division of roles including production, physical reproduction and community roles, and contribution of extractive companies to changing gender roles. Chapter 3 presents factors influencing host communities to access benefits from extractive companies. Chapter 4 focuses on gendered distribution of direct and indirect benefits from natural gas mining. Chapter 5 presents community attitudes towards benefit sharing from extractive companies. Chapter 6 presents a summary of the results and discussion of all the chapters, as well as the conclusions and recommendations.

REFERENCES

- Aikaeli, J. (2010). *Determinants of Rural Income in Tanzania: An Empirical Approach*. Research Report No. 4. Research Poverty and Alleviation, Dar es Salaam, Tanzania. 32pp.
- Ajadi, A. A., Oladele, O.I., Ikegami, K. and Tsuruta, T. (2015). Rural women's farmers' access to productive resources: the moderating effect of culture among Nupe and Yoruba in Nigeria. *Agriculture and Food Security Journal* 4(26): 1 - 9.
- Akabzaa, T. (2010). Gender dimensions of Ghana's oil and gas policy draft. University of Ghana. [http://www.g-rap.org/docs/oil_and_gas/netright-thomas_akabzaa-2010.pdf] site visited on 13/6/2014.

Bandura, A. (1977). *Social Learning Theory*. General Learning Press, 79 Madison Avenue
New York City 10016. 46pp.

Carrasco, C. and Domingues, M. (2015). Measured time, perceived time, and a gender
bias. *Time and Society Journal* 24(3): 326 – 347.

Darkwah, A. K. (2010). The Impact of Oil and Gas discovering and exploration in
community with emphasis on Women, Dissertation submitted University of
Ghana. [[www.g-rap.org/
docs/ oil_ and_ gas/netright-akosua_darkwah-
2010.pdf](http://www.g-rap.org/docs/oil_and_gas/netright-akosua_darkwah-2010.pdf)] site visited on 3/6/ 2014.

Donaldson, T. and Preston, L. E. (1995). The Stakeholder theory of the corporation:
concepts, evidence, and implications. *The Academy of Management Review*
20(1): 65 – 91.

Emel, J., Makene M. H. and Wangari, E. (2012). Problems with reporting and evaluating
mining industry community development projects: A case study from
Tanzania. *Sustainability* 4: 257 - 277.

FAO (2003). Women's access to land and property in selected countries. Analysis based
on initial and periodic report to the Committee on the Elimination of all forms
of Discrimination against Women (1997-2003), Volume 1: FAO, Rome, Italy.
[<http://www.fao.org/3/a-ak997e.pdf>] site visited on 19/10/2017.

- Fenstermaker, S. and West, C. (2013). *Doing Gender, Doing Difference: Inequality, Power, and Institutional Change*. Routledge, New York. 3pp.
- Fishbein, M. and Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison Wesley Publishing Company Inc., Philippines. 584pp.
- Fishbein, M. (1967). *A Behaviour Theory Approach to the Relations between Beliefs About an Object and Attitude toward the object*. New York, Wiley. 492pp.
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Pitman, Boston. 46pp.
- Garrett, S. (1987). *Gender*. Routledge, New York. 26pp.
- Glorioso, J. (2013). Women in the oil-and-gas industry: The right people for the job. [[www.fircroft.com/blog/womenin the oil and gas industry](http://www.fircroft.com/blog/womenin%20the%20oil%20and%20gas%20industry)] site visited on 18/8/2014.
- Gyan, C. (2013). The Role of women in the oil industry. *Journal of Social Sciences* 9(3): 94 – 100.
- Hanafiah, M.H., Jamaluddin, M.R. and Zulkifly, M I.(2013). Local Community Attitude and Support towards Tourism Development in Tioman Island, Malaysia. *Procedia - Social and Behavioral Sciences* 105: 792 – 800.

- Kamlongera, P. J. (2013). The mining boom in Malawi: Implications for community development. *Community Development Journal* 48(3): 377 – 390.
- Kayumba, A. A. (2014). *Challenges and Prospects of Benefits Sharing from Oil and Gas*. Institute of Law and Environment Governance, Nairobi, Kenya. 3pp.
- Kessy. F., Melyoki, L. and Nyamrunda, D. (2017). The Social License to Operate in Tanzania: Case Studies of the Petroleum and Mining Sectors. The Institute of African Leadership for Sustainable Development (UONGOZI Institute). Dar es Salaam. Tanzania. 13pp
- Kibendela, E. (2013). *Making Natural Gas Guarantee Sustainable Development: Plans and Progress by VETA to Prepare Tanzanians to Engage in the Natural Gas Value Chain Process*. Discussion Paper No. 50. ESRF. Dar es Salaam. Tanzania. 4pp.
- Kojima, M., Matthew, W. and Sexsmith, F. (2010). *Petroleum market in Sub Saharan Africa: Analysis and assessment of 12 countries*. Extractive Industrial for Development Series No. 15. World Bank, Washington DC. 12pp.
- Lange, S. (2006). Benefit streams from mining in Tanzania: Case studies from Geita and Merereni. Chr. Michelsen Institute (CMI) Report, [www.cmi.no/publications] site visited on 2/3/2016

- Lange, S. and Kolstad, I. (2012). Corporate community involvement and local institutions: two case studies from the mining industry in Tanzania. *Journal of African Business* 13(2): 134 – 144.
- Le Masson, V., Norton, A. and Wilkinson, E. (2015). Gender and Resilience. BRACED. [www.odi.org/sites/odi.org.uk/files/odi-assets/publicationsopinion-files/9890.pdf] site visited on 2/7/2017.
- Lozeva, S. and Marinova, D. (2010). Negotiating gender: Experience from Western Australian Mining Industry. *Journal of Economic and Social Policy* 13(2): 1 – 23.
- Mbatha, P. and Wynberg, R. P. (2014). *Mining and the Myth of Benefits in South African Rural Coastal Communities*. UCT Press, Cape Town, South Africa. 94pp.
- Merchant, C. (1990). Ecofeminism and Feminist theory (Eds.): In: *Reweaving the World: The Emergence of Ecofeminism*. Sierra Club Books, San Francisco. 105pp.
- Merino, A. and Valor, C. (2011). The potential of corporate social responsibility to eradicate poverty: an on-going debate. *Journal of Development in Practice* 21(2):156–167.
- Mokorosi, P. S. and Van der Zaag, P. (2007). Can local people also gain from benefit sharing in water resources development? Experiences from dam development in the Orange — Senqu river basin. *Physics and Chemistry of the Earth* 32(15): 1322 – 1329.

- Momsen, H. K. (2002). Ecofeminism within Gender and Development. [www.ecofem.org/journal] site visited on 10/8/2014.
- Moshi, H. P. B. (2013). *Opportunities and Challenges for the Extraction of Natural Gas in Tanzania*. Discussion Paper No. 48. ERSF. Dar es Salaam, Tanzania. 10pp.
- Nathan, M. and Eleanor, E. M. (2011). Encyclopedia of consumer culture. *Attitude Theory* 1(4): 16 - 64.
- Neithammer, C. (1977). *Daughters of the Earth: The Lives and Legends of American Indian Women*. Collier Books, New York. 24pp.
- Nightingale, A. (2006). The nature of gender: work, gender and environment. *Journal of Environment and Planning: Society and Space* 24(165): 1 - 42.
- Nyamwaya, C. (2013). *Benefits Sharing on Extractive Natural Resources with Society in Kenya*. Kenya Human Rights Commission. Nairobi, Kenya. 32pp.
- Okereke, K. C. (2011). Women in the Environment: The impact of oil and gas exploration on the women in the Niger-delta states of Nigeria since 1960: An Historical Perspective. *Journal of Environmental Management and Safety* 2(3): 137 – 155.
- Oluwaniyi, O. (Ed) (2011). Women's protests in the Niger Delta Region. In: *Oil and Insurgency in the Niger Delta; Managing the Complex Politics of Petro-Violence*. Zed Books, London. 150pp.

- Omorodionde, F. I. (2004). The impact of petroleum refinery on the economic livelihoods of women in the Niger Delta Region of Nigeria. *Journal of Culture and African Women Studies* 6: 1 – 15.
- Peprah, J. A. (2011). Women, livelihood and oil and gas discovery in Ghana: An exploratory study of Cape Three points and surrounding communities. *Journal of Sustainable Development* 4(3): 185 – 195.
- Pereira, M. and M. Hauck. (2014). Sharing benefits from tourism in Mozambique: Pitfalls and possibilities. In R. P. Wynberg, and M. Hauck, (ed). *Sharing Benefits from the Coast: Rights, Resources and Livelihoods*. UCT Press, Cape Town. 95 – 124pp.
- PWYP (Publish What You Pay). (2011). *Tanzania Oil and Gas Trend and Status Report*. Government Printer, Dar es Salaam, Tanzania. 24pp.
- Rajablu, M., Marthandan, G. and Wan Fadzilah, W. Y. (2015). Managing for Stakeholders: The role of stakeholder-based management in project success. *Asian Social Science* 11(3): 111 – 125.
- Rao, M. (2012). Ecofeminism at the Crossroads in India: A Review. *Journal of Deportees, Exiles, Refugees (D.E.R), Special Issue on Ecofeminism* (20): 1824 – 4483.
- REPOA (2010). *Tanzania Gender Indicators*. Ministry of Finance and Economic, Dar es Salaam, Tanzania. 50pp.

- Ribot, J. C. and Peluso N. L. (2003). A theory of access. *Rural Sociology* 68(2): 153 – 181.
- Rigzone, B. P. (2013). Global diversity and inclusion. [www.rigzone.com] site visited on 6/8/2014.
- Rio Tinto (2009). *Why Gender Matters: A Resource Guide for Integrating Gender Considerations into Communities Work at Rio Tinto*. Queensland, Australia. 80pp.
- Rolfe, J., Gregg, D., Ivanova, G., Lawrence, R. and Rynne, D. (2010). The economic contribution of the resources sector by regional areas in Queensland: *Economic Analysis and Policy* (EAP) 41(1): 15 - 36.
- Ross, M. L. (2008). Oil, Islam and women. *American Political Science Review* 102(1): 107 – 123.
- Sarris, A. and Karfakis, P. (2006). *Household Vulnerability in Rural Tanzania. Commodity and Trade*. Policy Research Working Paper No. 17. Food and Agriculture Organization, Rome, Italy. 2pp.
- Scott, J., Dakin, R., Heller, K. and Eftimie, A. (2013). *Extracting Lessons on Gender in the Oil and Gas Sector: A Survey and Analysis of the Gendered Impacts of onshore Oil and Gas Production in Three Developing Countries*. World Bank, Washington DC. 16pp.

- Shanghvi, I. and Jingu, J. A. K. (2013). *Tanzania and the Quest for sustainable Utilization of oil and natural gas*. Discussion Paper No. 49. ERSF. Dar es Salaam, Tanzania. 2pp.
- Shortland, S. (2012). Women's Participation in Expatriate: The contribution of Organization Policy and practice. A case of the oil and gas exploration and production sector. [Westminsterresearch.wmin.acuk] site visited on 11/5/2014.
- Sigam, C. and Garcia, L. (2012). *Extractive Industries: Optimizing Value Retention in host Countries*. United Nation, Geneva. 14pp.
- Simbakalia, J. L. (2011). *Challenges Ahead for Tanzanian to Build New Capacities for Gas Industry Development*. Discussion Paper No. 51. ERSF. Dar es Salaam, Tanzania. 16pp.
- Songas (2002). *Environmental and Social Management Programme for the Songosongo Gas to Power Project*. World Bank/TPDC, Dar es Salaam. 32pp.
- Strongman, J. (2008). *The Case for Gender Mainstreaming in the Mining Sector*. World Bank Mining Advisory Committee, World Bank. Washington, USA. 8pp.
- UNDP (2016). Sustainable Development Goals (SDGs) [www.undp.org/content/undp/en/home/sustainable-development-goals.htm] site visited on 11/5/2014.
- UNEP (2013). Women and nation resources unlocking the peace building potential. [WWW.UNEP_UN-women_PBSO-gender_NRM_peacebuilding-report. Pdf] site visited on 20/6/2014.

United Nations (1979). The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). UN Commission on the Status of Women. United Nation.
[<https://treaties.un.org/doc/Publication/MTDSG/Volume%20I/Chapter%20I/V/IV-8.en.pdf>] site visited on 11/7/2017

United Nations (1995). Beijing Platform for Action. UN Women. United Nation.
[<http://www.un.org/womenwatch/daw/beijing/platform/plat1.htm#objectives>] site visited on 7/7/2017.

United Nations (1992). *Convention on Biological Diversity*. United Nations Environment Programme, Geneva, Switzerland. 2pp.

United Nations (2016). Entity for Gender Equality and the Empowerment of women. Mapping Study on Gender and Extractive Industries in Mainland Tanzania. UN Women. Dar es Salaam, Tanzania. 11pp.

URT (2002). *Constitution of United Republic of Tanzania, 1977*. Government printer. Dar es Salaam. Tanzania. 9pp

URT (2000). *Composite Development Goals for Tanzania. Development Vision 2025*. Planning and Privatisation. President's office. Dar es Salaam, Tanzania. 140pp.

URT (2013). *The National Natural Gas Policy of Tanzania*. Government Printer, Dar es Salaam, Tanzania. 20pp.

URT (2016). *Tanzania Review*, (7th Ed), Ministry of Industry and Trade, Dar es Salaam. 56pp.

Wall, E. and Pelon, R. (2011). *Sharing Benefits in Developing Countries: The Experience with Foundation, Trust, and Fund*. Extractive Industry Development Series No 21. World Bank, Washington DC. 8pp.

Ward, B., Strongman, J., Eftimie, A. and Heller, K. (2011). *Gender-Sensitive Approaches for the Extractive Industry in Peru: Improving the Impact on Women in Poverty and Their Families: Guide for Improving Practice*. Extractive Industries for Development Series No. 24. World Bank, Washington DC. 2pp.

Warren, K. (2000). *Ecofeminism Philosophy: A Western Perspective on What It Is and Why It Matters*. Rowman and Little field, New York. 5pp.

Wegner, G., and Pascual, U. (2011). Cost – benefit analysis in the context of ecosystem services for human well-being: a multidisciplinary critique. *Global Environmental Change* 21(2): 492 – 504.

World Bank Group (2015). The art and science of benefit sharing in the natural resource sector. Discussion Paper. International Finance Corporation. Columbia, World Bank. [<https://www.commddev.org/the-art-and-science-of-benefit-sharing-in-the-natural-resource-sector/>] site visited on 11/8/2016

Wynberg, R. and Hauck, M. (2014). People, power, and the coast: a conceptual framework for understanding and implementing benefit sharing. *Ecology and Society* 19(1): 27 – 43.

Zimbardo, P. G. and Leippe, M. R. (1991). *The Psychology of Attitude Change and Social Influence*. McGraw-Hill, New York. 10pp.

CHAPTER TWO

2.0 Extractive Companies Investment and Changing of Gender Roles: Opinion from Communities Living Close to Extraction Sites in Kilwa District, Tanzania

Sarah E. Mwakymbiki¹, Anna N. Sikira² and Fatihiya A. Massawe³

¹Corresponding Author, Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania. Email: tulibonywas@gmail.com

² Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania. Email: annasikira@yahoo.com

³ Department of Policy Planning and Management, Sokoine University of Agriculture, P. O. Box 3035, Morogoro, Tanzania. Email: mnkya74@gmail.com

2.1 Abstract

Investment in natural gas extraction is associated with environmental degradation which weakens women's traditional roles in providing child care, food, clean water and firewood. The main objective of this paper was to analyse community opinions on changing gender roles with respect to extractive companies' investments. Specifically, the paper sought to examine: (i) types of social services provided by extractive companies, (ii) how various gender roles are distributed in the study area, and (iii) difference between men and women in time spending on various gender roles, and (vi) opinions of host communities on changing gender roles due to extraction companies' investment activities. The study adopted a cross-sectional research design whereby both qualitative and quantitative data were collected from 373 respondents. Content as well as descriptive analysis was used to analyse qualitative and quantitative data. The paper used independent sample t-test statistics to investigate the differences and similarities between males and

females. It was found that, overall, the majority of men and women had opinions that their gender roles were not changed by extractive companies; hence, host communities have not benefited much from natural gas extraction. However, a gradual shift of men's and women's roles was observed in the study areas as women had started to take up employment opportunities and being engaged in income generating activities which were enhanced by electricity availability while work load increased on the part of men due to inaccessibility of previously accessible livelihood support. Time spent on land clearing, planting, fishing activities and fetching water differed significantly. between men and women ($p < 0.05$). It is recommended that extractive companies should recognize essential gender roles in the maintenance of the economic and social wellbeing and empower them. It is also recommended that extractive companies and government should introduce labour saving technologies which aim to reduce workload and time spent on each role.

Key words: Extractive Company Investment, Gender roles, natural gas

2.2. Introduction

Gender roles are defined as socially constructed activities and attributes that a given society considers appropriate for women and men (WHO, 2015). Gender roles vary among different societies, cultures, classes, age and change with time. Globally, there is a wide spread discussion about the importance of evaluating gender roles towards sustainable development (Braidotti *et al.*, 1994; Corrasco *et al.*, 2015). It has been argued that there is unequal division of gender roles whereby women are more likely to be engaged in household activities and engaged in the informal sector with low paying productive work. Women contribute more than half (58%) of unpaid family caring roles and produce over 50% of the food that is used world-wide (Abebe and Galmessa, 2011; ILO, 2016). Thus,

the time which women spend on unpaid domestic, care and economic activities are 11 to 14 hours per day contrary to men who spend fewer hours (Cecelski, 2000). Of the total burden of work, women carry out on average 53% in developing countries and 51% in industrial countries (Cecelski, 2000). On the other hand, men do less house roles because their greater incomes give them the power to opt out of it (Deutsch, 2007).

It is noted that during investment of different infrastructures to support natural gas extraction, host communities lose land for food production, medicine, firewood and water for survival which curtails women's traditional roles to support their families. Environmental destruction subsequently leads to increased workload of women due to limited livelihood support (Neithammer, 1977). Understanding gender division of productive roles is crucial for planners and policy makers in order to adhere to the principles of gender equality in accessing resources. In doing so the government shows the commitment in the implementation of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) of 1979. Article 14 of the Convention gives directions to the state parties to take into account rural women's roles playing in economic survival of their families, domestic chores and community managing activities, in order for women to realise benefits from mining. Absence of gender roles statistics on sharing benefits perpetuates unequal participation in mining activities and unequal distribution of benefits between men and women (FAO, 2003). In this regard, development policies may not have desired effects unless the roles and position of gender in communities living close to extraction site are explicitly taken on board.

Rural life in Sub-Saharan countries has been profoundly influenced by patriarchal system whereby men dominate societies in different aspects through customary laws (Kombo and

Minungu, 2012). The hierarchical nature of gender roles in household chores, land, water management, farm, fruits, trees, logs, and business which are acquired through socialization are skewed against women in favour of men (Carter, 2014). In this way, women produce around 80% of food for household consumption and contribute up to 74% of informal employment (Abebe and Galmessa, 2011; ILO, 2016). With respect to patriarchy, which is used as a tool to explain gender roles, the roles are skewed and are gender biased. In this manner, any environmental destruction by extraction activities has more detrimental effects to women in performing their roles and responsibilities compared to men. The workload of women increase and exposes them to inequality as they have to provide labour for cash to acquire food, medicines, water and wood for fuel. To achieve gender equality, the government of Tanzania ratified CEDAW, the reaffirmed commitment to the Beijing Platform for Action (BPFA) of 1995, and the Southern African Development Community (SADC) Protocol on Gender and Development of 2008 and having a provision in the Constitution on equality of persons as well as in the Natural Gas Policy of 2013 and in the Petroleum Act No 21 of 2015. However, unequal distribution of the roles between men and women still exists in the societies including communities where natural gas activities are taking place.

Since 2004, in Tanzania, there has been a significant discovery of natural gas reserves in different parts of the country. Currently, there are 76 wells drilled in Songosongo, Mnazi Bay, Nyuni, Ruvuma and Mkuranga. However, commercial production of gas is carried out at Songosongo and Mnazi Bay. The discovery of natural gas has attracted different investors in Tanzania, and the main investors in the study area are Tanzania Petroleum Development Company (TPDC), PanAfrica Energy Tanzania Limited (PAT) and Songas. TPDC and Songas own gas wells at Songosongo and natural gas processing plants at

Somanga Fungu. In respect of natural gas business, Songas has contracted PAT to operate Songosongo wells on their behalf (Songas, 2001). In this regard, extraction of natural gas has stimulated expectations from men and women from adjacent communities on how extractive companies would change gender roles through provision of social services such as water and health, education and energy supply to mitigate negative impacts of mining.

Corporate Social Responsibility (CSR) seeks to bring extractive companies closer to the host communities (Ventura and Jauregui, 2017). The Petroleum Act of 2015, Section 222 (5) clearly stipulates that mining companies (License holders) and contractors should take into account the environment, social, economic and cultural challenges of close communities in their Corporate Social Responsibilities (CSR). The CSR gives venture to the host communities to realize different benefits through development projects supported by gas mining companies. European Commission (2001) defines CSR as voluntary incorporation of social and environmental issues into a company's business model and operations aiming at meeting needs and expectations of stakeholders including communities. All the three companies (TPDC, PAT and Songas) have corporate social responsibility policies and are engaged in a number of development activities in the host communities (Songas, 2004; Mashindano *et al.*, 2008). What is not known is whether exploitation of natural gas enhances the provisions of social services which in turn is believed to reduce workload of the women in the communities living close to gas mining sites.

2.3 Theoretical Framework

This study is grounded on social learning theory which explains how gender roles stereotype emerged and have been perpetuated throughout the human life (Carter, 2014).

This theory maintains that people's behaviour is a function of the expectations of others and, therefore, they act in accordance with established social norms (Garrett, 1987; Carrasco *et al.*, 2015). Gender roles are learned through the socialization process whereby parents play crucial roles in the process of child socialization as they spend considerable amounts of time with children and establish emotional relationships with them (Garrett, 1987; Carter 2014). Parents use such opportunities to define socially acceptable behaviours which normally are gendered and punished if they are unacceptable (Garrett, 1987). Through the socialisation process, male and female children learn masculinity and femininity and roles associated with them. The socialisation of gender roles is dynamic, and what is considered appropriately gendered behaviour changes over time as influenced by social and economic factors. However, gender roles can be deconstructed to achieve gender equality (Deutsch, 2007).

The outcomes of gender roles construction cause disadvantages to women in gender relations in their socio-cultural contexts whereby there is variation in occupational aspirations between boys and girls, and most of females prefer to join supporting services such as teaching, nursing and secretarial duties (Farooq and Kayani, 2014). On the other hand, women's roles in access to water supply, electricity, safe transport and health-care services and time spent by women on unpaid work disadvantage their position in the labour force (ILO, 2016). Literature on the mining sector establishes that differences between men's and women's experiences in and out of the extractive industry are rooted in their traditional gender roles (Scott *et al.*, 2013).

This paper argues that gender division of labour determines the responsibilities in triple roles based on what is considered to be roles for women and for men within the household

and whether extractive industry activities changed gender roles. Such information is scanty in Tanzania, and this paper aimed at filling the knowledge gap on whether the introduction of natural gas extraction companies would change gender roles across the host communities, contrary to expectations to the assigned roles.

In this regard, the main objective of the paper was to analyse men's and women's roles among communities residing at Songosongo and Somanga Fungu areas. Specifically, the paper sought to examine: (i) types of social services provided by extractive companies, (ii) division of gender roles in the study area, (iii) difference between men and women in time spending on various gender roles, and (vi) opinions on change in gender roles due to extraction activities.

2.3 Methodology

2.3.1 The study area

Kilwa District is one of the administrative districts of Lindi Region in Tanzania. The district is located between latitudes 8° 58' South and longitude 39° 38' East. The study was conducted at Songosongo Ward which is located at 247 km from Dar es Salaam and has 3 032 inhabitants and Somanga Fungu Ward which is located 217 km from Dar es Salaam and has 10 161 inhabitants (Nakumira, 2011; URT, 2013). The two wards were purposely selected due to the availability of natural gas extraction activities (Songas, 2001). Despite economic significance of natural gas, it has been observed that gas extraction has caused environmental degradation through erosion and land being taken for natural gas activities depriving women of rights to access firewood and water sources. Chemicals used to soften rocks affect fish breeding grounds and now fishes are found far away. Moreover, pollution caused by emissions from plants has caused coconut trees, cattle and fish to die due to chemical poisoning (Songas, 2001; Shanghvi, 2010).

2.3.2 Research design, sampling procedures and sample size

The study employed a cross-sectional research design. The design allowed collection of information at one point in time without repetition and was effective in terms of time and resources (Babbie, 1990; Bailey, 1998). Purposive sampling was used to select Songosongo and Somanga Fungu Wards as well as respective villages due to presence of natural gas extraction activities. Random sampling was used to select 373 respondents.

Households were randomly selected from each selected village based on village register, with the aid of village governments and through Focus Group Discussions (FGDs). Selection of households was based on whether the household head was a man or a woman. This method allowed equal opportunities for every household head to be selected (Kothari, 2004). The sample size was determined by employing Cochran’s (1977) formula as follow:

$$n = \frac{n_o}{1 + \frac{n_o}{N}} \dots\dots\dots (i)$$

Where:

n = the required (adjusted) sample size,

N= is the population size,

n_o = the sample size

$$n_o = \left(\frac{t^2 \times pq}{S.E^2} \right) = \frac{1.96^2 \times 0.25}{0.05^2} = 384 \dots\dots\dots (ii)$$

Where:

t = 1.96 at 95% confidence level,

p = the proportion of respondents confirming information is 0.5,

q = the proportion of respondents not giving information of interest = 0.5 and,

S. E = $p^* q$ is the estimate of variance which is maximum when p = 0.50 and q = 0.50,

(estimate of variance = 0.25).

$$n = \left(\frac{384}{1 + \frac{384}{N}} \right) \dots\dots\dots (iii)$$

When N = 13187 and n = 373

The sample was drawn from Songosongo (N₁) and Somanga Fungu (N₂) respectively. The sample size from each ward was determined by using the following formula: $N_1 \times n/N$

Where: N is the sampling frame, N₁ and N₂ are sub-sampling frames and n is the sample size.

Therefore:

$$N_1 = 10161/13187 \times 373 = 287 \text{ (Somanga Fungu)}$$

$$N_2 = 3032/13187 \times 373 = 86 \text{ (Songosongo) for details see Table 1.}$$

At Somanga Fungu Ward two villages namely Somanga North and Somanga South 70 households were selected due to the big population, compared to other three villages where 49 households were selected in each village namely Marendengo, Somanga Simu and Namatungutungu (Table1.1).

Table 1.1: Percentage of Respondents Selected for survey in each village (n = 373)

| Wards | Village | (Men = 209) | (Women 164) | Total |
|---------------|----------------|-------------|-------------|-------|
| Songosongo | Songosongo | 25 | 19.5 | 86 |
| Somanga Fungu | Marendego | 14.8 | 11.0 | 49 |
| | Somanga Simu | 13.4 | 12.8 | 49 |
| | Somanga North | 15.3 | 23.2 | 70 |
| | Somanga South | 18.2 | 19.5 | 70 |
| | Namatungutungu | 12.4 | 14.0 | 49 |
| | | 100 | 100 | 373 |

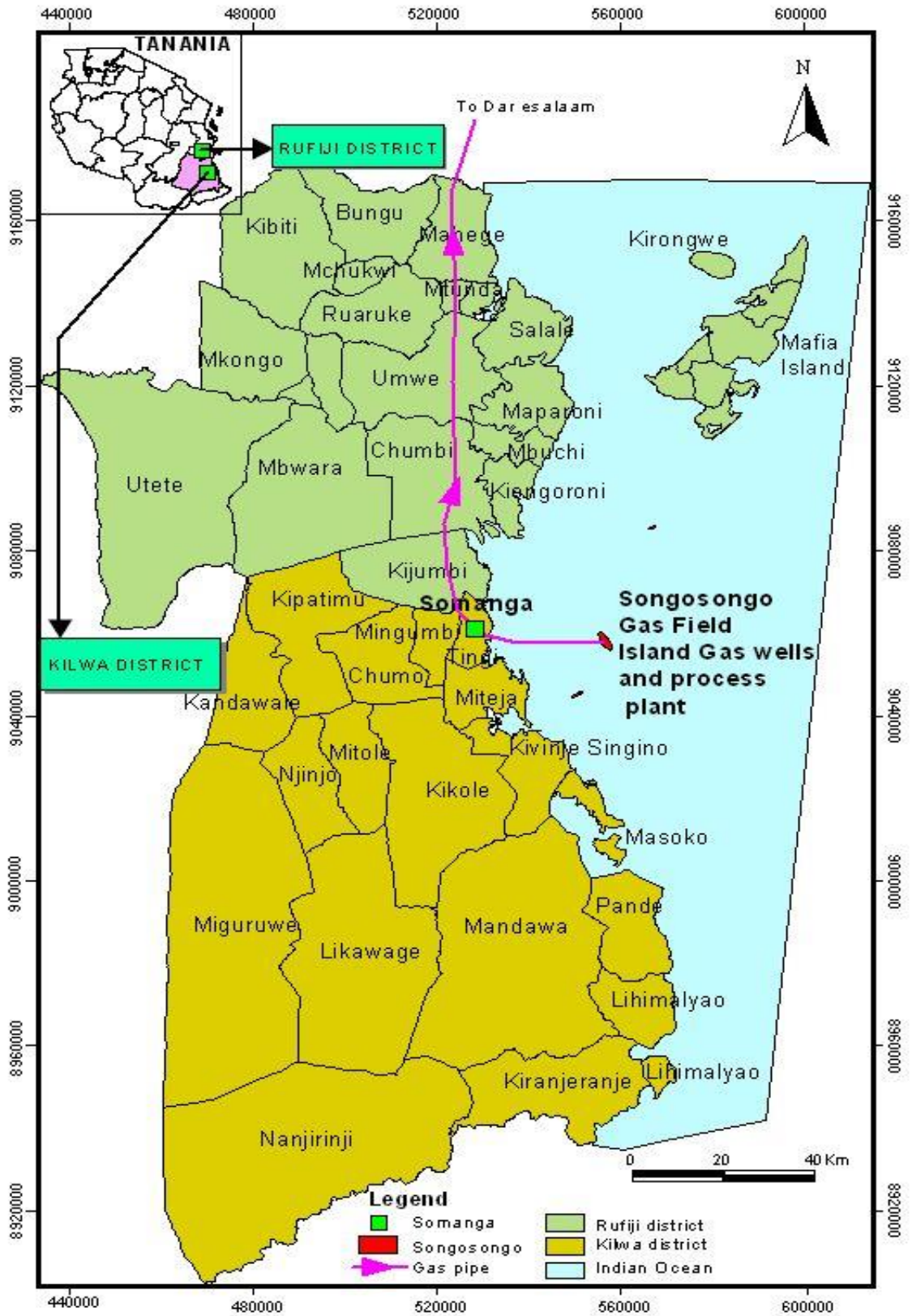


Figure 2.1 Map of Kilwa District showing the study area

2.4 Data Collection

Primary data were collected through use of a questionnaire which was administered to 373 respondents. The questionnaire was pilot-tested with 30 randomly selected respondents from Kilwa Kivinje as they share similar characteristics with Somanga Fungu and Songosongo. This was important for ensuring validity of the instrument (Msabila *et al.*, 2013). The respondents who took part in the pilot testing at Kilwa Kivinje were removed from the sampling frame of the main study. The data collection instruments were not translated into Tanzanian national language and later reviewed after pre-testing and are attached as Appendix 1.

The Harvard analytical framework (HAF) or Gender role framework was used to understand division of roles between men and women at household level in triple roles such as production, physical reproduction and community (Peters, 1999; Carrasco, 2015). The underlining assumption is that women are not able to benefit from natural gas extraction development compared to men, and also bear more risks from this sector (Okereke, 2011; Gyan, 2012 and Akabzaa, 2013). The framework was used to answer gender bias case for allocating equal benefits to men, women and youth through integration of a gender perspective on allocation of natural resources. This framework was used in data collection in division of triple roles performed by men and women. On the other hand, host communities' opinions were collected to understand whether gender workload decreased.

Time used to perform gender roles refers to the average number of hours spent by men and women in different categories of roles (Ellis, 1998; Sullivan, 2004; March *et al.*, 2005). It has been argued that the amounts of time spent to perform gender roles at household

obtained by using questionnaires are more accurate than the respective amounts of time obtained by using diaries (Carrasco *et al.*, 2015). It is also argued that the Harvard Analytical framework could be expanded to collect sufficiently detailed data at household level (Weibe, 2014). The framework was expanded to include one variable about community opinions on whether extractive company activities change gender roles or not in the study area.

Qualitative information was collected through eight FGDs whereby four FGDs were for women and four for men to allow them map out living reality and understand who was doing what, when, how and the intervention of extractive companies. The information was collected in separate groups of men and women, to allow women to articulate their roles more comfortably than in mixed groups, where men used to dominate discussions. Millward (1995) asserts that, in order to obtain meaningful information, it is important to identify people with broad knowledge of the subject under study. Recruitment of participants for FGD was done with assistance of VEOs who knew people around the community. Kreuger (1988) suggests that an appropriately designed FGD should have less than 10 questions, preferably 5 - 6 questions. In this study, six participants in FGDs for each group were purposefully selected whereby information such as needs, expectations, beliefs, and attitudes, values of individuals or population sub-groups, and insights into benefits sharing were discussed. FGDs were carried out in the ward officers, market place and ten cell leaders' homesteads where the participants felt comfortable and were able to talk openly in a circle or semi-circle seating arrangement, to encourage all participants to talk.

Further information was triangulated from 19 key informants who were purposively selected including Corporative Social Responsibility Officers (CSRO), female Engineers, Heads of Departments and Human Resource officers to understand social services provided by ECs, Ward and Village Executive Officers, Kilwa District Council Officers, Headmasters from Kinjumbi and Songosongo Secondary schools and Social Welfare Officer as listed in Table 2.2. In the same way, participant observation techniques were carried out throughout the research process, whereby health and water posts were visited to establish time used to perform particular roles and to understand how particular workload decreased or increased.

Table 2.2: Selected Key informants

| Criteria for selection | Institution | Informants |
|---|---|-------------------|
| Corporative Social Responsibility Officers (CSRO) | Songas | 1 |
| Human Resource officers | TPDC | 1 |
| Female Engineers | PanAfrica Energy Ltd | 2 |
| Heads of Department | PanAfrica Energy Ltd | 1 |
| | TPDC | 1 |
| | TPDC | 2 |
| Social Welfare Officer | University of Dar es Salaam (Engineering and Geology) | 2 |
| Ward and Village Executive Officers | VETA- (Training) | 1 |
| | PanAfrica Energy Ltd | 1 |
| | Songosongo | 3 |
| | Somanga Fungu | |
| Administrative Officers | Kilwa District Council | 2 |
| Head Masters | Kinjumbi and Songosongo Secondary schools | 1 |
| | | 1 |
| Total | | 19 |

In this study, gender roles were limited to men and women because in social and cultural norms, there are roles viewed as men's and women's work at household level. Therefore, division of gender roles was specifically compared between men's and women's reproduction, production and community roles (Blackden and Wodon, 2006; Carrasco *et al.*, 2015).

Respondents' opinions about survey research are regarded as an expression at individual level of the general survey (Loosveldt and Storms, 2008). The questionnaire consisted of fourteen statements covering various gender roles in productive, physical reproductive and community roles. The statements sought opinions from men and women on whether or not there was relationship between extractive companies' investment in social services and changing of particular role. The statements were focused on land clearing, planting, selling of crop products, fishing, selling fish, frying fish, sea weed farming, animal keeping, petty trade (Shop/kiosk), fetching water, food preparation, home cleaning, wedding, meetings and community work roles. The respondents were asked to respond "Yes" or "No" on whether investment by extractive company has any relationship with changing the type of gender roles between men and women.

2.5 Data Analysis

Qualitative data were analyzed using content analysis technique whereby information was summarized in themes and sub-themes for interpretation. Quantitative data were analysed using Statistical Package for Social Sciences (SPSS) version 16 whereby both descriptive and inferential analyses were done. An independent t-test was used to compare time spent between women and men on production, physical reproduction and community work to understand whether there was any difference in daily hours spent on roles between men and women. In the present paper, content and descriptive analyse were used to analyse respondents opinion on whether there were changes in gender roles due to extraction activities. Respondents answered "Yes" on where the gender roles had changed due to extractive companies and "No" where gender roles had not reduced by extractive companies. For each statement, the value of "1" was assigned for "Yes" response and "0" for a No response.

2.6 Results and Discussions

2.6.1 Socio-Demographic Characteristics of Respondents

2.6.1.1 Sex of respondents

The household characteristics for the 373 respondents who took part in the study are summarized and presented in Table 2.3. The findings reveal that both household heads and those who are not household heads participated in answering survey questionnaires. Table 2.3 indicates that 56% of the respondents were male-headed households while 44% were female-headed households. This shows that male headed household was the majority in this study. The observation shows that women who were not head of household accepted to be interviewed in the absence of their husbands who were the heads of household. This implies that men were the main decision makers at family level. These findings are in line with an argument by Kisinza *et al.* (2008) that patriarchy system and male dominance in decision making in many African societies have resulted into most households being led by men.

2.6.1.2 Age of respondents

The mean age of heads of household was 37.5 years, while the maximum and minimum ages were 18 and 68 years respectively. The largest proportions 40.6% and 41.2% of female-headed and male-headed were 31 to 42 years old respectively (Table 2.3). Small proportions 1.8% and 3.4% of female-headed and male headed households respectively were above 68 years. This implies that the majority of the respondents were middle aged people who are believed to be active in economic activities, and they could afford to carry out various roles in the community. The second largest proportion (37%) of women and 28.4% of men were youth aged between 18 to 30 years (Table 2.3). This implies that

natural gas benefits programme and opportunities should target youth as an anticipated working class which is expected to stimulate growth of the economy in our country.

2.6.1.3 Household size

The findings presented in Table 2.3 show that the maximum, minimum and mean household sizes were 14, 1 and 4.1 respectively. The average size of household in the study area was lower than 4.4, which is reported in URT (2013). Nevertheless, 57.4% of the households surveyed had members ranging between 5 and 8, while 22% of the respondents had family members ranging from 1 to 4 members. According to Mamkwe and Mwangike (2008), households with 1 to 4 members are more able to support the families with their basic needs including food, shelter and clothes. The findings further imply that it is not easy to provide basic needs to households with big family sizes. In the situation of large number of members, education is more likely to be forgone for the sake of other needs like food, clothing and shelter (Mamkwe and Mwangike, 2008).

Table 2.3: Socio-demographic characteristics of respondents (n = 373)

| Variables | Women (n=164) | Men (n=209) | Total (n=373) |
|-----------------------|---------------|-------------|---------------|
| | % | % | % |
| Age | | | |
| 31-42 yrs | 40.6 | 41.8 | 41.2 |
| 18-30 yrs | 37.0 | 28.4 | 32.2 |
| 43-55 yrs | 17.0 | 18.8 | 18 |
| 56-68 yrs | 3.6 | 7.7 | 5.6 |
| Above 68 yrs | 1.8 | 3.4 | 2.7 |
| Martual status | | | |
| Married | 69.7 | 78.4 | 74.5 |
| Single | 16.9 | 13.0 | 14.7 |
| Widow | 11.5 | 6.8 | 8.9 |
| Divorced | 1.8 | 1.9 | 1.9 |
| HH size | | | |
| 5 – 8 | 59.4 | 55.8 | 57.4 |
| 1- 4 | 24.2 | 20.2 | 22.0 |
| Above 9 | 16.4 | 24.0 | 20.6 |

2.6.1.4 Marital status

The findings in Table 2.3 show that the majority (69.7%) and (78.4%) of female-headed households and male-headed households respectively were married, while 16.9% and 13% of women and men respectively were single. It is noteworthy that a small proportion (1.8%) of women was divorced. During focus group discussions, it was reported that the Islamic religion insists on men and women to get married and discourage single life as it attracts adultery. The results imply that society as well as families were stable and could concentrate more on economic production activities (Mutayoba, 2011).

2.7 Social Services Provided by the Extractive Companies in the Study Area

The information from key informants, summarised in Table 2.4, shows that the two wards had dispensaries owned by the Government. However, Songosongo dispensary was renovated by Songas and fully furnished with water facilities by PanAfrican Energy Tanzania Limited (PAT) and acquired a Grade “A” dispensary status (Mashindano *et al.*, 2008). The same was not done at Somanga Fungu dispensary. Despite Songosongo having a good dispensary, they experienced challenges of having too few health workers and inadequate drugs and other equipment’s.

As a result, PAT provided a doctor to the dispensary twice a week to serve the community. Apart from these activities, PAT in collaboration with Kilwa District Council constructed a hospital and workers houses at Nangurukuru. On the other hand, PAT constructed a maternity waiting home commonly known as “*mama ngojea*” at Kinyonga District hospital which aimed to reduce walking distance for women to access safe delivery care for mothers and children. In respect of Human Immunodeficiency Virus/Acquired Immune deficiency Syndrome (HIV/AIDS), PAT conducted training in the study area with

the aim to sensitize community members on the effects of high interaction of people from different parts of the world mass movement due to the natural gas extraction.

PAT also supported education through construction of schools such as Songosongo kindergartens, Kinjumbi Secondary Schools, Songosongo female students' dormitories and provision of scholarships to 10 students each year from secondary education to university level. PAT was also involved in two water projects for sea water purification and construction of water reservoirs at Panga natural water spring. PAT also invested in safe water services throughout Songosongo Island, contrary to previous situation when women used to walk for 2 to 3 hours to fetch domestic water (Songas, 2001; Mashindano *et al.*, 2008). Unfortunately, Somanga Fungu still used shallow and natural wells as their main sources of domestic water.

On the other hand, Songas embarked on different community development activities in education including construction of laboratories, secondary schools and offering secondary school scholarship to 3 best students in Kilwa District (2 girls and 1 boy). The programme benefited more than 255 students including 162 girls and 93 boys and reduced parents' responsibilities of educating those children (Songas, 2004). However, through key informant interviews, it was found that most of the girls sponsored did not complete secondary education as they were walking long distances from home to school, hence high risk of early marriage which is culturally accepted. Further, unfriendly learning environment and presence of fish business whereby school children involved were receiving quick money.

Similarly, Songas provided free of charge electricity to the Islanders. However, at Somanga Fungu Ward, electricity was distributed by Tanzania Electricity Supply Company (TANESCO), and customers were required to pay TZS 90,000 to be connected to electricity. On the other hand, Tanzania Petroleum Development Corporation (TPDC), in collaboration with her contractor, contributed an ambulance boat to the Islanders to support quick access to the District Hospital at Kilwa Kivinje. It was reported by Mashindano *et al.* (2008) and later by Besta (2011) that despite notable improvement in health, education, electricity and potable clean water services, still there was high illiteracy rate, poor health services and insufficient water supply. However, during focus group discussions, it was revealed that the communities expected that the discovery of natural gas would help to re-write the long history of Kilwa as a major trading centre in East African Coast when extractive companies invested in different categories of social services.

Table 2.4: Social services provided by three the extractive companies

| Company | Education | Water | Health | Electricity |
|---------------------------|--|----------------------------------|---|---|
| Songas | Secondary school scholarship program in the District. | - | Renovated Songosongo health center | Free of charge at Songosongo |
| | Construction of Kijumbi secondary school at Somanga Fungu | - | - | In collaboration with TANESCO provided power at Somanga Fungu |
| Pan Africa Energy Limited | Construction of Songosongo's Kindergarten school | Water distribution at Songosongo | Construction of Nangurukuru hospital | |
| | Construction of Songosongo's Secondary school hostels including beds and mattresses, a room for matron | | Medical facilities at Songosongo | |
| | Secondary Scholarship programme | | Medical counseling- Songosongo | |
| | Provision of books (current ratio 1:1) | | Built maternity waiting ward (<i>Mama Ngojea</i>) | |
| TPDC | Renovation of Primary schools & teachers' houses | | HIV/AID training | |
| | Sponsored 3 kindergarten teachers from Songosongo | | | |
| | Construction of primary school classes at Songosongo | | Ambulance boat from Songosongo to Kivinje | |

2.8 Production Roles and Time Spent Per Day

2.8.1 Agriculture

The findings showed that the majority (67%) of men were engaged in land clearing, compared to 33% of the women (Table 2.5). The findings imply that the majority of the men were more engaged in land clearing than women. This is due to differences in the perceived physical strength between men and women. This portrays that, in the farm activities, there are some tasks that are viewed as “men’s work” and others as “women’s

work” (Blackden and Wodon, 2005). These findings are in line with FAO (2010) which showed similar patterns in other developing countries, where men appeared to be working longer hours than women on the land clearing activity. However, in one of the focus group discussions, the discussants said that:

“Farmers at Songosongo have to cross the sea to access their farms because the topographic nature of the islands does not support agricultural activities”

Similar findings were reported by Mashindano *et al* (2008) that Songosongo Island is food dependent on the mainland. On the other hand, urbanization at Somanga Fungu town, as results of the natural gas activities, caused farmers to walk long distances to reach their farms. An independent samples t-test was conducted to determine if a difference existed between amounts of time spent by women and men in land preparation (Table 2.6). There was a significant difference in the mean time spent by male ($M = 2.84$, $SD = 1.01$) and female ($M = 2.62$, $SD = 1.05$), $t(2.072)$, $p = 0.039$.

On the other hand, 62% of the women were responsible for planting, compared to 38% of the men (Table 2.5). This provides evidence that men spent fewer hours on planting crops, while women spent more hours on planting activities. This findings re in line with findings by Blackden and Wodon (2005) who confirmed that women in Africa are socialised and assigned planting as well as food processing activities, while men do most of the land clearing. This study’s findings in Table 2.6 show that the mean time that women spent on planting had a statistically significant difference with the time that men spent on the same activity ($M = 2.25$, $SD = 0.85$) and women ($M = 2.62$, $SD = 1.05$), $t(1.961)$, $p = 0.050$. Further, the majorities (72%) of men were engaged in selling crop products and 28% of the women were engaged in selling agricultural products contrary to men (Table 2.5).

This finding helps to explain the remark provided by Ellis *et al.*, (2007) that the majority of women work as labourers on the farm, hence they have access to land while men control income through selling products.

Table 2.5: Gender roles Distribution among respondents (n = 373)

| Role Category | Roles performed | Men = 209 (%) | Women =164 (%) |
|-------------------------|--------------------------|----------------------|-----------------------|
| Production | Land clearing | 67.0 | 33.0 |
| | Planting | 38.0 | 62.0 |
| | Selling of crop products | 72.0 | 28.0 |
| | Fishing | 96.0 | 4.0 |
| | Selling fish | 27.0 | 73.0 |
| | Frying fish | 34.0 | 66.0 |
| | Sea weed farming | 11.0 | 89.0 |
| | Animal keeping | 72.0 | 28.0 |
| Physcal Reproduction | Petty trade (Shop/kiosk) | 85.0 | 15.0 |
| | Fetching water | 10.0 | 90.0 |
| | Food preparation | 4.0 | 96.0 |
| | Home cleaning | 9.0 | 91.0 |
| Community | Wedding | 15.0 | 85.0 |
| | Meeting | 70.0 | 30.0 |
| | Community work | 77.0 | 23.0 |

2.8.2 Fishing and seaweed farming

The study revealed that the majority (96%) of the men were engaged in fishing activities while only 4% of women were engaged in fishing (Table 2.5). This implies that fishing was one of the major economic activities for men in the study. This finding is in line with FAO (2010) which confirms that capturing of fish in coastal and deep-sea waters is almost a male domain. This is due to inequalities between men and women and cultural concepts of masculinity and femininity (Lenkeit, 2001). In one focus group discussions it was reported that:

“In order for young men to be respected and recognized as valuable members of the community they should be socialized and able to fish, because the fishing activity is the last employment option for us”

Observations from Somanga Fungu showed that women were more engaged in shrimp and salmon fish catching, locally namely known a “*Kutanda*” while at Songosongo women were engaged in octopus fish trapping. This means that women were allowed to fish around shoreline for fulfilling their domestic chores. Mwaipopo (2003), further, insists that women are excluded from the fishing activity due to traditional practices, for example, women are not allowed to inherit vessels and other fishing gears from their wealthy parents because fishing is regarded as a male activity. Discussants at Somanga Fungu lamented that fishermen tended to travel long distances for fishing as nearby fish catchment areas were prohibited due to natural gas extraction activities. An independent sample t -test was conducted to determine if there was a significant difference between the mean time spent on fishing activities. There was a statistically significant difference between mean time men spent ($M = 1.92$, $SD = 0.98$) and the mean time that women spent ($M=1.73$, $SD = 0.98$), $t (1.961)$, $p = 0.050$. This implies that more men were self-employed in fishing activities and used most of their time to access this resource, hence fishing was their main source of income.

Women were relatively more engaged in fish frying (66%) compared to men (34%). On the other hand, the majority (73%) of women were engaged in selling of fish, while men who were engaged in the activities were only 27% (Table 2.5). This finding implies that women were more engaged in post fishing activities. During in-depth discussions, one female discussant said:

“Presence of electrical power generated from natural gas has opened up channels for women entrepreneurs to do business like transporting fish including Octopus to nearby market places such as Dar es Salaam fish market, running ice blocks shops, fish freezing and engaging in selling fried fish along the high way”.

This implies that the installation of electricity has provided opportunities for women to engage in different roles for income generating activities to support their life, contrary to the expected habit of coastal women to stay at home.

Table 2.5 further illustrates that the majority (89%) of the women were engaged in seaweed farming while men who were engaged in that activity were only 11%. This implies that seaweed farming was a women's role as it was conducted around shoreline between 0600 h to 0800 h in the morning which allowed women to attend other domestic chores thereafter. Findings from focus group discussions revealed that men could easily engage in seaweed farming which was considered a women's role when they saw opportunities for making good money. This is in line with Besta (2013) who found that most of the women were engaged in seaweed activities, while few men decided to engage in seaweed farming due to price attraction, less labour used and restriction in fish catchment areas.

Likewise, the findings in Table 2.5 show that 85% of men were engaged in petty businesses dealing with different commodities; only 15% of the women were engaged in such businesses. This means that men were engaged in petty trade business such as shop and kiosk because they are capable of spending the whole day on the activity, unlike women who were required to attend domestic chores. The observation shows that the respondents opened mixed items kinds of goods whereby vegetables, drinks, telephone charging point and other goods were sold in one shop.

An independent samples t-test revealed that there was no statistically significant difference in time spent by men ($M = 1.69$, $DS = 0.91$) and women ($M = 1.67$, $SD = 0.90$), $t (-0.098)$,

$p = 0.920$ used in the kiosk/shop role. This indicates that domestic roles affect women participation in kiosk/shop activities hence they spend few hours compared to men.

Table 2.6: Time spent per day in triple gender roles (n = 373)

| Roles | Men = 209 | | Women = 164 | | T | Df | p value |
|------------------------------|-----------|-------|-------------|--------|--------|--------|---------|
| | Mean | Std.D | Mean | Std. D | | | |
| Production | | | | | | | |
| Land clearing | 2.84 | 1.01 | 2.62 | 1.05 | 2.072 | 345.77 | 0.039 |
| Planting | 2.25 | 0.85 | 2.62 | 1.05 | 1.961 | 371 | 0.050 |
| Selling crops | 2.27 | 1.02 | 2.28 | 0.96 | 0.119 | 371 | 0.910 |
| Fishing | 1.92 | 0.98 | 1.73 | 0.93 | 1.946 | 371 | 0.050 |
| Fish selling | 1.91 | 0.93 | 1.73 | 0.97 | 0.808 | 371 | 0.420 |
| Frying fish | 2.11 | 1.24 | 2.06 | 1.20 | 0.154 | 371 | 0.877 |
| Seaweed farming | 1.39 | 0.75 | 1.43 | 0.79 | 1.274 | 371 | 0.204 |
| Animal keeping | 1.52 | 0.82 | 1.65 | 0.80 | 1.274 | 371 | 0.200 |
| Shop/Kiosk | 1.69 | 0.91 | 1.66 | 0.90 | -0.098 | 371 | 0.920 |
| Physical Reproduction | | | | | | | |
| Fetching water | 2.21 | 0.49 | 2.30 | 0.08 | -1.645 | 371 | 0.001 |
| Cooking | 2.33 | 0.68 | 2.02 | 0.18 | 1.184 | 371 | 0.237 |
| Home cleaning | 2.33 | 0.68 | 1.75 | 0.65 | 0.601 | 371 | 0.548 |
| Community | | | | | | | |
| Wedding | 2.09 | 0.70 | 2.42 | 0.64 | -1.325 | 371 | 0.086 |
| Meeting | 1.98 | 0.79 | 2.09 | 0.70 | 1.498 | 371 | 0.135 |
| Community work | 1.69 | 1.12 | 1.76 | 1.15 | 0.621 | 371 | 0.538 |

2.8.3 Physical reproductive roles

Physical reproductive roles involve care and maintenance of the household and its members, including preparing food, fetching water and fuel, shopping, housekeeping, caring and family health-care (March *et al.*, 2005). In this study, bearing of children roles were excluded in the analysis with the objective to remain with physical reproductive roles. The findings in Table 2.5 show that large proportions (90%) of women were engaged in fetching water activity while only 10% of men were doing it. This indicates that the primary roles of women were to make sure that their families had enough water for cooking, washing and drinking. This finding is in line with Farooq and Kayani (2014)

who reported that women are responsible for making sure that water is available for domestic uses. An independent samples t-test was carried out to examine difference in time spent by women and men on fetching water. Table 2.6 indicates that women spent ($M = 2.30$, $DS = 0.08$) and men spent ($M = 2.21$, $SD = 0.49$), $t (-0.645)$, $p = 0.001$. This implies that women used more time in fetching water compared to men.

Likewise, the largest proportions (96%) of women were engaged in food preparation contrary to 4% of men (Table 2.5). The study further showed that the majority (91%) of women were doing cleaning roles while a small proportion (9%) of men was doing similar roles. This implies that food preparation and cleaning roles were sole responsibilities of women. This finding is in line with an argument by Carrasco *et al.* (2015) that individuals who perform between 75% and 100% of the total work are viewed as doing all of the work. This implies that, overall; women are primarily responsible for household work and taking care of their families. This further suggests that households assign women to do domestic sphere activities and expose men to the public sphere activities (March *et al.*, 2005). The observation revealed that, in coastal culture, a women's day starts from 05.00 hours after the first prayer and ends at 09.00 hours in the evening after prayers. Women perform roles not for cash payment, but for domestic support. Women are primarily seen as mothers, and their roles are perceived as "natural roles", which are called as work. Hence, they should stay at home since it is their roles (March *et al.*, 2005). On the other hand, men are viewed as the main breadwinners of their households. This further implies that similar attitudes deny women opportunities to get benefits from natural gas, including education and employment opportunities as they are required to stay at home to perform domestic roles. One of the female security guard revealed her story by saying:

“According to my religion and coastal culture, women are not allowed to work outside of home, but after the introduction of natural gas, I have decided to join Militia training at Kinjumbi ward. The community has been yelling at me asserting that I am interfering with men’s roles as my roles are at home. Currently, I am employed by SUMA JKT directly after finishing training as a security guard and opened a restaurant business”.

This implies that presence of natural gas extraction has opened up different opportunities changing women’s traditional roles from domestic work to paid work. This finding is in line with Farooq and Kayani (2014) who argue that women have the perception that changing economic structures is influencing the traditional roles.

An independent samples t -test was carried out to determine difference in time spent by women and men in performing physical reproductive roles like food preparation and cleaning roles. The findings in Table 2.6 show that there was no statistically significant difference in time spent by women and men in food preparation and cleaning roles ($p > 0.05$). This implies that, despite a large proportion of women performing cooking and cleaning roles, men and women used almost similar time amounts to perform some particular roles.

2.8.4 Community managing roles

The majority (85%) of the women were participating more actively in wedding ceremonies, while men were only 15% (Table 2.5). This implies that women were more participating in wedding activities as they were required to prepare food for the invitees and distribute the same. Men appear in wedding sessions, eat and disappear, while women remain for cleaning dishes and environment. Similar findings were reported by Moser

(1989) who observed that participation in community managing roles, like wedding and funeral ceremonies is associated with groups of people and other social activities done voluntarily. Elson (2002) argues that voluntary community work comprises unpaid activities in community and civic associations such as self-help groups of mothers organised to run kitchen or to secure improvements in neighborhood safety. However, spending time helping other households and in community activities is more of a “choice” than of a “duty” and is seen as leisure rather than “work” (Blackden and Wodon, 2006). Nevertheless, observation showed that women are more exposed to community activities which are related to domestic roles than men. The findings further showed that there was no statistically significant difference ($p > 0.05$) in time spent by men and women in performing community activities like wedding and funeral ceremonies.

The findings in Table 2.5 indicate that the majority (70%) of the men and 30% of the women attended meetings. This implies that more men were involved in decision making, participating in elections, receiving information about the natural gas opportunity while women missed the opportunity to air out their grievances about natural gas. This is in contradiction with the findings of Carrasco *et al.* (2015) who said that individuals doing between 40% and 75% are viewed as sharing in the work. This further implies that participation in meetings was primarily undertaken by men, and a small proportion of women attended this role probably due to the fact that women had different roles to perform, hence they didn't have enough time to attend meetings (March, 2005). During a focus group discussion it was agreed that women did not have time to sit around for four hours in a meeting in the middle of a day since they had other responsibilities of taking care of their families. An independent samples t- test was used to test whether women and men spent equal hours on the meeting activity .Table 2.6 indicates that men spent

(M = 1.98, DS = 0.79) and women spent M = 2.09, DS = 0.70), $t(1.498)$, $p = 0.135$ hence there was no statistically significant difference in time spent on participation in meeting.

2.9 Communities' Opinion on Gender Roles with Respect to Extraction

Companies Investment

The findings in Table 2.7 indicate that most of roles did not change. For example, food preparation (98.2% W and 99.5% M), home cleaning (96.0% W and 94.0% M), meetings (92.7% W and 95.7% M), animal keeping roles (84.8% W and 95.5% M), land clearing (81.2% W and 86.1% M) and fishing (81.2% W and 85.5% M) of women and men had opinions that their roles were not changed by the extraction companies investments. This implies that traditional gender roles of women and men remained almost the same in the community. For instance women were responsible for domestic roles like fetching water, cooking and home cleaning. In some instances the communities had opinion that the investment had increased workload to women by hardening the opportunities to implement their traditional gender roles. One focus group discussant at Songosongo had this to say:

“Currently, doing some gender roles is harder compared to the period before beginning of extraction companies because there are restrictions in getting access to firewood, fetching water and fish catching areas in gas development projects sites”

This implies that investment done by extraction companies were not able to challenge the existing gender roles. This was due to the fact that extractive companies have not invested much in understanding gender roles and prepared corresponding investment that would either reduce the workload or change the gendered distribution of roles. Programmes aimed at reducing gender roles like provision of fishing gears and provision of modern fishing vessels with trawl nets in order to catch large volume of fish. Provision of such

support improving community income and creating job opportunities as well as provision of labour saving technologies. The findings by this study is similar to that of Besta (2011) who found that some of fish catchment areas are prohibited under Petroleum Act of 1980 as amended by the Petroleum Act of 2015, Section 118(2), which requires contractor and license holders of any extractive company to ring fence or restrict areas where there are explorations, pipelines or gas wells for safety reasons, hence they prohibit access to some of fish catchment areas.

Table 2.7: Respondent’s opinion on extractive companies and changing gender roles

| Roles | Women (n =164) | | Men (n =208) | |
|------------------|----------------|---------|--------------|---------|
| | No (%) | Yes (%) | No (%) | Yes (%) |
| Land cleaning | 81.2 | 18.8 | 86.1 | 13.9 |
| Planting | 81.2 | 18.8 | 86.1 | 13.9 |
| Selling crops | 78.8 | 21.2 | 83.2 | 16.8 |
| Fishing | 81.2 | 18.8 | 85.5 | 14.5 |
| Frying fish | 82.1 | 17.9 | 81.0 | 19 |
| Selling fish | 73.9 | 20.1 | 85.0 | 15 |
| Seaweed farm | 77.8 | 23.0 | 89.2 | 10.8 |
| Animal keeping | 84.8 | 17.2 | 95.5 | 0.5 |
| Shop/kiosk | 84.8 | 15.2 | 76.5 | 24 |
| Fetching water | 79.4 | 20.6 | 80.0 | 23 |
| Food preparation | 98.2 | 1.2 | 99.5 | 0.5 |
| Home cleaning | 96.4 | 3.6 | 94.0 | 6.0 |
| Wedding | 98.2 | 1.8 | 95.0 | 0.5 |
| Meeting | 92.7 | 7.3 | 95.7 | 4.3 |
| Community work | 85.5 | 14.2 | 80.8 | 19.2 |

The qualitative findings revealed that availability of electricity attracted women to engage in fish related activities including fish business, fish storage, and ice block making business. Further, some women started picking up opportunities created by extractive companies. In the same way, women were engaged in paid work like security guide and construction activities. This finding is line with Lozeva and Marinova (2010) and Kibendela (2013) who found that mining opportunities through direct and indirect employment can reduce gender disparities and enhance access to benefits among host communities.

Empirical evidence revealed that the women's workload was reduced for instance women spent fewer hours to water point due to availability of water in the study area. It took about 30 minutes to reach a water point, contrary to 2 to 3 hours which were previously used to access water at Panga natural well. Water availability at the domestic level in turn improved hygiene at home. When hygiene improved, it reduces workload among women for caring members of the family.

During Focus group discussions it was revealed that water supply was not sufficient for the whole population. Women spent many hours on the queue and sometimes fought amongst themselves to get water. This finding is in line with Mashindano *et al.* (2008) and Besta (2013) who reported that even if the company installed infrastructure and supplied water, still the demand for safe and clean water was higher than the current water supply at Songosongo Island.

2.10 Conclusions and Recommendations

Generally, the majority of communities surrounding extraction companies had opinion that women's and men's roles were not changed by social services provided by companies'. Still, men are perceived as breadwinners while women are primarily seen as being responsible for domestic roles in line with the social learning theory. Hence, local communities did not benefit much as they expected from extraction companies. Communities still experienced challenges in accessing and utilization of social services, such as health services, education, water and installation of electricity. It is recommended that; for positive change in gender roles, effective implementation of corporate social responsibility projects and improving access to benefits; extractive companies and local government should evaluate gender roles played by men and women in the maintenance of

the economic and social wellbeing and support them. It is also recommended that the Government and extractive companies should opt for targeted intervention that will reduce work load among men and women to improve their social wellbeing.

It is also concluded that some specific positive changes on women's roles related to increased economic opportunities were observed. The noted positive changes in gender roles on women was associated with the company's investment that created opportunities at economic domain whereby women had access to paid work outside domestic sphere. This happened when extraction companies, invested services such electricity that provided multiplier effects. This indicates that gender roles can slowly change given provision of services and opportunities that challenge the existing structure in line with the Social Learning theory. Thus, it is recommended that extractive companies should target to provide social services that challenge the existing structure that limits women's access to economic opportunities.

It is further concluded that, the negative changes where the investments worsened the implementation of gender roles by men and women were related to decreased opportunities from livelihood supporting environment due to extraction activities. This lead to lowering of men's and women's statuses within the family and society at large whilst increasing their work burdens in performing roles such as fetching firewood, water and fish catching; hence, performing gender roles consumed men's and women's time and limited participation in other development activities. It is recommended that ECs and District Council should introduce labour saving technologies based on availability of electricity with the aim of reducing workload and increased time spent on other economic activities.

Acknowledgements

The author is grateful to The Mwalimu Nyerere Memorial Academy (NMNA) through Higher Education Students' Loans Board (HESLB) for sponsoring this study. Moreover, profound appreciation is expressed to the Local Government Authority in Kilwa District for granting permission to conduct the research in host communities.

REFERENCES

- Abebe, W. and Galmessa, U. (2011). Gender role in peri-urban dairy production system of Ambo town, Ethiopia. *Journal of Agricultural Extension and Rural Development* 3(13): 224 – 228.
- Aikaeli, J. (2010). *Determinants of Rural Income in Tanzania: An Empirical Approach*. Research Report No. 4. Research Poverty and Alleviation, Dar es Salaam, Tanzania. 4pp.
- Akabzaa, T. (2010). Gender dimensions of Ghana's oil and gas policy draft. University of Ghana. [http://www.g-rap.org/docs/oil_and_gas/netright-thomas_akabzaa-2010.pdf] site visited on 13/6/2014.
- Babbie, E. P. (1990). *Survey Research Methods*. Wordsworth Publication Company Inc., California. 395pp.
- Bailey, D. (1998). *Methods of Social Science Research*. The Press Collier Macmillan Publisher, London. 475pp.

- Besta, N. A. (2011). Seaweed farming and intra-household gender relations on Songosongo Island, Tanzania. Thesis for Award of PhD Degree at School of International Development, University of East Anglia. 258pp.
- Blackden, C. M. and Wodon, Q. (2006). *Gender, Time Use, and Poverty in Sub-Saharan Africa*. Working Paper No.73. World Bank, Washington DC. 15pp.
- Braidotti, R., Charkiewicz, E., Hausler, S. and Wieringa, S. (1994). *Women, the Environment, and Sustainable Development*. Zed Books, Atlantic Highlands. 220pp.
- Carrasco, C. and Domingues, M. (2015). Measured time, perceived time, and a gender bias. *Time and Society Journal* 24(3): 326 – 347.
- Carter, J. M. (2014). Gender socialization and identity theory. *Social Science Journal* 3: 242 – 262.
- Cecelski, E. (2000). Sustainable energy development: Energy, environment and development Germany. [<http://www.doe.gov/bridge>] site visited on 20/6/2014.
- Cleaver, F. (2000). Analysing gender roles in community natural resource management. *International Development Studies Bulletin* 31(2): 60 – 67.
- Cochran, W. G. (1977). *Sampling Techniques*. (3rdEd.), John Wiley and Sons, New York. 6pp.

- Deutsch, F. M. (2007). Undoing gender. *Gender and Society Journal* 21(1): 106 – 127.
- Ellis, A., Blackden, M., Cutura, J., MacCulloch, F. and Seebens, H. (2007). *Gender and Economic Growth in Tanzania: Creating Opportunities for Women*. World Bank, Washington DC. 113pp.
- Ellis, F. (1998). *Peasant Economic Farm household and Agrarian Development*. Cambridge University Press, Cambridge. 257pp.
- Elson, D. (2002). “*Macroeconomics and Macroeconomics Policy from a Gender Perspective.*” Presented at Public Hearing of Study Commission, “Globalisation of the World Economy — Challenges and Responses,” February 18, Deutscher Bundestag, United Kingdom. 1-18pp.
- European Communities (2011). Green Paper. Office for Official Publications. Brussels, Belgium. 5pp.
- FAO (2003). Women’s access to land and property in selected countries; Analysis based on initial and periodic report to the Committee on the Elimination of All Forms of Discrimination against Women (1997-2003), Volume 1: Main Report. FAO, Rome, Italy. [<http://www.fao.org/3/a-ak997e.pdf>] Site visited on 19/10/2017
- FAO (2010). Gender and climate change issue in agriculture and food security. [<http://www.few.org.org/org/docrep/015/md280/md280e/pdf%5D>] site visited on 16/7/2014.

- Farooq, A. and Kayani, A. K. (2014). Social dynamics in rural Punjab: changes in gender roles, spatial mobility and decision making. *International Journal of Sociology and Social Policy* 34(6): 317 – 333.
- Garrett, S. (1987). *Gender*. Routledge. New York. 26pp.
- Gyan, C. (2013). The Role of women in the oil industry. *Journal of Social Sciences* 9(3): 94 – 100.
- ILO (2016). Women at work: Trends. International Labour Office . Geneva.
[http://www.ilo.org/gender/Informationresources/Publications/WCMS_457317/lang--en/index.htm.] Site seen on 9/7/2017.
- Kamlongera, P. J. (2013). The mining boom in Malawi: Implications for community development. *Community Development Journal* 48(3): 377 – 390.
- Kasanga, L. A. (2005). English (es) and the global context: the changing face of a lingua franca under siege. *BELL-Belgian journal of English language and literatures* 169 - 18.
- Kibendela, E. (2013). Making Natural Gas guarantee sustainable development: plans and progress by VETA to prepare Tanzanians to engage in the Natural Gas Value Chain Process. ESRF Discussion Paper No. 50. 4pp.
- Kisinja, W. N., Talbert, A., Mutalemwa, B. and McCall, P. S. (2008). Community knowledge, attitudes and practices related to tick-borne relapsing fever in Dodoma rural District, central Tanzania. *Tanzania Journal of Health Research* 10(3): 131 – 136.

- Kombo, I. and Minungu, L. (2012). Gender imbalance in the Leadership of local Government Authorities in Tanzania: The case of Dodoma Municipality. *African Journal of Social Science* 2(3): 116 – 123.
- Kothari, C. R. (2004). *Research Methodology and Techniques*. (2nd Ed.), New Age International, New Delhi, India. 60pp.
- Kreuger, R.A. (1988). *Focus Groups: A Practical Guide for Applied Research*. London: Sage. 12pp
- Lenkeit. E. R. (2001). *Introducing Cultural Anthropology*. McGraw-Hill Companies Inc., New York. 8pp.
- Lozeva, S. and Marinova, D. (2010). Negotiating Gender: Experience from Western Australian Mining Industry. *Journal of Economic and Social Policy* 13 (2): 1 – 23.
- Loosveldt, G and Storms, V. (2008). Measuring public opinions about surveys. *International Journal of Public Opinion Research* 20(1):74 – 89.
- Mamkwe, C. E. and Mwangike, L. (2008). *Community in Addressing Gender Disparity in Education: A case study of Iringa Rural District*; Research report. Mzumbe University. 56pp.
- March, C., Smyth, I. and Mukhopadhyay, M. (2005). *A Guide to Gender-Analysis Frameworks*. Oxfam Publishing Companies, London. 24pp.

- Mashindano, O., Kibamba, D., Charles, P. And Maro, F. (2008). *Songosongo Social Services and Economic Survey*. Economic and Social Research Foundation, Dar es Salaam, Tanzania. 12pp.
- Millward, L. (1995). *Focus Groups*. in *Research Methods in Psychology* (Eds.), Sage Publications, London. 292pp.
- Moser, C. (1989). Gender planning in the third world: meeting practical and strategic needs. *World Development* 17(11): 1799-1825
- Msabila, D. T. and Nalaila, S. G. (2013). *Research Proposal and Writing: Principles and Practice*. Nyambari Nyangwine Group of Companies Ltd., Dar es Salaam, Tanzania. 27pp.
- Mutayoba, V. (2011). Wildlife resource outside protected areas and poverty reduction in Sikonge District. Tanzania. *Kivukoni Journal* 1(1): 73 – 88.
- Mutch, T. (2012). East African oil and gas: a lack of critical analysis leaves local people isolated. [<http://africanarguments.org/2012/08/13/east-african-oil-and-gas-a-lack-of-critical-analysis-leaves-local-people-isolated-by-thembi-mutch/>] site visited on 5/9/2014.
- Mwaipopo, R. N. G. (2003). *Gender Equity and, Coastal Management Partnership Science and Technical Working Group*. Coastal Management Tanzania State, Dar es Salaam, Tanzania. 47pp.

Mwamkwe, C. E. and Mwangike, L. (2008). *Community Contribution in addressing Gender Disparity in Education: A Case of Iringa Rural District*. Mzumbe University, Morogoro, Tanzania. 56pp.

Nakamura, R. (2011). Multi-Ethnic coexistence in Kilwa Island, Tanzania; The basic ecology and fishing cultures of a swahili maritime society. *The International Journal of Research into Island Cultures* 5(1): 44 – 68.

Neithammer, C. (1977). *Daughters of the Earth: The Lives and Legends of American Indian Women*. Collier Books, New York. 24pp.

Peters, P. (2016). Time allocation in time structural transformation: A Synchronesh view on Gender differences in the Netherlands. *Time and Society Journal* 8(2): 329 – 356.

AU (2008). The SADC Protocol on Gender and Development. SADC

Scott, J., Dakin, R., Heller, K. and Estimate, A. (2013). *Extracting Lessons on Gender in the Oil and Gas Sector: A Survey and Analysis of the Gendered Impacts of Onshore Oil and Gas Production in Three Developing Countries*. World Bank, Washington DC. 21pp.

Shanghvi, I.S. (2010). *Effective Management of the Tanzanian Natural Gas Industry for an Inclusive and Sustainable Socio-Economic Impact*. A Baseline Report. Economic and Social Research foundation (ESRF). 36pp

Songas (2001). *Environmental and Social Assessment and Management Plan. A Summary of Environmental and Social Impact Studies and Detailed Management Plan.* Songas Publishers, Dar es Salaam. 59pp.

Songas (2004). *Annual Report to the Development Association; Community Development Progress and Actions to Protect Bio-Diversity.* Songas Publishers, Dar es Salaam, Tanzania. 4pp.

Sullivan, O. (2004). Changing gender practices within the household: Theoretical perspective. *Gender and Society Journal* 18(2): 207 – 222.

United Nations (1979). *The Convention on the Elimination of All Forms of Discrimination against Women.* UN Commission on the Status of Women. United Nation. [<http://www.un.org/womenwatch/daw/cedaw/>] site visited on 11/7/2017

United Nations (1995). *Beijing Platform for Action.* UN Women. United Nation. [<http://www.un.org/womenwatch/daw/beijing/platform/plat1.htm#objectives>] site visited on 7/7/2017.

URT (2015). *The Petroleum Act No 21.* Government Printer. Dar es Salaam. Tanzania. 141pp.

URT (2013). Tanzania national population and household census.

[<http://www.scribd.com/doc/134906223/Tanzania>] site visited on 15/8/2014.

URT (2013). *The National Natural Gas Policy of Tanzania*. Minister for Energy and Minerals, Dar es Salaam, Tanzania. 20pp

Weibe, A. (2014). Applying the Harvard Framework: A case study from Guatemalan Maya-Mom Community. *Canadian Journal of Latin American and Caribbean studies* 22(44) 147 – 175.

WHO (2015). Why do we mean by “sex” and “gender”. World Health Organization. [who.int/gender/whatisgender/en/index.html] site visited on 6/5/2016.

CHAPTER THREE

3.0 Factors Influencing Benefits Sharing from Mining Companies to the Host Communities in Kilwa District, Tanzania

Sarah E. Mwakyambiki¹, Anna N. Sikira² and Fatihya A. Massawe³

¹Corresponding Author, Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024 Morogoro Tanzania. Email: tulibonywas@gmail.com

²Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024. Morogoro. Tanzania. Email: annasikira@yahoo.com

³Department of Policy Planning and Management, Sokoine University of Agriculture, P. O. Box 3035, Morogoro. Tanzania. Email: mnkya74@gmail.com

International Journal of Research in Social Sciences Vol. 8 (5) 2018: 375-395

3.1 Abstract

Natural gas extraction makes substantial contributions to government revenue in the form of taxes and royalties. However, host communities have received much less than they are expected because extractive companies feel that it is government's role to improve their people's livelihoods, since companies pay statutory taxes. This paper aimed at analysing factors influencing extractive companies (EC) sharing benefits with host communities in Tanzania. Specifically, this paper examined; (i) community's expectations from natural gas extraction companies, (ii) perceived benefits sharing, and (iii) factors influencing extractive companies to share benefits with host communities. The study used a cross-sectional research design. A total of 373 respondents were selected, and information was

triangulated through key informant interviews and focus group discussions. The dependent variable (benefit sharing from extraction companies) was regressed on seven independent variables to determine factors influencing benefit sharing. It was found that host communities had higher (64.6%) expectations in employment opportunities, health services, education, electrical supply and water services provision. However, the host communities perceived to receive low level (61.1%) of benefits sharing from extractive companies. The binary logistic analysis confirmed that distance from extraction sites, education level of community members and legitimacy influenced benefit sharing from extractive companies. It is concluded that Kilwa District Council, being among natural gas extraction stakeholders, has the right to gain benefits from ECs. It is recommended that extractive companies and Government should take into consideration the host communities' expectations as a starting point to improve benefits sharing from extractive companies. It is also recommended that the Government and extractive companies should include gender components in the implementation of corporate social responsibility policy. It is also recommended that the extractive industry should improve communication channels with the host communities to allow local communities to understand the opportunities available from extraction business companies.

Key words: Benefits, extractive companies, stakeholders, host communities and
natural gas

3.2 Introduction

The responsibility of improving the livelihood status of the communities living close to extractive industry sites is not well understood by different investors including those in the gas extractive sector (Lange, 2006; Emel *et al.*, 2012; LHRC and ZLSC, 2014). Globally,

host communities have not benefited much from natural gas development (Kamlongera, 2013; World Bank, 2015). In this way, extractive industries have insufficient or limited economic linkages to the host communities where they operate. The Extractive Companies (ECs) feel that they are doing beyond what they are obliged to do. They pay all statutory requirements like taxes, service levy and royalties to the government. They thus feel that it is the government's responsibility to return some of the revenue back to the local communities (Mwalyosi and Hunges, 1998; Campell, 2007). Therefore, the role of benefits sharing with communities living close to mining sites is perceived as charitable activities, and they are not legally binding (LHRC and ZLSC, 2014).

From the literature, it is evident that investors decide when, how, where to invest or allocate a small amount of money for community support which is considered not enough for community development and deny locals alternative livelihood strategies (Mader, 2012). Locals experience environmental pollution and destruction of livelihood opportunities as their land is taken for exploration activities. It is their expectations to get a little share from mining development (Rio Tinto, 2010). However, little is known on factors influencing ECs sharing benefits with the surrounding communities where mining activities take place.

The concept of benefit is subjective and defined differently by the host communities, government and investors (Bekkering and Kleijnen, 2008). The study adopts the definition provided by SIDA (2015) that the term host communities defines benefits as opportunities derived from the utilisation of natural gas resources, including satisfaction with both direct benefits including employment, royalties, improvement of infrastructures like roads and indirect benefits including all induced opportunities generated due to the presence of

natural gas activities. In addition, Pham *et al.* (2013) suggest that sharing of benefits refers to the distribution of the direct and indirect benefits that are generated through the implementation of a mining project. In this study, sharing of benefits refers to the division and distribution of direct and indirect benefits as defined by Petroleum Act of 2015.

Indeed, 24 out of all the 54 African countries have natural gas reserves whereby the benefits sharing mechanism is divided into three channels: first, the statutory payment such as royalties, taxes and services levy. Secondly, the compensation for land taken for project development; and thirdly, community development through corporate social responsibility (CSR) (Kamlongera, 2013). It is worth noting that availability of laws, policies and regulation frameworks is among the determinants of a country's ability to attract benefits from foreign investment and direct to the host communities (Lange and Kolstad, 2012). It is obvious that companies would act more responsibly when facing strong and well-enforced state regulations (Campbell, 2007). For example, the Nigeria Energy Policy and Renewable Energy Master Plan of 2006 indicates that natural gas energy is for achieving sustainable development, whereby almost 173 million people benefit from 6,976 Megawatts of power generated from natural gas (Usman and Abbasoglu, 2014). Regardless of the existence of different channels of benefits flow from the extractive sector, other factors influencing close communities to share benefits from extractive companies are not well known.

International laws and principles provide the context within which benefit sharing from extractive industry can be measured and demanded. Tanzania signed the International convention which specifically calls for mining companies to share benefits with host communities. The International Convention on Biological Diversity (CBD) of 1992,

Article 17(7) requires each state party to the convention to take considerable measures in terms of legislative and policy to make sure that host communities share benefits from utilization of natural resources in a fair and equitable manner. This Convention is used as a practical policy tool to achieve greater social inclusiveness, improve local livelihoods, and reinforce social equity as an approach to promoting sustainability (Wynberg and Hauck, 2014). It is also clear that principles of Customary International Law have become very important legal instruments affecting private investment in benefit sharing. Among others is the principle of *Pacta Sunt Servanda* (agreements must be kept and binding).

This signifies that every treaty in force is binding upon the parties to it and must be performed by them in good faith. In the context of benefit sharing, the principle simply means that extractive companies must be honoured and the agreements should be kept to provide benefits to close communities. On the other hand, the Principle of Good Faith and Prohibition of Abuse of Rights implies that parties to the contract must be sincere and honest of intention in implementation of agreements. This principle supplements the principle of *pacta sunt servanda*. Another principle is access and benefit sharing from natural resources. This principle signifies that companies should adhere to the benefit sharing provisions in the agreements including shares, payment of revenues, provisions of social services and job opportunities.

In some sub-Saharan African countries, including Kenya and Malawi, benefit sharing is not properly regulated by the law but investors voluntarily support different community development projects (Kamlongera, 2013, Nyamwaya, 2013 and Kayumba, 2014). It has been argued that inadequate legal frameworks hinder smooth flow of benefits from the extractive industry to communities living close to the extraction sites (Eweje, 2006). This

leads to a situation of powerlessness because communities lack power to demand for benefits from ECs.

In respect of Mozambique, Nigeria and Tanzania, benefit sharing is regulated by the law (Wall and Pelon, 2011). Tanzania adheres to International laws and standards through national laws and bilateral investment treaties. Tanzania is part of the Convention on Biological Diversity (CBD) of 1992 as was signed in 1992 and ratified in 1996. The Constitution of the United Republic of Tanzania, 1977, Article 9(c) explains that the benefits from natural resources should be directed to development of the people and in particular be geared towards the eradication of poverty, ignorance and disease.

The recently enacted Petroleum Act No 21 of 2015 of Tanzania, Sections 219, 220, 221, 222, together with section 97(1) of Land Act of 1999 and section 7(1) Part II of the Act of Local Government Finance Act of 1982, explain the way benefits from extractive industries should trickle down to the local communities. Laws instruct that licence holders, contractors and sub-contractors have the mandatory obligation to contribute to the local communities economic growth whereby ECs are required to observe these provisions in Production Sharing Agreement (PSA) before signing with the National Oil Company (NOC), formerly known as the Tanzania Petroleum Development Corporation (TPDC) on behalf of the government in the case of oil and gas production.

Within the PSA, there is mandatory requirement for benefits flow to the community in terms of employment, education, scholarships, skills training and technology transfer to the locals, utilisation of the local market and prepare a credible corporate social responsibility plan. In the same vein, during land acquisition, land owners were required to be paid fairly and equitably for the land taken for the gas projects development. After the

commencement of production, EC is obligated to pay 0.3% as service levy to Kilwa District Authority, of which 20% of the money is supposed to be paid to host communities (Songosongo and Somanga Fungu Wards) as benefits and used for economic development and recovering from poverty and environmental damage.

Consequently, Section 219(1- 4) of Petroleum Act of 2015 gives directions to the license holder, contractors and subcontractors to use goods and services which are produced and available in Tanzania. In case goods and services are not available in Tanzania, extractive companies are required to use foreign companies which entered into a joint venture with local companies to procure their needs. The law also makes clear that for sustainable utilization of Tanzanian goods and services, contractors and subcontractors are required to prepare and submit to PURA a procurement plan for a duration of at least five years which shows how they are going to utilize services including but not limited to insurance, financial, legal, accounts and health matters and goods produced in Tanzania.

Further, Extractive Industries Transparency Initiatives (TEITI) Act of 2015 has been developed to address issues related to profit sharing and aims to ensure that the revenues from extractive industries contribute to sustainable development and poverty reduction among communities around the mining areas. To put more emphasis, Section 15(1) of the Act shows that it is mandatory for ECs to submit to the TEITI committee a report on the implementation of local content and corporate social responsibility; failure to do that amounts to a penalty. However, the practice shows that existence of the laws and regulations does not guarantee benefits flow from EC to communities living close to mining sites. Likewise, the satisfaction of local communities with the benefits transferred by the ECs will depend on the level of host communities expectations and other factors.

Again, Tanzania enacted Local Content Policy for Oil and Gas Industry of 2015 with the objective to address market inefficiencies and ensure competition. The government and local companies argued that the main hindrance of local Small and Medium Enterprise (SME) and farming sectors was to meet given standards to supply goods and services to the ECs (Kinyondo and Villanger, 2016). The local supplies suffered from low expertise and skills, which disqualified them from the high-end markets that would be generated by the gas sector. As results foreign companies supply goods and services in the oil sector (Kinyondo and Villanger, 2016). Local content policies are an important tool for sharing benefits by generating jobs and bussiness. This is another area whereby Tanzanians can enjoy indirect benefits from natural gas industry. Local Content Unit has task, *inter alia* to enhance the capacity of local suppliers in meeting international standards when delivering their services in the oil and gas sector.

In this way, the pattern of benefits flow from extractive industries to the host communities in Tanzania is considered to be legally constructed as it was observed from international laws to domestic laws. However, existence of a legal framework is not enough to guarantee benefits flow from ECs to host communities without considrering stakeholder' attributes. Literature has been written on local communities and benefits sharing from mineral mining in Tanzania (Lange, 2006; Emel *et al.*, 2012, Lange and Kolstad, 2012; Nyamwaya, 2013). Nonetheless, those studies leave a gap on stakeholders attributes as other reasons which influence extractive companies to stream down benefits to host communities. Therefore, there is a need to analyse (i) communities expectations from natural gas extraction, (ii) perceived benefits sharing, and (iii) factors influencing extractive companies to share benefits with host communities

3.3 Theoretical Framework

Different literature used stakeholders theory to integrate the host communities right of benefit sharing from ECs (Donaldson and Preston, 1995; Campbell, 2007; Lange and Kolstad, 2012). The theory is flexible enough to cover both the mining and non-mining sectors (Greening and Gray, 1994). Stakeholders are defined as any group or individual who can affect or be affected by the activities of the company. Thus, stakeholders may include but not be limited to employees, customers, suppliers, government and local communities (Freeman, 1984). The definition adopted by this paper is that stakeholders are communities who are living close to mining activities.

The theory directs that without an element of “risk” there is no stake, and stake is only something that can be lost, and the stakeholders should be the ones likely to be affected by activities of the company (Jones, 1995). In fact, women and men living close to mining communities are voluntarily or involuntarily at risk as they surrendered their land for the project development. In due process, host communities lose cropland, water, wildlife, and forests for fuel and medicines. In the same way, close communities are involuntarily exposed to different risks, like explosions and exposure to hydrogen sulphide, which is toxic and can lead to health problems (Darley, 2004). Thus, they anticipate benefits from ECs because they are exposed to different risks (Burke, 1999). In this regard, EC management is also supposed to have the responsibility to take expectations and needs of men and women aiming at gaining a better understanding of gender inequality in accessing different benefits (Le Masson *et al.*, 2015). Theory proposed that stakeholders can be identified by possession of one to three of attributes. Stakeholder attributes influence corporation to share benefits to the communities including power/urgency, legitimacy, interests or expectations and community proximity to the project (Rajablu *et al.*, 2015).

This is in contrast with Coff's (1999) perspective of organisation operation that theory uses state intervention (law) to force companies to share benefits with their stakeholders.

3.4 Conceptual Framework

It is well acknowledged from literature that benefit sharing between ECs and host communities needs to be guided by various factors. As indicated in Fig. 5, it is assumed that not only does availability of legal framework influence benefits flow from ECs to the host communities, but also there are other factors as stipulated by the stakeholder theory. From legal framework, Petroleum Act No 21 requires investors to sign a Production Sharing Agreement (PSA) which directs ECs to create employment opportunities, transfer technology, education and utilization of local products, as well as prepare corporate social responsibility plans that direct the companies to take into consideration development of close communities in terms of social services so that they can acquire social license to operate. In the same way, Local Authority Finance Act of 1982 directs companies to pay 0.3% as service levy to the local government authority and 20% of the money is required to be paid to the host communities. It was further assumed that the following attributes influence host communities to access benefits: (i) host communities proximity to project, (ii) host communities' interests in the project or expectations, (iii) legitimacy, (iv) power of host community to influence the firm, and power/urgency (Freeman, 1984; Rajablu *et al.*, 2015; Alves *et al.*, 2015).

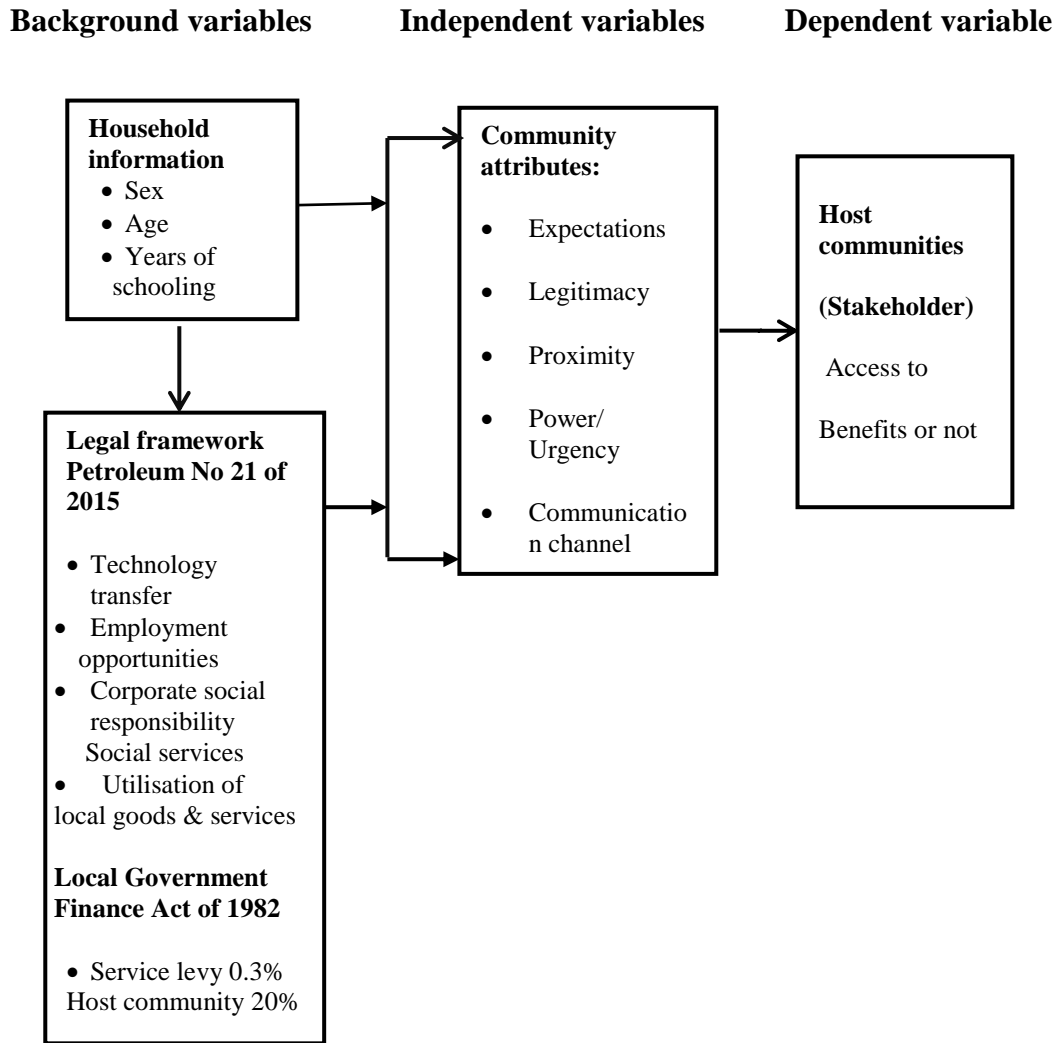


Figure 3.1: Conceptual framework for benefit sharing from EC to the host Community

Source: Adapted from the work of Wall and Polen, (2011)

3.5 Methodology

3.5.1 The study area

The study was conducted in Songosongo and Somanga Fungu wards in Kilwa District. Songosongo Island is located 247 km from Dar es Salaam and has 3 026 inhabitants (Nakamura, 2011; URT, 2013). Somanga Fungu is located 217 km from Dar es salaam and has a population of 10 161. The study area was selected due to the availability of gas

wells, processing plants and power generation plants (Songas, 2001; PWYP, 2011). Thus, the social and environmental situations around the mining communities raised high expectations from communities that development of natural gas would share benefits with them (Songas, 2001; Kamlongera, 2013)

3.5.2 Research design, sampling procedure and sample size

A cross-sectional study design was employed, and data were collected between June and December 2015. This design was effective and economical in terms of time and financial resources because it allowed to collect data once (Bailey, 1998). Purposive sampling was used to select two wards where natural gas activities were done. Selection of key informants and participants in focus group discussions (FGD) took place in consideration of gender whereby both men and women were included in the sample. The sample size was determined by employing Cochran's (1977) formula whereby 373 households were selected including 287 respondents from Somanga Fungu and 86 respondents from Songosongo. A random sampling technique was employed to select respondents from Songosongo, Somanga Simu, Somanga North, Somanga Sourth, Marendego and Namatungutungu villages using village registers, whereby 209 men and 164 women were selected.

3.5.3 Data collection

Both qualitative and quantitative data collection were used in this study. Quantitative data were collected using a structured questionnaire which was administered to 373 respondents from whom information on respondents' characteristics and factors influencing benefit sharing were collected. Moreover, 19 key informants were interviewed based on their being considered to have knowledge of natural gas investment. A total of

eight (8) Focus Group Discussions (FGD) were held whereby four FGDs were for women and four for men. Each FGD consisted of 6 participants. Secondary data were collected from different legal instruments including TEITI Act of 2015, Land Acts, Petroleum Act of 2015, Local Authority Financial Act of 1982 and Production sharing Agreement whereby appropriate legal provisions which influence benefits flow from ECs to the community were selected.

3.5.4 Data processing and analysis

Qualitative data collected from FGDs and key informants interviews were analysed through content analysis. The information was summarised in themes and sub-themes to reflect objectives of the study. Quantitative data were processed and analysed using the Statistical Package for Social Sciences (SPSS) software. Data were descriptively analysed to determine frequencies, percentages, average and standard deviations.

A perceived benefit sharing index was developed to explain benefit sharing to the host community. The benefit variables included were: water, education, employment, health, electricity and service levy. For each of the variables the responses were either “1” = Yes if a respondent got particular benefits or “0” otherwise. The scores obtained from the questions related to the variables were added up to form an index and further categorised into low and high levels of benefits sharing whereby low level of benefits was represented by scores from 0 to 2.45, while high level of benefits was represented by scores from 2.46 to 6.00.

Consequently, an expectations index was developed to describe level of expectations from host communities. The variables that were included for determining the expectations

were: employment, health, water, electricity, utilisation of local markets, financial services, compensation for land taken for gas exploration, development funds and sea transport. The scores for lowest were from 0 to 1.45 while high scores for expectation scores ranged from 1.46 to 10.00.

Binary logistic regression was used to assess the influence of eight independent variables which influenced the host communities to share benefits with ECs. Pallant (2007) points out that binary logistic regression is an appropriate model for predicting dichotomous dependent variables with two or more continuous or categorical independent variables. The model was appropriate for this chapter because the response variable, sharing benefits was a dichotomous variable (1 = Yes, 0 = No) with independent factors. The impact of independent variables on the dependent variable was examined to establish which factors contributed to benefit sharing and to measure the role of each variable in explaining the variance in the dependent variable. Value “1” was assigned to “Yes response” whereas “0” was assigned to “No response”. More details are given in Table 3.1.

Table 3.1: Description of variables used in the binary logistic regression model

| Variables | Description |
|------------------|---|
| Y | Perceived benefits (1= Yes, 0 = No) |
| X ¹ | Sex (1 = Male, 0 = Female) |
| X ² | Age of respondents measured in years |
| X ³ | Numbers of years of schooling |
| X ⁴ | Distance (1 = if one lives 1 km from a natural gas production cite, 0 = otherwise) |
| X ⁵ | Expectations from host community (0 = low expectations, 1 = high expectations) |
| X ⁶ | Legitimacy = provision of development funds in respective wards (1 = if ward received fund, 0 = otherwise) |
| X ⁷ | Power = availability of communication channels to submit needs and ideas to the company (0 = Yes, 1= No) |

The model used the following predictors: sex, age, education level, distance from the household to natural gas activities, expectations of communities before establishment of EC, legitimacy and power while the dependent variable was perceived shared benefits, as seen in Table 3.1. The analysis involved overall model evaluation, Beta weights, Wald statistics and significant levels of p values at 5%. Evaluating the impact of independent variables on the changes of the dependent variable securing is through detecting the signs of the beta value (β value) which indicates either negative or positive signs. The Wald statistics is commonly used to test the significance of individual logistic coefficients for each independent variable (Garson, 2008). The general logistic regression model equation was as follows:

$$\text{Log}(Y) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + e_1$$

Where: p is the probability of the study event occurring = Dependent variable;

Yi = Benefit sharing (1 = Y, 0 = Otherwise)

β_0 = constant

e_1 = Random error terms

X_i to X_n = Independent variables or set of predictors (factors influencing),

β_1 to β_n = Coefficients of the predictor variables

At least one of the $\beta_s \neq 0$

3.6 Results and Discussion

3.6.1 Respondents' characteristics

3.6.2 Years of schooling (education level)

Figure 3.2 indicates that 28.5% and 26.0% of the women and men respectively had not spent even one year in school, but they had informal education, whereas 52.7% of the

women and 47.1% of the men had seven years of schooling (primary education). Only 1.3% and 0.5% of the women and men had sixteen years of schooling (Bachelor degrees). This implies that a large proportion of targeted beneficiaries in the natural gas mining projects had completed seven years of schooling or had not gone to school at all. Lack of or having little formal education implies that they did not possess the required skills to work in natural gas activities. This further implies that low level of formal education in the study area is considered as an important factor to exclude men and women from accessing formal employment benefits from natural gas activities. In 2015, Tanzania had a deficit of 200 experts in the field of oil and gas, thus all the posts were taken by persons living outside of mining sites because community members living close to the mining sites did not have the minimum formal education required (URT, 2016).

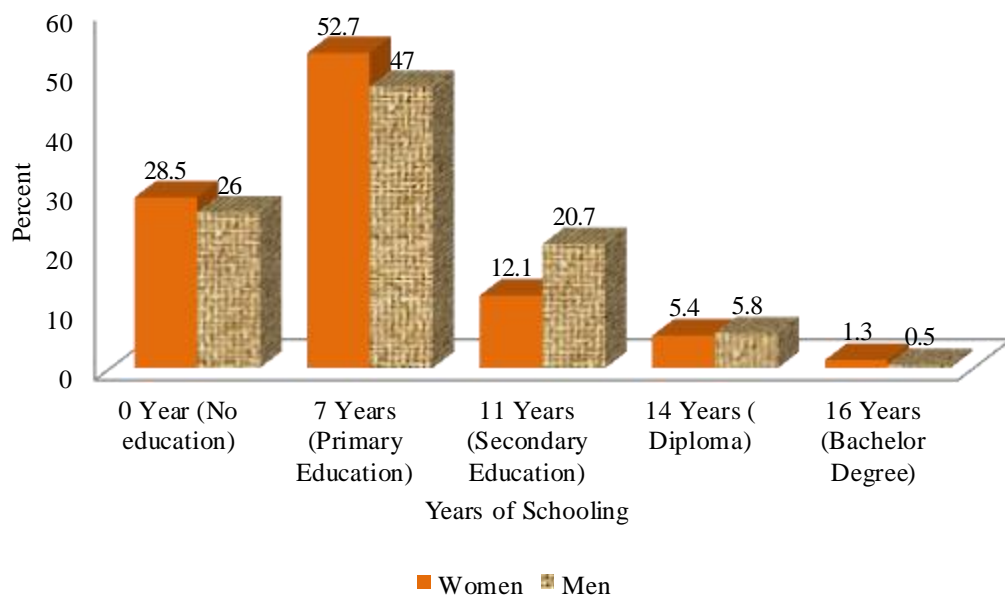


Figure 3.2: Respondents years of schooling

3.6.3 Respondents' proximity to the natural gas project

A large proportion (70%) of the respondents were selected from Somanga Fungu ward who lived more than 10 km from the natural gas wells, electricity plants and power stations, while 30% of the respondents who were selected from Songosongo Islands lived within 1 km from natural gas wells. This implies that the majority of the respondents interviewed were from Somanga Fungu, while the rest were from Songosongo.

3.6.4 Communities' expectations from natural gas extraction

Table 3.2 indicates that 64.6% of the respondents had high level of expectations in getting different benefits from ECs. This implies that expectations of respondents were a realistic assessment of the communities' needs in terms of employment opportunities, better health services, water and education services, electricity power and utilisation of local market as benefits from natural gas extraction. This finding is in line with Cappelen *et al.* (2016) who conducted a study on natural gas benefits in Tanzania and revealed that communities had high expectations that exploitation of natural resources would substantially improve Tanzania's wellbeing. This further implies that once community expectations are high, the management of expectations is an issue that needs the attention of industry stakeholders and policy makers. On the other hand, sea transport scored low (5.4%) ranking in expectations. This implies that communities had low expectation in improvement in sea transport because over a long period of time dhows, motorboats and big blank structure boats are the main transportation means used by the people along the Swahili coast (Nakumura, 2011).

Table 3.2: Communities' expectations from natural gas development (n = 373)

| Expectations | Responses | % |
|-------------------------------|------------------|----------|
| Sea transport | 87 | 5.4 |
| Service levy fund | 90 | 5.6 |
| Compensation for land taken | 111 | 7.0 |
| Financial services i.e banks | 112 | 7.0 |
| Utilisation of local markets | 133 | 8.3 |
| Electricity services | 167 | 10.5 |
| Water services | 183 | 11.5 |
| Education opportunities | 217 | 13.6 |
| Health services | 233 | 14.6 |
| Employment opportunities | 263 | 16.5 |
| Respondents expectation index | | |
| Mean index | 1.46 | |
| Hig expectation | 241 | 64.6 |
| Low expectation | 132 | 35.4 |

3.7 Perceived Benefits Sharing by Host Communities

The findings in Table 3.3 show that the majority (61.1%) of all the respondents perceived a low level of benefit sharing, while 38.9% of the respondents perceived a high level of benefits sharing from natural gas ECs. The findings further imply that mining companies had less impact on poverty reduction among host communities as expected. These findings are similar to arguments by Kamlongera (2013) who found that different host communities in Malawi were disappointed with benefit sharing from ECs because there were little efforts to improve their livelihoods. EC reported big and useful projects to improve host communities' livelihoods, but it was contrary to living realities of the actual projects. In one FGD at Somanga Fungu the discussants said:

“Benefits are not equally distributed as it was expected. The main challenges are non-payment of service levy by the local government authority to the respective wards, little communication with target groups to understand needs of men and women and little awareness of local, political and cultural contexts. Further, women are still struggling to access safe and clean water and health services in our ward”.

This implies that respondents from Somanga Fungu Ward perceived low level of benefit sharing because their wards had not been receiving service levy, proper communication to submit their claims against extractive companies, and they lacked safe water and health services.

Table 3.3: Perceived benefits-sharing index (n = 373)

| Score | n | Percentage |
|-----------------------------------|-----|------------|
| 1 | 83 | 22.3 |
| 2 | 127 | 34.0 |
| 3 | 70 | 18.8 |
| 4 | 40 | 10.7 |
| 5 | 47 | 12.6 |
| 6 | 6 | 1.6 |
| Mean Index 2.45 | | |
| Std Dev. 1.53 | | |
| General perceived benefits | | |
| Low benefits | 228 | 61.1 |
| High benefits | 145 | 38.9 |

3.8 Factors Influencing Benefit Sharing

The findings in Table 3.4 indicate that the model had predictors percentage accuracy classification (PAC) of 84.2% which implies that the model was appropriate. The model performance was statistically significant (χ^2 (8 df) = 291.268, $p < 0.001$). According to the Hosmer and Lemeshow statistic which indicates inferential test for goodness-of-fit, the model fitted the data well (R^2 (7 d.f) = 6.812, $p > 0.05$). The descriptive measures of goodness-of-fit also supported that the model fitted the data well (Cox and Snell R^2 = 0.542, Nagelkerke R^2 = 0.735).

The findings further showed that three out of seven independent variables were statistically significant on benefits sharing including: distance or proximity, education and legitimacy. This indicates that Kilwa District Council was among the stakeholders of

extractive companies' stakeholders hence entitled to get benefits. This finding is in line with Mitchell *et al.* (1997) and Rajablu *et al.* (2015) who recommended that stakeholders can be identified by possession of one, two or three of the factors.

It was further revealed that distance or proximity of the host community to mining activities was significant at $p < 0.05$. This implies that communities living close to mining areas can access more benefits than those who live far from the mining sites. This was also supported by one of the key informants from Somanga Fungu who commented that:

“Our fellows are privileged by the natural gas project particularly PAT, Songas and TPDC companies which have invested more in social services at Songosongo Island, compared to Somanga Fungu Ward where we have only an electricity project ”

Similar findings were reported by Rajablu *et al.* (2015) who observed that the shorter the distance from homestead to the mining activities the higher the rate of access of locals to different benefits. However, Chuhan-Pole *et al.* (2015) noted that within less than 20 km there is an economic footprint of mining activities.

Accordingly, education had negative effect ($p < 0.05$). This implies that the respondents with low education level had limited chances of sharing benefits than the ones who had higher education. Kasanga (2005) argues that education is valued as a means of deliverance from ignorance and enables one to perform effectively any task within a specified period. Similarly, legitimacy showed to have a positive effect ($p < 0.05$). This indicates that presence of legal and regulatory frameworks in the mining sector was found to be a determinant of the host communities ability to access benefit sharing from the mining development.

Table 3.4: Factors influencing community sharing benefits with extractive company

| Variables | B | S.E. | Wald | Df | Sig. | Exp(B) | 95.0% C.I.for EXP(B) | |
|--|----------|-----------|----------|-------|-------|--------|----------------------|--------|
| | | | | | | | Lower | Upper |
| Sex | -0.559 | 0.350 | 2.550 | 1 | 0.110 | 0.572 | 0.288 | 1.136 |
| Age | -0.010 | 0.015 | 0.431 | 1 | 0.511 | 0.990 | 0.962 | 1.019 |
| Distance | -7.716 | 1.264 | 37.290 | 1 | 0.000 | 0.000 | 0.000 | 0.005 |
| Expectations | 0.106 | 0.380 | 0.078 | 1 | 0.781 | 1.112 | 0.528 | 2.430 |
| Legitimacy | 1.917 | 0.430 | 19.889 | 1 | 0.000 | 6.799 | 2.928 | 15.876 |
| Communications channels | .496 | 0.466 | 1.133 | 1 | 0.287 | 1.642 | 0.659 | 4.094 |
| Education | -3.776 | 0.744 | 25.765 | 1 | 0.000 | 43.642 | 10.155 | 187.55 |
| Constant | 2.251 | 1.193 | 3.561 | 1 | 0.059 | 9.495 | | 4 |
| Model evaluation | | | | | | | | |
| Tests: | χ^2 | Df | P | | | | | |
| Likelihood ratio test | 291.26 | 8 | 7 | 0.000 | | | | |
| Goodness of fit test | | | | | | | | |
| Hosmer & Lemeshow test | 6.812 | 8 | 0.557 | | | | | |
| Nagelkerke's R ² and Cox & Snell's R ² | 207.19 | 5 | 0.542 | 0.735 | | | | |
| Percentage accuracy classification –PAC | | | | | 84.2 | | | |
| | | | | | % | | | |

3.9 Conclusions and Recommendations

It was established that host communities had high expectations of benefit sharing from ECs, specifically on improving health services, electrical power, employment and education opportunities from natural gas mining investment. However, after commencement of the mining activities, communities had low access to benefits sharing from EC. Low level of benefits sharing was caused by the mismatch in expectations between communities' and the actual EC development contributions. It is also concluded that Kilwa District was among stakeholders hence entitled to receive benefits from ECs as three factors (distance or proximity, education and legitimacy) had a positive impact on benefits sharing ($p < 0.05$).

On the basis of this conclusion, the Central governments, local government and ECs should take into consideration in their plans, host communities' expectations as a point of intervention for benefit sharing. Accordingly, it is recommend that there is a need to improve communication between companies and host communities to allow locals to understand opportunities available from extraction busines companies.

Acknowledgements

The authors gratefully acknowledge the support including information and data provided by Corporate Social Responsibility and Human Resource Officers from PanAfrican Energy Tanzania Limited Songas and TPCD .

REFERENCES

- Alves, E. R., Gomes, E. R., and Corsini, L. F. (2015). The characteristics of Power, Legitimacy and Urgency of Stakeholders and the Actions of Corporate Social Responsibility of Companies. *Asian Journal of Business and Management Sciences* 3(7): 34 – 46.
- Bailey, D. (1998). *Methods of Social Science Research*. The Press Collier Macmillan, London. 475pp.
- Bekkering, G. E., and Kleijnen, J. (2008). Procedures and methods of benefit assessments for medicines in Germany. *The European Journal of Health Economics* 9(1): 5 – 29.

- Burke, E. M. (1999). *Corporate Community Relations: The Principle of the Neighbor of Choice*. Quorum Books, Westport. 68pp.
- Campbell, J. L. (2007). Why would corporations behave in a socially responsible way? An institutional theory of corporate social responsibility. *Academy of Management Review* 32(2): 946 – 967.
- Cappelen, A. W., Fjeldstad, O., Jahari, C., Mmari, D., Sjursen, I. H., and Tungodden, B. (2016). Not so great expectations: Gas revenue, corruption and willingness to pay tax in Tanzania. *Chr. Michelsen Institute (CMI) BRIEF* 15(4): 1- 4
- Chuhan-Pole, P., Dabalén, A., Kotsadam, A., Sanoh, A. and Tolonen. (2015). A. The Local Socio-economic Effects of Gold Mining; Evidence from Ghana; Policy Research Working Paper 7250. World Bank. 28pp.
- Cochran, W. G. (1977). *Sampling Techniques* (3rd Ed.). New York: John Wiley and Sons. 6pp.
- Coff, R. W. (1999). When competitive advantage doesn't lead to performance: Resource-based theory and stakeholder bargaining power. *Organization Science* 10: 119 – 133.
- Darley, J. (2004). *High Noon for Natural Gas: The New Energy Crisis*. Chelsea Green Publishing, White River Junction, Vermont. 42pp.

- Donaldson, T. and Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *The Academy of Management Review* 20(1): 65 – 91.
- Emel, J., Makene, H. M. and Wangari, E. (2012). Problems with reporting and evaluating mining industry community development projects: A case study from Tanzania. *Sustainability Journal* 14: 257 – 277.
- Eweje, G. (2006). The role of MNEs in community development initiatives in developing countries. Corporate social responsibility at work in Nigeria and South Africa. *Business and Society* 45: 93 – 129.
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. MA Pitman Publishers, Boston. 46pp.
- Garson, G. D. (2008). *Testing of Assumptions. Quantitative Research In Public Administration*. North Carolina State University, USA. 70pp.
- Greening, D. W., and Gray, B. (1994). Testing a model of organisational response to social and political issues. *Academy of Management Journal* 37(3): 467 – 498.
- Jones, T. M. (1995). Instrumental Stakeholder Theory: A synthesis of ethics and economics. *Academy of Management Review* 20 (2): 404 – 437.
- Kamlongera, P. J. (2013). The mining boom in Malawi: Implications for Community development. *Community Development Journal* 48(3): 377 – 390.

Kasanga, L.A. (2005). English (es) and the global context: The changing face of lingua franca under siege. *Belgium Journal of English language and literature* 3(4): 161 - 181.

Kayumba, A. A. (2014). *Challenges and Prospects of Benefits Sharing from Oil and Gas*. Institute of Law and Environment Governance, Nairobi, Kenya. 3pp.

Kinyondo, A. and Villanger, E. (2017). Local content requirements in the petroleum sector in Tanzania: A thorny road from inception to implementation? *The Extractive Industries and Society* 4(2): 371-384.

Lange, S. (2006). Gold and governance: Legal injustices and lost opportunities in Tanzania. *African Affairs* 110(439): 233 – 252.

Lange, S. and Kolstad, I. (2012). Corporate community involvement and local institutions: Two case studies from the mining industry in Tanzania. *Journal of African Business* 13(2): 134 – 144.

Le Masson, V., Norton, A., and Wilkinson, E. (2015). Gender and Resilience. BRACED. [www.odi.org/sites/odi.org.uk/files/odi-assets/publicationsopinion-files/9890.pdf] site visited on 2/7/2017.

Mader, K. (2012). Corporate Social Responsibility in Tanzania: [<http://csroverview.tanzania.files.wordpress.com/2012/08/csr-overview-tanzania3.pdf>] site visited on 27/7/2016.

- Mitchell, K. R., Agle, B. R. and Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. *Academy of Management Review* 22(4): 853 – 886.
- Moser, C. (1989). Gender planning in the third world: meeting practical and strategic needs. *World Development* 17(11): 1799 – 1825.
- Mwalyosi, R., and Hughes, R. (1998). *The Performance of Environment Impact Assessment in Tanzania: An Assessment*. Research Paper No. 41. International Institute for Environment and Development, London. 5pp.
- Nakamura, R. (2011). Multi-Ethnic Coexistence in Kilwa Island, Tanzania: The Basic Ecology and Fishing Cultures of a Swahili Maritime Society. *The International Journal of Research into Island Cultures* 1: 44 – 68.
- Nyamwaya, C. (2013). *Benefits Sharing on Extractive Natural Resources with Society in Kenya*. Kenya Human Rights Commission. Nairobi. 32pp.
- Pallant, J. (2007). *Statistical Package for Social Sciences (SPSS) Survival Manual: A step by step Guide to Data Analysis Using SPSS for Windows* 3rd Edition. Open university Press. Berkshire. 212pp.
- Pham, T. T., Brockhaus, M., Wong, G., Dung, L. N., Tjajadi, J. S., Loft, L., Luttrell, C. and Assemble, M. S. (2013). *Approaches to Benefit Sharing: A Preliminary Comparative Analysis of 13 REDD+ Countries*. Working Paper No. 108. Centre for International Forest Research, Bogor, Indonesia. 4pp.

PWYP (Publish What You Pay). (2011). *Tanzania Oil and Gas Trend and Status Report*.

Government Printer, Dar es Salaam, Tanzania. 24pp.

Rajablu, M., Marthandan, G., and Wan Fadzilah, W. Y. (2015). Managing for stakeholders: The role of stakeholder-based management in project success.

Asian Social Science 11(3): 111 – 125.

Rio Tinto (2009). *Why Gender Matters: A Resource Guide for Integrating Gender Considerations into Communities Work at Rio Tinto*. Queensland, Australia,

80pp.

SIDA (2015). Gender analysis, principles and element. [<http://www.sida.>] site visted on 6/3/2016.

Songas (2001). *Environmental and Social Assessment and Management Plan. A summary of Environmental and Social Impact Studies and Detailed Management Plan*.

Songas, Dar es Salaam. 59pp.

The Legal and Human Rights Centre and the Zanzibar Legal Services Centre (LHRC and ZLSC). (2014). *Tanzania Human Right Report*. Dar es Salaam, Tanzania.

227pp.

United Nations (1992). *Convention on Biological Diversity*. United Nations Environment Programme, Geneva, Switzerland. 2pp.

URT (1999). Land and Village Land Act no 4 and 5. Government Printer, Dar es Salaam, Tanzania.

URT (1982). Local Authority Finance Act. Government Printer, Dar es Salaam, Tanzania. 2pp

URT (2013). Tanzania national population and household census. [<http://www.scribd.com/doc/134906223/Tanzania>] site visited on 15/8/2014.

URT (2013). *The National Natural Gas Policy of Tanzania. Minister for Energy and Minerals*. Government Printer, Dar es Salaam, Tanzania. 2pp.

URT (2015). Extractive Industries Transparency and Accountability (TEIT) Act. Government Printer, Dar es Salaam, Tanzania. 3pp.

URT (2016). *Tanzania Review*, (7th Ed), Ministry of Industry and Trade, Dar es Salaam. 39 - 56pp.

Usman, Z. G., and Abbasoglu, S. (2014). An overview of power sector laws, policies and reforms in Nigeria. *Asian Transactions on Engineering* 4(2): 1 – 7.

Wall, E., and Pelon, R. (2011). *Sharing Benefits in Developing Countries: The Experience with Foundation, Trust, and Fund. Extractive Industry*. World Bank, Washington DC. 6pp.

World Bank (2015). The Art and Science of benefit sharing in the natural resource sector.

[http://www.ifc.org/wps/wcm/onnnect/8e29cb00475956019385972fbd86d19b/IFC_Art+and+Science+of+Benefits+Sharing_Final.pdf?MOD=AJPERES &CACHID=8e29cb00475956019385972fbd86d19b] site visited on 29/5/2016.

Wynberg, R., and Hauck, M. (2014). People, power and the coast: A conceptual framework for understanding and implementing benefit sharing. *Ecology and Society* 19(1): 27 - 38.

CHAPTER FOUR

4.0 Gendered Access to Benefits from Natural Gas Mining in Kilwa District, Tanzania

Sarah E. Mwakymbiki¹, Anna N. Sikira² and Fatihya A. Massawe³

¹Corresponding Author, Department of Development Studies, Sokoine University of Agriculture, P.O. Box 3024, Morogoro, Tanzania. Email: tulibonywas@gmail.com

² Department of Development Studies, Sokoine University of Agriculture, P.O. Box 3024, Morogoro, Tanzania. Email: annasikira@yahoo.com

³Department of Policy Planning and Management, Sokoine University of Agriculture, P. O. Box 3025, Morogoro, Tanzania. Email: mnkya74@gmail.com

4.1 Abstract

Research on how host communities share benefits from natural gas development has taken a significant turn in recent years. Much of the previous studies have focused on benefit sharing at national level. In this paper, a gender lens is used to analyse access to direct and indirect benefits received by communities from extractive companies. Specifically, the paper (i) determines gendered expectations of host communities on natural gas extraction (EC); (ii) assesses gendered access to direct and indirect benefits accrued from natural gas; and (iii) examines levels of access to direct and indirect benefits from host communities. The study adopted a cross-sectional research design, whereby data were collected from 373 respondents using questionnaire. Moreover, different forms of qualitative inquiries including focus group discussions, key informant interviews and observation were used. Descriptive statistics were used to analyse quantitative data. It was found that both men and women had high expectations in health services, access to electricity services and

employment opportunities. It was found that women and men had high levels of access to indirect benefits compared to direct benefits as influenced by availability of education benefits programmes and electricity services which attracted them to start income generating activities. It is recommended that the Government should consider assisting host communities to establish co-operative societies to capture extractive companies' markets. It is also recommended that the Government and extractive companies should develop a foundation or a trust fund that will ensure sustainable development and flow of benefits from natural gas.

Keywords: Gender, access, natural gas, direct and indirect benefits.

4.2 Introduction

Across the world, women are among the poor and disadvantaged people. Women face gender based discrimination as reflected by inequalities in access to resources (FAO, 2003). Inequality between men and women in accessing and controlling resources is closely related to women's poverty and social exclusion. Access is defined as the ability or opportunity to use, manage or control particular resources (Nichols *et al.*, 1999; Ribot and Peluso, 2003). Globally, approximately 70% of the women are poor, and over 65% of the women are illiterate due to inadequate access to resources in the economy (ILO, 1996).

Unfortunately, gender inequality is also evident in access to oil and gas resources. Women, in particular, often miss out opportunities to access potential benefits from extractive industries (Okereke, 2011; Gina, 2013; Akabzaa, 2013). It is evident that women constitute 7.8% of the world's workforce and a small proportion of them are found in engineering and technical professions. Similarly, only 11% of the women are board

members in the top 100 largest extractive oil and gas companies in the world (Gulf Intelligence Research, 2015). In spite of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) of 1979, Article 14 which directs state parties to make sure that women have an equal right to access resources and basic services, still inequality persists between men and women in access to resource and remains an obstacle to women's economic development.

In Africa, countries rich in mineral natural resources, Tanzania inclusive, women share common exclusion in the mining sector and constitute the poorest and most marginalized people due to lack of access to and control over the resources than men (Ajadi *et al.*, 2015). The percentage of women workforce in the mineral mining sector is less than 10% and in Tanzania it is only 0.4% (REPOA, 2010; Ward and Strongman, 2011). The major reasons for women exclusion are lack of appropriate education and skills needed by the industry; hence almost all employment opportunities in the mining sector are taken by men (Gina, 2013; Mukherjee, 2014). Inadequate women participation in decision making leads them to low level of empowerment and access to resources needed to sustain and improve their lives (Marilee, 1995). Consequently, cultural beliefs have a negative impact on women's access to benefits as they are required to stay at home or perform clerical work and not participating in actual mining activities believing that minerals will disappear if women participate in mining (Mukherjee, 2014). This creates assumptions that the extractive industry (EI) working environment has been perceived as dangerous, risky and hazardous, thereby creating a myth of masculinity around it (Lahiri-Dutt, 2007). In this way, women are considered to be caretakers of their homes (reproductive roles), which makes it difficult for them to engage in direct and indirect employments (Nayak and Mishra, 2005). As a result, women living close to the extraction activities have remained

poor, with limited access to basic resources and services (Mbota, 2007). Accordingly, Dadiowei (2003) insists that women are the last to benefit from any 'left-over' trickling down from oil exploration in the community. Therefore, focusing on the access to direct and indirect benefits to the community living close to the natural gas extraction site, it was important to understand whether Tanzania has learnt from global gender trend in access to resources and mainstream gender on ongoing natural gas extraction.

In Tanzania, natural gas extraction is in its infancy stage. Despite the existence of statutory regulations that give guidance on benefits flow from EC to the communities living close to natural gas extraction sites, the existing knowledge about multiplicity of ways in which women and men living close to extraction sites access different benefits from extractive company (EC) is still scanty and shaky. Review of different literature sources such as Lange (2011); Shangvi and Jingu (2013); Kibendela (2012); Boma (2013); Lauwo and Otusanya (2014) reveal one thing in common that natural gas benefits, analysed at the national level leave behind gender aspects mainly in sharing of benefits among communities residing close to extraction sites. Little is known whether natural gas benefits are equally shared between men and women in Tanzania. Thus, the findings of this study intended to bridge the information gap identified from literature and inform planners, policy and decision makers on how to improve gendered access to direct and indirect benefits in Tanzania, particularly in Kilwa District.

Therefore, this paper sought to answer the following questions: What were men's and women's expectations before natural gas extraction development? What are the direct and indirect benefits accrued from natural gas extraction and what were the levels of access to direct and indirect benefits.

4.3 Theoretical Framework

This study was guided by Ecofeminism theory which is also known as Women and Environment theory as developed by Françoise d'Eaubonne in 1974. Ecofeminism theorists hold that there is a special relationship between the oppression of women and environment in terms of social construction of knowledge (Manion, 2002; Lozeva and Marinova, 2010). Extraction development is associated with “resource” destructions and communities’ livings close to natural gas extraction sites have no exception. In this paper, the term “resources” refers to items which provide daily sustenance for humans including food, water, forests, animals, and agriculture (Laplonge, 2016). When natural resources become insufficient to support the livelihoods, women experience more adverse effects than men, due to domestic roles of accessing safe water, fuel, medicine and land for crop production (Lozeva and Marinova, 2010; Jean *et al.*, 2013).

Women are always the first ones to recognize livelihood threats because they can quickly respond to those roles (Oluwaniyi, 2011). In the context of patriarchy, men use values and norms to marginalise and foster subordination of women in access to different benefits which emanate from natural gas extraction as a way to dominate the environment and women. In this circumstance, distribution of benefits like employment, education and participation in decision making processes favour men (Oluwaniyi, 2011). Kronlid (2003) argues that ecofeminism is a complex theory, not sufficiently precise as it combines environmental issues and gender issues. However, the position of women affected by mining provides evidence to support this theory in this study. Currently, environmental challenges have been observed in the study area. The extraction activities are linked to soil erosion in the western side of Songosongo Island. Land taken for natural gas investments has caused hundreds of people to lose land for crop production, wood for fuel and fresh

water at Panga well due to construction of a TPDC plant. People also are exposed to air pollution caused by plant emissions through gas combustion (Songas, 2002). In view of those environmental challenges, women's living close to extraction sites have no right to access affected areas to support their livelihoods. The aim of this paper was to investigate direct and indirect benefits that extractive companies share with men and women living close to mining sites as an alternative livelihood support.

4.4 Research Methodology

4.4.1 Description of the study area

The study was conducted at Songosongo and Somanga Fungu wards in Kilwa District, Lindi Region. These wards were selected for the study because natural gas extractions was taking place there, and also they are known as host communities as explained by Petroleum Act of 2015 Section, 220(5). The Songosongo ward serves two on-shore and three off-shore natural gas wells and plants, while the mainland coast of Somanga Fungu ward is a landing area of natural gas from Songosongo Island and where there are power stations and a gas plant.

4.4.2 Research design, sampling procedure and sample size

A cross-sectional research design was employed which allows data to be collected at one point in time and is effective in terms of time and financial resources (Bailey, 1994). A total of 373 respondents were selected from six villages by simple random selection from the village registers. Purposive sampling was used to select two wards whereby natural gas activities were being done. Purposive sampling also was used to select 19 key informants as well as participants in Focus Group Discussions (FGD).

4.4.3 Data collection

Data were collected using a questionnaire, key informant interviews (KIIs) and Focus group discussions (FGD). The questionnaire was administered to assess respondents' expectations from natural gas development and examine benefit indicators that men and women had. Assessment of benefits indicators is a useful approach when an absolute measure of access is needed for a specific population group (Allin *et al.*, 2007). Further, the measurement of indicators allows easy monitoring of progress on access, and to ascertain what improvements can be made in policy recommendations. The indicators collected included gendered access to electricity, employment, payment benefits from EC, supply of goods and services to EC and educational benefits. The key informants were purposively selected from Tanzania Petroleum Development Cooperation (TPDC), Pan African Energy Tanzania (PAT), Songas, secondary schools, Kilwa District Authority, and Ward and Village Executive Officers. The study also involved Eight Focus group discussions (FGD) which were held for women and men separately in order to allow them to express their feelings about natural gas benefits. Secondary data including service levy payment, CRS donations, and scholarships beneficiaries; were collected from Kilwa District Council (KDC) and Pan African Energy Office.

4.4.4 Data analysis

Qualitative data from FGDs and KIs were reduced into themes and sub themes through coding and condensing the codes to reflect appropriate objectives. The Statistical Package for Social Sciences (SPSS) software was used for quantitative data analysis. Descriptive analysis was used because it summarizes information, organises and simplifies a set of scores (Gravette and Wallnau, 2007). Descriptive statistics were used to summarise gender

expectations, access electricity, employment opportunities, services levy, market of goods and services as well as indirect benefits.

Indexes were developed to analyse the status of access to direct and indirect benefits in the study area. Indicators such as access to electricity, employment, paying service levies, supply of goods and services to the EC and educational benefits were identified. Each indicator was given a value of “1” for the “Yes” response and a value of “0” for the No response for particular benefits. Access to benefit status was categorised into high, medium and low. In this way, the lowest score for direct benefit was from 0 to 1.44. The mean index was 1.44 which means that respondents above mean had high level of access while those below the mean had low level of access to direct benefits. The medium was 1.45 and higher level was from 1.46 to 4. Indirect benefits indicators included: access to employment and education. The lowest score was 0 to 2.71 while the medium was 2.72, and higher scores ranged from 2.73 to 4.00

4.5 Results and Discussions

4.5.1 Gendered expectations from natural gas extraction

The major category (29.7%) of the women had higher expectations in improvement of health services, compared to 27.6% of men (Table 4.1). This implies that women had more expectations from EC to improve their access to health services in their villages in reducing burden of taking care of sick people at long distances. In respect to accessing to maternal health observations indicated that Somanga Fungu had a dispensary with limited facilities including laboratory services, 1 labour bed and medicine. In the focus group discussion at Marendego village women shouted that:

“Our expectations of getting better health services at Somanga Fungu Ward faded away after introduction of natural gas extraction. The situation of health services in our ward is pathetic as the population has increased due to natural gas activities. We have one dispensary with one bed for labour ward, no electricity and there are not enough health workers as well as medicines. In most cases nurses are offered Tzs 2,000 for prescription of medicines”.

The observation shows that despite Songosongo Island having a Grade ‘A’ dispensary, still communities experienced challenges in accessing health services as the dispensary had one auxiliary nurse, 3 labour beds, a dysfunctional ambulance boat and inadequate drugs to reflect community needs. This finding is not in line with Mashindano *et al.* (2008) who reported that the dispensary had a senior clinical officer and two female medical attendants and good facilities meant to handle the outpatient clients. However, during field work, Songosongo dispensary had no service offered and was closed at 12.00 hour due to lack of health workers.

The findings presented in Table 4.1 further show that 24% of the men had higher aspirations on accessing electrical power for domestic use, compared to 22.4% of the women. This connotes that men had more expectations for electrical installation compared to women because availability of electricity would allow them to invest in printing, welding, and ice block making and using modern facilities in carpentry while previously they were required to walk 90 km to access similar services. Further, 19.4% of the men had more expectation in accessing job opportunities, compared to 16.3% of women. These results suggest that men and women had different aspirations of employment opportunities. Men expected to participate in rig processing to assist technicians while

women expected to get employment in sweeping, cooking and washing clothes as those roles resemble their traditional gender roles. The findings also show that 4.8% and 6.1% of women and men had lower expectations to supply goods and services to the ECs. Very few (0.6%) of men expected to have improvement in sea transport services, compared to 5.3% of the women. This implies that men were more used to local transport (boats) from Kilwa Kivinje or Somanga Fungu to Songosongo compared to women. These findings explain the remark provided by Burke (1999) that once extractive companies implement aspirations, concerns and expectations from communities residing close to extraction fairness in distribution of benefit sharing will be achieved. However, Arya and Zhang (2009) suggest that Corporate Social Responsibility policy should establish social expectations in effectively promoting the idea that addressing social problems helps host communities to realize the benefits. It was also observed that expectations from natural gas were not significantly associated with sex of respondents ($\chi^2 = 7.602$, $df = 7$, $p = 0.369$). This is probably because men and women interviewed came from one area that experienced similar kinds of challenges in accessing the social services.

Table 4.1: Gendered expectations from natural gas extraction (n = 373)

| Expectations | Women (%) | Men (%) | χ^2 | Df | P Value |
|---------------------------|-----------|---------|----------|----|---------|
| Sea transport | 0.6 | 5.3 | 7.602 | 7 | 0.369 |
| Market for local products | 6.1 | 4.8 | | | |
| Land Compensation | 6.1 | 5.8 | | | |
| Service Levy | 1.8 | 1.4 | | | |
| Education opportunities | 13.9 | 15.4 | | | |
| Work opportunities | 19.4 | 16.3 | | | |
| Electricity services | 22.4 | 24.0 | | | |
| Health services | 29.7 | 26.9 | | | |

4.5.2 Direct benefits from natural gas development

4.5.2.1 Energy for lighting

It was clearly observed that all the respondents residing within 1 km from extraction activities were using electricity for lighting, among them more than three fifths (61.6%) were male headed households and 38.4% were female headed households (Table 4.2). This suggests that all respondents from Songosongo Ward benefited from electrical power generated from natural gas and provided electricity free of charge at the plant boundary. Similar findings were reported by Chuhan-Pole *et al.* (2015) who contend that, in Ghana, the increase of gold mining influences households to have access to electricity, whereby households living close to extraction activities (less than 10 km) benefit more than those living 50 km from extraction activities.

It was observed that less than a half (47.5%) of the men benefited from electrical services than 40.8% of women living more than 10 km from extraction sites. This implies that more than a half of women and men residing more than 10 km from extraction sites did not benefit free electricity generated from natural gas compared to men and women living within 1 km from extraction activities. This was probably because communities were required to pay TZS 90 000 before being connected to electricity, which was a low charge compared to the normal charge of TZS 177 000 (Songas, 2002). Despite electricity being provided at a low price, some respondents were not able to afford to pay TZS 90 000. Further, during FGD in Somanga North, some women lamented that:

“The process to install electricity was cumbersome and associated with corruption”

Table 4.2 indicates that a good proportion (40.3%) of men depended on kerosene for lighting, followed by 39.4% of women respondents. About one tenth (10.2%) of men respondents were relying on torch as a source of lighting, compared to 19.8% of the women. This suggests that installation of electrical services was not affordable to all people at Somanga Fungu. As a result; they still used other sources of energy for lighting, including kerosene.

Table 4.2: Source of energy for lighting (n = 373)

| Location | | Source of energy for lighting (%) | | | | | |
|----------------------|-----|-----------------------------------|-------------|----------|-------|-----------|-------------|
| Km | N | Sex | Electricity | Kerosene | Torch | Generator | Solar power |
| 1 km (Songosongo) | 86 | Women | 38.4 | 0 | 0 | 0 | 0 |
| | | Men | 61.6 | 0 | 0 | 0 | 0 |
| 10 km (SomangaFungu) | 287 | Women | 40.8 | 39.4 | 19.8 | 0 | 0 |
| | | Men | 47.5 | 40.3 | 10.2 | 1 | 1 |

4.5.2.2 Employment opportunities in the extractive companies

The findings in Table 4.3 show that there were seven companies operating in the study area: four companies dealing with security and another was dealing with food services (cafeteria), namely Knight Support, Suma JKT and Small business Services (SBS), while three were extractive companies, namely PanAfrica Energy Tanzania Limited (PAT), TPDC and Songas. Table 4.3 indicates that a largest proportion (92%) of the women had no access to job opportunities from extractive companies, compared to 86% of men. This implies that the majority of the respondents from the adjacent communities did not benefit from job opportunities created by natural gas extraction. The findings are contrary to what Akakpo (2012) found that oil and gas companies brought a lot of direct employment opportunities to the host communities in Ghana where people living close to extraction sites were recruited in the fields of engineering, management, security and safety.

The findings also show that a small proportion (8%) of the women were employed by ECs, while 14% of men were employed. This result suggests that the majority of men and women were not employed by ECs. However, women were less employed compared to men and most of the women were employed in less paid work like housekeeping, contrary to men who were employed to perform roles which required some technical skills like boat driving, mechanics, machine operating and painting. During a focus group discussions, it was agreed that;

“Most of extraction companies prefer men despite the fact that there are some jobs which do not need special education or masculinity, like washing dishes, grass cutting and cleaning, but in most cases women are excluded ”.

This implies that failure to distribute natural gas job opportunities fairly within production areas may reduce high expectations from communities for sharing various benefits. These findings are in line with what were observed in Canada, South Korea and Ghana (Sherk, 2004; Ross, 2008; Darkwah, 2010) where women who had low level of access to employment in the oil and gas sector were not accessing different benefits. This connotes that the mining sector is a male dominated industry that employs few women and particularly expose women to masculine stereotyping environments.

Table 4.3: Gendered access to direct employment (%)

| Company | Women | Employed as | Men | Employed as |
|----------------|-------|-------------------------|-----|--|
| SBS | 1 | Dish washing | 1 | Chief Cook |
| Knight Support | 2 | Security guard | 2 | Security guard |
| PAT | 1 | House keeping | 7 | Mechanical, painter and machine operator |
| Songas | 1 | Security guard | 2 | Security guard |
| Suma JKT | 1 | Security guard | 1 | Security guard |
| TPDC | 2 | Construction activities | 1 | Boat driver |
| Total | 8 | | 14 | |

4.5.2.3 Service levy payment benefits from extractive companies

The findings in Table 4.4 show that, from September 2012 to 2015, PanAfrican Energy Tanzania Limited (PAT) paid Kilwa District Council (KDC) a total of TZS 1.6 billion and KDC were obliged to pay 20% of the service levy directly to Songosongo and Somanga Fungu Wards. The findings showed that KDC paid Songosongo ward a total of TZS 139.4 million as service levy out of 1.6 billion, which is only 8.2% of the money, while 11.8% of service levy fund which is equal to 199 million was not paid to the respective wards (Table 4.4). Unfortunately, Songosongo Ward had a debt of TZS 158 million for installation of electricity in the village. Thus, all service levy funds received from Local Government Authority were channeled to debt repayment. On the other hand, from February 2014 to December 2015, it was revealed that Somanga Fungu Ward received nothing from Kilwa District Council (Table 4.4). This implies that services levy was not used in a fair and equitable manner in accordance with men and women interests which effects development of the study area.

Discussants from Somanga North village produced a government document and read during FGD which said that:

"The Ministry for Energy and Minerals shows that Somanga Fungu Ward deserved to receive 20% as service levy, but since natural gas extraction started in 2014 Somanga Fungu has received nothing".

This implies that, despite the existence of formal legal provisions to support funds flow from ECs to the communities, experience shows lack of enforcement of the laws governing distribution of service levy being not properly enforced by both ECs as well as by Kilwa District Council. This is due to the fact that there was no mechanism for ensuring that funds are equally paid on time and to the respective wards (Table 4.4). A

similar concern was raised by Petkova *et al.* (2009) in Australia that the local governments receive smaller economic benefits than expected from extraction companies.

Table 4.4: Service levy paid to Songosongo and Somanga Fungu from 2012 -2015

| Year | Dates PAT Paid KDC | Amount (TZS) | Dates | KDC Paid Songosongo TZS | KDC Paid Somanga. F TZS |
|-------|--------------------|------------------|-------------------------|-------------------------|-------------------------|
| 2012 | 10/4/2012 | 87, 212 532 | 5/9/2012 | 17, 644, 300 | - |
| | 31/5/2012 | 42, 377,600 | 22/11/2012 | 21, 800, 000 | - |
| | 17/7/2012 | 88,832,164 | - | - | - |
| | 19/10/2012 | 109 552 692 | - | - | - |
| | 31/1/2012 | 200 000 000 | - | - | - |
| Total | | 527, 974, 988 | | 39,444,300 | - |
| 2013 | 20/1/2013 | 123,802,169 | 28/6/2013 | 24, 200, 000 | - |
| | | 121,389,513 | 28/6/2013 | 23,101468.40 | - |
| | 1/2/2013 | 114, 631, 341 | 13/11/2013 | 27,958,636.80 | - |
| | 03/5/2013 | 114,631,241 | - | - | - |
| | 17/6/2013 | 164, 284, 208.21 | - | - | - |
| | 31/7/2013 | 117,076,055 | - | - | - |
| | 28/10/2013 | 139,793,184.07 | - | - | - |
| Total | | 895, 607, 811.1 | Total | 114,704,405 | - |
| 2014 | 31/7/2014 | 110, 378, 957 | 30/1/2014 | 24,760,433.80 | - |
| | 31/7/2014 | 48,001,809 | - | - | - |
| | 22/4/2014 | 112,769,069 | - | - | - |
| | | 271, 149, 835 | Jan, 2014- Dec, 2015 | - | - |
| Total | | 1, 694, 732, 634 | | 139,464,839.8 | - |

Source: Songosongo Ward Executive Office

This finding is in line with what Wynberg and Hauk (2014) who reported that power imbalance among actors (Local authorities versus communities) hinders fair distribution of benefits arising from natural resources. One of the key informants from Kilwa District Council (KDC) explained that:

“When the District Council receives service levy fund from PAT, and the respective wards fail to demand for their payments, we normally reallocate the funds to other development activities within the district”.

This implies that it is the discretion of District Council to utilise service levy funds. This creates chances of misappropriation of funds and attracts corruption. This further implies that there is no transparency in paying services levy as amount of money that Songosongo and Somanga Fungu Wards were entitled to get from each allocation.

This finding is in line with what Wynberg and Hauk, (2014) found that lack of downward accountability and transparency, elites capture of benefits, and misuse of power remain highly significant factors impeding close communities from accessing benefits from resources. In this manner, beneficiaries were not sure whether District Council would pay service levy or the amount of funds allocated for their ward was what they deserved to get from Kilwa District Council.

One District Officer explained that service levy funds were primarily targeted at all community members residing close to extraction sites. District authority used service levy fund to support District budget and some of the funds were directed to address social challenges, for example some of service levy was directed to the construction of Nangurukuru Hospital and staff houses at Kilwa Masoko. However, some of service levy money accrued from ECs was not invested in development expenditure to benefit all members' communities; rather it was allocated to recurrent expenditure (Ngowi, 2015). The findings are contrary to what Wall and Pelon (2011) found that in Namibia, Papua New Guinea and South Africa presence of a foundation a trust fund facilitates the use of service levy and royalties for sharing benefits from mining operations with close communities where locals' capacity is limited or the public sector is absent or weak.

4.5.2.4 Market of goods and services from local communities

Figure 4.1 indicates that majority (83%) and (75.5%) of women and men respectively agreed that they were not able to utilise to the Extractive companies market. This indicates that the majority of community members were not able to sell food stuffs including fish, meat or any other products found in their area to the extractive companies. This also means that men and women living close to extraction sites were not well prepared to meet needs and standards required by ECs. This means that men were more unable to penetrate and use this market relative to women. This further implies that women and men were not getting direct benefits from ECs. This result is not in agreement with what Ovadia (2016) found that close communities sold goods and services to the ECs and this enabled them to receive direct benefits. This study findings are also contrary to those of a study by Lange (2011) who studied mineral extraction in Tanzania and found that the government in collaboration with companies, formed a co-operative society for agricultural products, including vegetables, eggs, chickens and *Moringa oliefera* tree seed and communities close to extraction sites were expected to gain direct benefits through selling different products.



Figure 4.1: Market for goods and services from local communities

In respect to underutilisation of EC market by host communities, one key informant from PAT said that:

“The legal requirement under Petroleum Act Section 21 directs contractors and sub-contractors to use goods and services produced locally before importing similar goods and services from abroad. However, Songas and PAT fail to consume local products produced by communities living close to extraction sites due to failure to meet required quality, quantity and timely supply”

Another key informant added that:

“Our company has workers from more than twenty nations. Thus, caterers must possess some international hotel standards due to the presence of international workers. However, most of the local food suppliers do not meet such standards to win such tender”

This implies that communities close to ECs received less benefits as they were not able to meet international standards in terms of quality, quantity and timely supply of goods due to lack of capital and skills on how to supply goods and services. The findings show that TPDC sub-contracted a local company from Dar es Salaam to run their cafeteria at Songosongo. However, the cafeteria was used by Tanzanian workers while experts from China used to cook their own food. These findings are not similar with what Akakpo (2012) found that in Ghana oil and gas companies used goods and services found around close communities like catering, banks, restaurants and insurance companies to support their own work. This further suggests that little effort has been made by Government and other development stakeholders to empower men and women local suppliers to produce adequate and quality goods and services that satisfy the available market.

Fig. 4.1 shows that only 9% of women from Songosongo were given a tender to supply building stones for the construction of TPDC plant, compared to 10.5% of men who were given a tender to supply fresh water for construction at Songosongo. This indicates that there were exchanges of gender roles whereby men supplied a large quantity of fresh water taken from Kilwa Kivinje which required capital and physical strength.

4.5.2.5 Level of access to direct benefits

The overall results of access to direct benefits from extractive industry showed that the majority (62.2%) of the respondents were in the low level of access to direct benefits (Table 4.5). This could be due to inadequate access to direct employment, failure to supply goods and services to the EC and inadequate payment of service levy. This finding is similar to arguments by Hilson and Haselip (2004); Denault and Sacher (2012) that extraction projects do not have positive benefits for local communities. On the other hand, 37.8% of the respondents experienced high access to direct benefits.

Table 4.5: Direct access to benefit Index (n = 373)

| Scores | n | Percent |
|--|-------------|----------------|
| 1 | 199 | 53.3 |
| 2 | 131 | 35.1 |
| 3 | 38 | 10.2 |
| 4 | 5 | 1.3 |
| Mean index | 1.44 | |
| Std D. | .913 | |
| Level of access to direct benefit | | |
| Low access | 232 | 62.2 |
| High access | 141 | 37.8 |

4.6 Indirect Benefits from Extractive Companies

4.6.1 Indirect employment opportunities

The results in Table 4.6 show the highest categories (34%) of the women were self-employed in ice processing activities while men who were doing those activities were only 28%. On the other hand, a large proportion (29%) of women, compared to 26% of men was engaged in storage and transport of fish to other towns and shops. This is due to the ecological zones of Kilwa coast that is a home to various fisheries (Nakamura, 2011). This connotes that women were more active in post-harvest fishing activities due to the presence of electricity that attracted various people to be self-employed. A good proportion of women were engaged in ice processing activities to preserve fish and fish business. This finding reflects well the findings in the first paper of this thesis whereby women were predominantly in fish post harvest activities. Table 4.6 also indicates that the few (9%) women were self-employed in restaurant business compared to 14% of the men. This implies that presence of workers from TANESCO and TPDC plants influenced communities to open restaurants. In the due process, other businesses like transport services, particularly motorcycle taxi (commonly known as *bodaboda*), car/motorcycle tires repair and guest house businesses were growing very fast to support the available activities as influenced by the presence of electrical power in the study area.

Table 4.6: Indirect employment opportunities (n = 373)

| Opportunities emerged | Women (%) | Men (%) |
|--|------------------|----------------|
| Ice business | 34 | 26 |
| Fish business (Storage of fish and transporting them to other towns) | 29 | 28 |
| Restaurants (Food vending) | 9.0 | 14 |
| Car/Motorcycle tire repair | - | 10.0 |
| Motorcycle taxi (bodaboda) | 4.0 | 7.7 |
| Guest house | 3.0 | 8.0 |
| Shops/Kiosk | - | 12 |
| Food store | 6.0 | 3.8 |
| Saloon | 1.8 | - |
| Stationery | 1.2 | - |
| Music library and phones changing | - | 0.6 |

4.6.2 Educational benefits

The findings in Table 4.7 indicate that Songas offered scholarships annually to three (3) best students, one boy and two girls per school, who were selected to join secondary schools. Kilwa, Rufiji and Mkuranga were the beneficiaries of this project. This was also supported by a key Informant from Songas who argued that:

“Once standard seven examination results are out, Corporate Social Responsibility Officers in collaboration with Head teachers, select 3 best students for the programme, and those names must be approved by appropriate village meetings, in order for the students to qualify for the scholarship”.

The programme offered scholarships from different villages to join Kinjumbi secondary schools. Up to 2015, approximately 255 students from 32 primary schools. The majority (64%) being girls, compared to 36% of the boys had benefited from the scholarships. On the other hand, from 2011, PAT granted scholarships to 10 students from Songosongo to study at Makongo secondary school in Dar es Salaam. In 2015, a total of 39 students benefited from this programme whereby the majority (67%) of the boys and almost one third (33%) of the girls benefited. However, in 2015, this project stopped after construction of Songosongo secondary school. This signifies that the programmes were

intended to support female students from marginalized communities near extraction areas in having equal access to education and skills. The joint venture of the companies which aimed at developing a Liquidated Natural Gas (LNG) Plant in Tanzania; including British Gas (BG) group Pavilion Energy, Exxon Mobil and Statoil that; in response to the demand for skilled labour in natural gas and related services, the companies sponsored a large proportion (67%) of the boys followed by 33% of the girls to study at Lindi Vocational Education Training Authority (VETA). The students got trained in the fields of food preparation, plumbing and pipe fitting, welding and fabrication, carpentry and joinery, motor vehicle mechanics as well as electrical installation and maintenance, Laboratory Assistant and English language. This could also mean that youth living close to extraction activities were equipped with necessary skills needed by the oil and gas and related services. This further suggests that youth had access to direct benefits in terms of employment opportunities in the sector and increased household income.

Table 4.7: Gender distribution of scholarships beneficiaries

| Company | Categories | Location | Fund allocated | Girls% | Boys % |
|--|---|---|-------------------------|---------------|---------------|
| Songas | Secondary school scholarships of 3 best students @ primary school | Kilwa district Songosongo Somanga Fungu | Tzs 240,000 per student | 162(64) | 93(36) |
| PAT | 10 students. Secondary | Songosongo | | 13 (33) | 26(67) |
| | 3 Teachers | Songosongo | Tzs 12 226 368 | 3(100) | - |
| BG group Pavilion Energy, Exxon Mobil and Statoil | Vocational training | Kilwa- VETA Lindi | | 73(33) | 150(67) |

The findings in Table 4.8 indicate that Songas supported education through construction of Kijumbi secondary school and its laboratory whereby 42.5% of the girls and 57.5% of the boys benefited. Songas also renovated Songosongo primary school and provided books

to eight secondary schools, whereas PAT supported education through construction of Songosongo Secondary school whereby, in 2015, 60% of the girls and 40% of the boys benefited. Construction of Songosongo kindergarten benefited 134 children. This implies that enrolment rate of communities for kindergarten, primary and secondary schools and vocational training increased through scholarships and construction of new schools. However, evidence on record shows that in 2014, a total of 255 benefited from the scholarship but a total of 81(32%) students were disqualified from future support due to poor performance in their annual examinations (Songas, 2014). This implies that it will take time to reduce the current Kilwa District Council illiterate level of 46% due to the school drop up (UTR, 2013).

Table 4.8: Constructed and renovation schools in study area

| Company | Type of benefit | Area | Amount | Girls% | Boys% |
|---------|---|--|-----------|---------------------|-----------|
| | | | TZS | | |
| PAT | Kindergarten | Songosongo | 109 Mil. | 134 | |
| | Secondary school | Songosongo | | 72(60) | 48(40) |
| | Hostel (bed and mattress) | Songosongo | 157 Mil. | 55(100) students | - |
| | Secondary schools- Laboratories construction | Kilwa district (Songosongo and Kinjumbi) | 70 Mil. | | |
| TPDC | Primary school renovation | Songosongo | 500,000/= | | |
| | Contribution of laboratory | Songosongo | 15 Mil. | | |
| Songas | Construction of primary and Secondary school | Kinjumbi Secondary (Somanga Fungu) | | 94(42.5) | 127(57.5) |

The results in Table 4.9 show that SONGAS and PAT supplied textbooks, desks, computers and installed electricity in 26 secondary schools in Kilwa District. During in-depth discussions, one of the key informants from Marendego commented that:

"The received support solved the problem of books, desks, power, laboratories and shortage of library in our schools. Currently, the learning environment has improved, and students are provided with quality education; we thank ECs for their support".

This finding suggests that investment in education by extractive companies has improved students' learning environment and probably will increase performance of secondary schools in Kilwa District. These findings are similar to findings by Chidiel *et al.* (2003) who found that students' performance in secondary education examination are directly linked to material inputs such as textbooks, teachers quality, availability of libraries and laboratories with equipment and basic facilities.

Table 4.9: Other educational benefits

| Company | Type of benefit | Area | TZS |
|---------|--|--|--|
| Songas | 2100 text Books | 8 Secondary schools in way leave Kijumbi inclusive | 20 Mil. |
| | 450 desks | Primary schools Somanga Simu inclusive | 66 Mil. 1500 students benefited |
| PAT | Installation of solar panel | 26 Kilwa secondary schools | |
| | Text Books | Songosongo for kindergarten, primary & secondary | Tzs 23,188,915 More than 200 students benefited |
| | Computer and projector in 26 secondary schools | Kilwa district | |

4.8.3 Level of access to indirect benefits

The results in Table 4.10 indicate that 53.9% of the respondents were in high level of access to indirect benefits from natural gas. This could have been contributed by different education opportunities offered by the extractive companies and availability of electricity which attracted different income generating activities. This finding is contrary to what Emel *et al.* (2012), who conducted a study in gold mines in Tanzania, found that the status

of education to the communities close mining sites has not improved due to lack of enough books, lack of enough teachers, lack of electricity and no scholarship from the extraction companies for students. This further implies that Songas, TPDC and PAT have done a lot to improve access to education for girls and boys from marginalised communities living close to extraction sites, while about 46.1% of the respondents experienced low level of indirect benefits. The mean average index was 2.71 which is categorised as high level of access to indirect benefit sharing from extractive companies.

Table 4.10: Indirect access to benefit index (n = 373)

| Scores | n | % |
|--|--------------|------------|
| 1 | 181 | 48.5 |
| 2 | 118 | 31.6 |
| 3 | 74 | 19.9 |
| Total | 373 | 100 |
| Mean Index | 2.71 | |
| Std D | 0.777 | |
| Level of access to indirect benefit | | |
| Low access | 172 | 46.1 |
| High access | 201 | 53.9 |

4.9 Conclusions and Recommendations

From the findings, it is concluded that men and women had high expectations of improvement in health services, access to electricity services and employment opportunities. It is also concluded that host communities experience low level of access to direct benefits; hence the findings did not comply with the ecofeminism theory. This is due to inadequate access to direct employment opportunities as the majority of local community members were not employed. However, few women were employed compared to men. In the same way, Kilwa District Authority did not pay service levy received from the extractive companies to the Songosongo and Somanga Fungu Wards as required by the law. Thus, service levy fund had limited impact for men and women to realise benefits from ECs.

It is also concluded that women and men had limited chances to selling goods and services to the extraction companies. It is recommended that the Kilwa District Authority and ECs should manage host communities expectations through communication strategy that provides correct and timely information to the close communities on activities implemented by ECs. It is further recommended that Government, extractive industry and district authorities should consider establishing trust funds that will facilitate the use of service levy fund, ensure sustainable availability of service levy fund and improving transparency on the use and flow of service levy flow from EC to the host communities.

It is further recommended that some of service levy expenditure should be directed to skills development which will improve host communities self-employability. It is again recommended that the Government and the private sector should empower men and women to establish co-operatives in fishing, catering, and agricultural products with an objective of Local Content Unit to provide guidance in empowering host communities to meet extractive companies' demand of quality and quantity of goods and services.

It is further concluded that respondents living nearby the extraction sites experienced high level of indirect benefits as ECs offered different education benefits such as scholarships, construction and renovation of schools and provided learning materials. Further that Extractive Company provided electrical power which attracted business including ice processing and fish storage as alternative livelihood strategies which were in line with ecofeminism theory. It is further recommended that more efforts is needed for Kilwa District Council and non-governmental organizations (NGOs). to prepare capacity building projects in small industry for processing, storage and transport fish to meet wide range of fish market that foster host communities' access to benefits.

It is concluded that there was a high rate of drop out for students benefited from scholarship programme to join secondary education. It is suggested that District Council, should formulate awareness strategies over importance of education to parents and students that aim to stop students from dropping out from schools.

REFERENCES

- Ajadi, A. A., Oladele, O.I., Ikegami, K and Tsuruta, T. (2015). Rural women's farmers' access to productive resources: The moderating effect of culture among Nupe and Yoruba in Nigeria. *Agriculture and Food Security Journal* 4(26): 1-9.
- Akabzaa, T. (2013). Gender Dimensions of Ghana's Oil and Gas Policy, Draft, Department of Geology, and the University of Ghana for NETRIGHT. [http://www.g-rap.org/docs/oil_and_gas/netright-thomas_akabzaa-2010.pdf] site visited on 13/9/2016.
- Akakpo, G. S. (2012). Social impact assessment of oil and gas exploration in the Western, Region of Ghana: A case study of Sekondi/Takoradi Metropolis. *Regional Maritime University* 2: 44 - 62.
- Allin, S., Masseria, C., Sorenson, C., Papanicola, I., and Mossialos, E. (2007). *Measuring Inequalities in Access to Health Care: a Review of the Indices?* Brussels, Belgium: European Commission. 20pp.
- Arya, B., and Zhang, G. (2009). Institutional reforms and investor reactions to CSR announcements: Evidence from an emerging economy. *Journal of Management Studies*, 46(7): 1089 - 1112.

- Bailey, D. (1994). *Methods of Social Science Research*. The Press Collier Macmillan Publisher, London. 475pp.
- Boma, K. J. (2013). The Natural gas sector in Tanzania. Suggestions for a better framework to benefit the Country. Dissertation for Award of MA Degree at University of Lapland, Rovaniemi, Finland. 70pp.
- Burke, E. M. (1999). *Corporative Community Relations: The Principle of the Neighbour of Choice*. Westport: Quorum Books. 68pp.
- Chediak, R. W., Sekwao, N. and Kirumba, P. L. (2000). *Private and Community Schools in Tanzania (Mainland)*. International Institute of Education Planning. UNESCO. 99pp.
- Chuhan-Pole, P., Dabalén, A., Kotsadam, A., Sanoh, A., and Tolonen, A. (2015). *The Local Socio-economic Effects of Gold Mining: Evidence from Ghana*. Policy research working paper. World Bank. 26pp.
- Dadiowei, TariEbimo. (2003). *Niger Delta Fund Initiative - Women, Environmental Impact Assessment (EIA) and Conflict Issues in the Niger Delta: A Case Study of Gbaran Oil Filed Communities in Bayelsa State* A Paper Presented at the National Workshop On Gender, Politics and Power: Overcoming the Barriers to the Emergence of Women Political Leaders in Nigeria, Organised by the Centre for Social Science Research and Development (CSSR&D), at the Lagos Airport Hotel, Ikeja, Lagos, Nigeria (July 28th – 30th, 2003).

- Darkwah, A. K. (2010). *The impact of oil and gas discovery and exploration on communities with emphasis on women*. Department of Sociology. University of Ghana [http://www.g-rap.org/docs/oil_and_gas/netright-akosua_darkwah-2010.pdf] site visited on 5/8/2016
- Deneault, A., and Sacher, W. (2012). *Imperial Canada Inc.: Legal Haven of Choice for the World's Mining Industries*. F.A. Reed & R. Philpot (Trans.). Vancouver: Talon books. 35pp.
- Emel, J., Makene, H. M., and Wangari, E. (2012). Problems with reporting and evaluating mining industry. Community development projects: A case study from Tanzania. *Sustainability Journal* 14: 257 – 277.
- FAO (2003). Women's access to land and property in selected countries; Analysis based on initial and periodic report to the Committee on the Elimination of Discrimination against Women (1997-2003), Volume 1: Main Report. FAO, Italy. 1pp.
- Gina, C. (2013). The role of women in the oil industry. *Journal of Social Sciences* 9(3): 94 - 100.
- Gravette, F.J., and Wallnau, L.B. (2007). *Statistics for the Behavioral Sciences*. (7th Ed). Thomson Learning Academic Resource Centre. 760pp.

Gulf Intelligence Research. (2015). Special report; How to advance women in the Global oil and gas industry. [<http://www.thegulfintelligence.com/uploads/Publications/women%20In%20Energy%20Summit%20Special%20Report.pdf>] site visited on 16/11/2016.

Hilson, G., and Haslip, J. (2004). The environmental and socio-economic performance of multinational mining companies in the developing world economy. *Minerals and Energy* 9(3): 25 - 47.

ILO (1996). *More and Better Jobs for Women an Action Guide*. Geneva. [<http://collections.infocollections.org/ukedu/en/d/Jh2366e/>] Site visited on 12/10/2017.

Jean, S., Dakin, R., Heller and K., Eftimie, A. (2013). Extracting Lessons on Gender in the Oil and Gas Sector: A Survey and Analysis of the Gendered Impacts of Onshore Oil and Gas Production in Three Developing Countries. World Bank, Washington, DC. © World Bank. [<https://openknowledge.worldbank.org/handle/10986/16299>] License: CC BY 3.0 Unreported." site visited on 23/10/2016.

Kibendela, E. (2012). *Making Natural Gas guarantee sustainable development: plans and progress by VETA to prepare Tanzanians to engage in the Natural gas Value chain Process*. ERSF Discussion paper No.50. 4pp.

- Kronlid, D. (2003). *Ecofeminism and environmental ethics. An analysis of Ecofeminism ethical theory*. Dissertation for the Degree of Doctor of Theology in Ethics Presented at Uppsala University.
[www.academia.edu/29710573/Ecofeminism_and_Environmental_Ethics]site visited on 23/6/2017
- Lahiri-Dutt, K. (2007). Status of women in extractive industrial in India; Making a place for a gender sensitive mining development. *Social Change Journal* 37(4): 37 - 64.
- Lange, S. (2011). Gold and governance: Legal injustices and lost opportunities in Tanzania. *African Affairs* 110(439): 233 – 252.
- Laplonge, D. (2016). Exploring the distance between ecofeminism and women in mining. *Extractive Industry Society Journal* 3(3): 843 – 849.
- Lauwo, S., and Otusanya, O. J. (2014). Corporate accountability and human rights disclosures: A case study of Barrick gold mine in Tanzania. *In Accounting Forum* 38(2): 91 - 108.
- Lozeva, S. and Marinova, D. (2010). Negotiating gender: Experience from Western Australian mining industry. *Journal of Economic and Social Policy* 13 (2): 1 – 23.

- Manion, H. K. (2002). Ecofeminism within gender and development. *Ecofem.org—The eJournal*. [<http://www.ecofem.org/journal/>] site visited on 22/4/2017.
- Marilee, K. (1995). *Women and Empowerment: Participation and Decision Making*. Vol. 10. London: Zed Books. 173pp.
- Mashindano, O., Kibamba, D., Charles, P., and Maro, F. (2008). *Songosongo Social Services and Economic Survey*. Economic and Social Research Foundation, Dar es Salaam, Tanzania. 12pp.
- Mbota, M. M. (2007). *Reflection on Gender in Households use and Management of Resource: A case of Somanga Fungu and Songosongo Island. Kilwa*. Dissertation for Award of M.A at University of Dar es Salaam. Tanzania. 76pp.
- Momsen, J. (2002). *Women and Development in the Third World*. Routledge, London. 25pp.
- Mukherjee, S. (2014). Mining and women: The Case of the Maria of Chhattisgarh. *Social Change Journal* 44(20): 229 – 247.
- Nakamura, R. (2011). Multi-Ethnic Coexistence in Kilwa Island, Tanzania; The basic ecology and fishing cultures of a swahili maritime society. *The International Journal of Research into Island Cultures* 5(1): 44 – 68.

- Nayak, P., and Mishra, S. K. (2005). *Gender and Sustainable Development in Mining Sector in India*. Necas and Women's Collage, Silchar Workshop, Meghalaya, India, 18 - 19pp.
- Ngowi, H. P. (2015). Contribution of service levy from Gas companies in Mtwara and Kilwa Districts Councils revenues: what is missing? Policy Forum Tanzania. [www.policyforum.or.tz] site visited on 4/5/20/16.
- Nichols, S., Crowley, E., and Komjathy, K. (1999). Women access to land: survey can make difference. *Survey Quarterly* 20: 16 - 19.
- Okereke, K. C. (2011). Women in the environment: The impact of oil and gas exploration on the women in the Niger-Delta States Of Nigeria since 1960: A historical perspective. *Journal of Environmental Management and Safety* 2(3): 137 – 155.
- Oluwaniyi, O. (2011). Women's protests in the Niger Delta Region (Ed.). In: *Oil and Insurgency in the Niger Delta; Managing the complex politics of petro-violence*. Zed Books, London. 163pp.
- Ovadia, (2016). Local content policies and petro-development in Sub-Saharan Africa: A comparative analysis. *Resources Policy* 49: 20 – 30.
- Petkova, V., Lockie, S., Rolfe, J. and Ivanova, G. (2009). Mining developments and social impacts on communities: Bowen Basin Case Studies, *Rural Society*, 19(3): 211 - 228.

Petty, R. E. and Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion: advances in experimental social psychology. *Academic press, Inc* 19: 123 – 192.

REPOA (2010). *Tanzania Gender Indicators*. Ministry of Finance and Economic. Dar es Salaam, Tanzania. 50pp.

Ribot, J. C., and Peluso N. L. (2003). A theory of access. *Rural Sociology* 68(2): 153 – 181.

Ross, M. L. (2008). Oil, Islam and women. *American Political Science Review* 102(1): 107 - 123.

Shanghvi, I. and Jingu J.A.K. (2013). *Tanzania and the quest for sustainable utilization of oil and natural gas*. ERSF Discussion paper No.49. 2pp.

Sherk, S. (2004). *A Report on Women in Canada's Oil and Gas Sector*. AGRA Earth and Environmental Limited. 23pp

Songas (2002). *Environmental and Social Management Programme for the Songosongo Gas to Power Project*. Dar es Salaam. World Bank/TPDC. 40pp.

Songas (2014). Annual Report to the International Development Association: *Community Development Programmes Actions to Protect Bio-Diversity*. Songas Limited. Massena Bay Peninsula. 5pp.

United Nations (1979). *The Convention on the Elimination of All forms of Discrimination against Women*. UN Commission on the Status of Women. United Nation. [<http://www.un.org/womenwatch/daw/cedaw/>] site visited on 11/7/2017.

URT (2002). *Constitution of United Republic of Tanzania, 1977*. Government printer. Dar es Salaam. Tanzania. 9pp

URT (2013). Tanzania national population and household census. [<http://www.scribd.com/doc/134906223/Tanzania>] site visited on 15/8/2016.

URT (2013). *The National Natural Gas Policy of Tanzania*. Minister for Energy and Minerals (MEM). Government Printer. 20pp.

URT (2015). *The Petroleum Act No 21*. Government Printer. Dar es Salaam. Tanzania. 141pp.

URT (2016). *Tanzania Review*, (7th Ed), Ministry of Industry and Trade, Dar es Salaam. 39 - 56pp.

Wall, E. and Pelon, R. (2011). *Sharing Benefits in Developing Countries: The Experience with Foundation, Trust, and Fund*. Extractive Industry Development Series No 21. World Bank, Washington DC. 8pp.

Ward, B. and Strongman, J. (2011). *Gender Sensitive Approaches for Extractive industry in Peru: improving the impact on women in poverty and their families*. World Bank. 3pp.

Wynberg, R. and M. Hauck. (2014). People, power, and the coast: a conceptual framework for understanding and implementing benefit sharing. *Ecology and Society* 19(1): 27 - 43

CHAPTER FIVE

5.0 Host Communities' Attitude towards Benefit Sharing from Natural Gas

Extraction: Insights from Kilwa District, Tanzania

Sarah E. Mwakymbiki¹, Anna, N. Sikira² and Fatihiya A. Massawe³

¹Corresponding Author, Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania. Email: tulibonywas@gmail.com

²Department of Development Studies, Sokoine University of Agriculture, P. O. Box 3024, Morogoro, Tanzania. Email: annasikira@yahoo.com

³Department of Policy Planning and Management, Sokoine University of Agriculture, P. O. Box 3035, Morogoro, Tanzania. Email: mnkya74@gmail.com

5.1 Abstract

Evaluation of host community's attitude is important in the improvement and implementation of benefits sharing strategies, but there has been little similar research regarding natural gas extraction. Specifically, the paper assesses: (i) host communities' attitude towards benefits sharing, and (ii) factors that influence host communities' attitude towards benefit sharing. A structured questionnaire was administered to 373 respondents. A Likert scale was used to measure attitude of host community members towards benefit sharing. Ordinal Logistic Regression (OLR) was used to examine factors influencing attitudes of communities towards benefits sharing. The results revealed that overall the respondents had negative attitude (60%) towards benefits sharing from the extractive industry. The proportions of the respondents with neutral and positive attitudes were 2.7%, and 37%, respectively. Distance from extraction activities, access to electricity, relationship between community and extractive companies and sex were important determinants to influence attitude ($p < 0.05$). It is recommended that Government and

extractive companies should conduct awareness campaigns on the progresses that have been achieved by the extractive sector to support host communities' livelihoods that would change community attitude from negative to positive. It is further suggested that extractive companies, policy makers and planners should prepare strategies for intervention in the areas where host communities had negative attitudes towards sharing of benefits including health services, employment opportunities and adherence to the principles of equality between men and men.

Key Words: host community's attitude, natural gas, benefit sharing, Tanzania

5.2 Introduction

Minerals and natural gas are a blessing. They are a gift of nature available to be developed and sold to benefit all citizens in a given nation (Amponsah-Tawiah and Dartey-Baah, 2011). This is a reason for any discovery of minerals in the country as it raises high hopes for economic gains among host communities (Ross, 2014). Almost half of the populations in the world where mining activities are taking place are still poor, and women are in the most disadvantaged position compared to men (World Bank, 2016). This is because benefits accrued from extractive companies (EC) have not benefited women and men living close to the extraction areas, hence locals had negative perception towards benefit sharing from mining activities (Moffart and Zhang, 2014; Shanghvi and Jingu, 2013). Unfortunately, the nature and magnitude of the host communities' attitude vary from one extraction site to another, depending on distance, trust of extraction companies, fulfillment of community expectations, availability of legal framework and relationships between close communities and companies (Plank *et al.*, 2016). This study was carried out to assess the attitude and factors that shape individuals' perception towards benefits sharing in communities living close to natural gas extraction sites.

Tanzania is among the blessed countries in Africa in terms of mineral endowment. Regardless of economic contribution of extraction and significant impacts on human activities and wellbeing which create a positive image in the host communities through benefit sharing to gain social licence, natural gas extraction in Tanzania is in its infancy stage (URT, 2016). Evaluations of community attitude highlight specific areas for vulnerabilities of women and men in access to benefits, with an objective to prepare strategies for intervention on areas which communities had negative perception towards benefit sharing. In this way, assessment of community attitude towards benefits sharing was an important aspect to generate empirical information which could be used to minimize risks of conflict in the country.

Since 2004 Songosongo and Somanga Fungu communities accessed different benefits from companies including employment, water, health, education services, electricity and payment of service levy that could improve their livelihoods and influence their attitude towards benefits sharing. Ignoring host communities' attitude towards benefits sharing may create disruptive social tensions, thereby increasing business risks and jeopardizing social license to operate for companies (Humphreys, 2002). Negative attitude is generally maladaptive and can cause harmful behavioural, affective and cognitive consequences (Petty and Cacioppo, 1986). Moshi (2013) observed unequal distribution of mineral mining benefits in Mtwara, Mara, Mwanza, Shinyanga and Arusha leading to negative perception, confusion and ending up in conflict. Once civil conflict develops through negative attitude, communities engagement in achieving a social license will negatively be influenced (Dare *et al.*, 2014).

Different literature sources have evaluated attitude towards economic, social and environmental impacts of mining in Tanzania. These studies include: impacts of gold extraction on local livelihoods (Kitula, 2006), Natural Gas Conflict in Tanzania and the Impacts to the Population in Mtwara Municipality (Ndimbwa, 2013), corporate communities involvement and local institutions (Lange and Kolstad, 2012), challenges ahead for Tanzania in the gas industry (Simbakalia, 2011), opportunities of natural gas in Tanzania (Moshi, 2013), as well as utilization of oil and natural gas (Shanghvi and Jingu, 2013). However, little is known on the assessment of host communities' attitude towards benefit sharing from natural gas at this time of infancy stage of natural gas extraction in Tanzania, hence the rationale for the research on which this thesis is based.

5.3 Theoretical Framework

The theory of attitude has been widely used in measuring individuals' attitude towards something. Fishbein and Ajzen (1975) hypothesized that studies on attitude are based on explaining what govern an individuals' beliefs, perceptions or feelings. Attitude is defined as a predisposition to behaviour of a person or an individuals' tendency to evaluate objects, but it varies in degree, implying that individual's reaction towards an object can be positive, neutral or negative (Nathan and Eleanor, 2011). According to Fishbein and Ajzen (1975), attitude refers to behaviour that is consistently favourable or unfavourable towards something. Attitude is evaluated in three-correlated components of object but distinctly including cognitive, knowledge and affective components.

This theory plays a basic role in the evaluations of individual attitude towards benefits sharing from extractive companies. This theory help to examine factors that shape individuals' attitudes towards benefits sharing and providing the way forward to improve

host communities' access to benefits from ECs. Since attitude is learned, therefore, it is likely to change (Fishbein and Ajzen, 1975). It is assumed that host communities' attitude towards benefit sharing can be improved from negative to positive, if ECs equitably distribute benefits emanating from natural gas extraction.

This paper attempts to provide empirical evidence over communities' attitude towards benefit sharing in Tanzania, where there has been deficient information. The findings of this paper are valuable to ECs and policy makers to understand factors that shape host communities' attitudes that might lead to civil conflicts and remove social license to operate in the host communities. This paper essentially sought to examine host communities' attitude towards benefits sharing and examine factors that influence attitude of local communities towards benefit sharing from natural gas extraction.

5.4 Conceptual Framework

The conceptual framework model of the paper is indicated in fig 1. and is in line with Theory of attitude (Fishbein and Ajzen, 1975) which contends that an attitude is a relatively continuing organization of beliefs, feelings, and behavioural tendencies towards socially significant objects (Hogg and Vaughan, 2005). The theory of attitude is one of the multifunctional models of compensatory type because is linear model which evaluate the individuals' attitudes toward something (Alsamydai *et al.*, 2015). According to Azjen, (2005) evolution of attitude should consist of cognitive, affective, and cognitive components. The iterative relationships between attitude attributes and shared benefits are important in building relations and bringing about change in community perception towards benefit sharing.

With respect to individuals living close to extraction sites, it is expected that access to different benefits from extractive companies will develop behaviours and beliefs of community and finally they will develop attitude towards benefit sharing. However, individuals' attitudes towards benefit sharing are influenced by a complex interaction of positive and negative factors (Plank *et al.*, 2016). These include factors such as sex, education, and distance from extraction sites and access to information which has the potential to affect attitude (Fishbein and Ajzen, 1975; Devine-Wright, 2007; Ndibwa, 2014). Consequently, Plank *et al.* (2016) noted that once community members receive enough information from reliable sources they are likely to develop positive attitude. On the other hand, host communities participation in decision-making is an important aspect in development of community attitude (Wüstenhagen *et al.*, 2007). Individual attitude is also linked to access to different benefits from extraction projects including access to electricity, water, education and health services benefits, dependence on natural gas resource, and distance from the natural gas activities (Plank *et al.*, 2016).

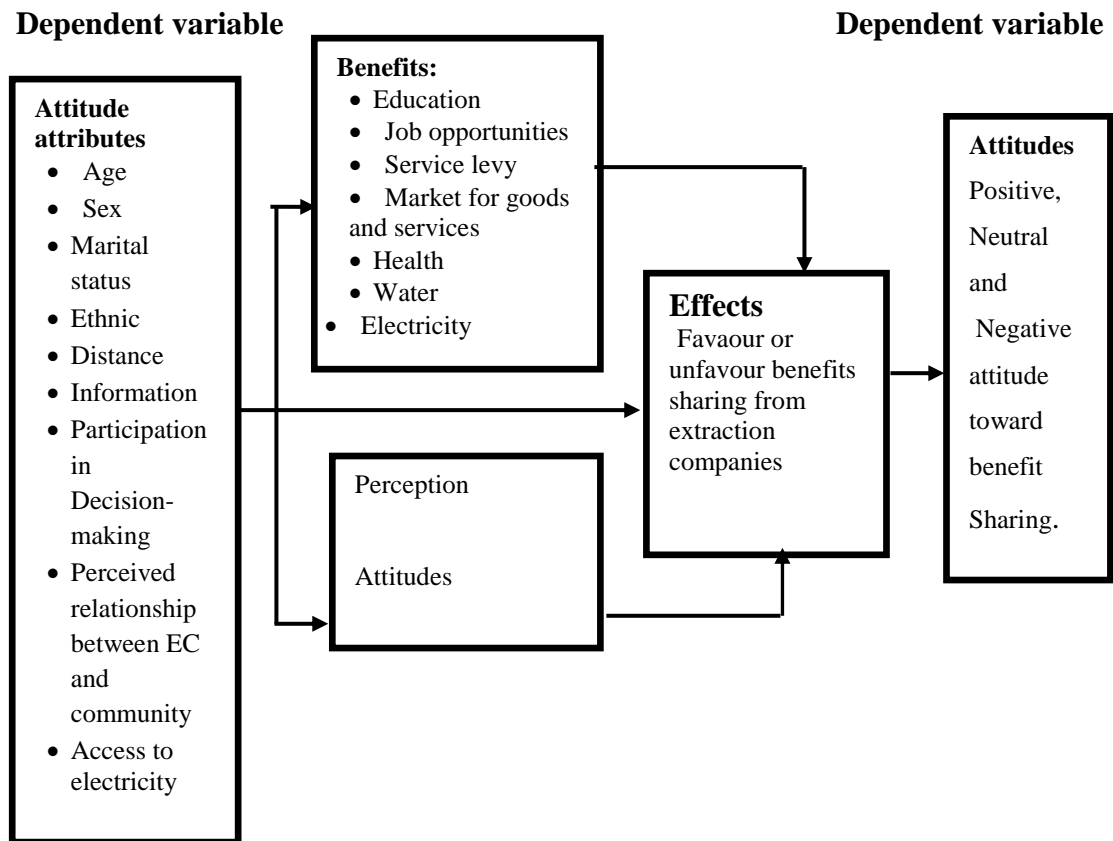


Figure 5.1: Conceptual framework for Attitudes of host communities towards benefit sharing.

Source: Adopted from the works of ALSamydai *et al.*,(2015)

5.5 Methodology

5.5.1 The study area

The study was conducted in Kilwa District in Lindi Region, Tanzania. The study covered two wards namely Songosongo and Somanga Fungu. Songosongo ward is found 247 km from Dar es Salaam and has a population of 3 032 of people, while Somanga Fungu Ward is located 217 km from Dar es Salam and has the population of 10 161 people (URT, 2013). The two wards were selected for the study due to the presence of natural gas activities including wells, a gas processing unit and a power generation plant.

5.5.2 Research design and sampling techniques

The study employed a cross-sectional research design whereby data were collected at one point in time (Bailey, 1994). The sample size was determined by using Cochran's (1977) formula whereby 373 respondents were involved in the study out of a population of 13 193 people. From the sample size of 373 respondents proportionate stratified sampling was used to get two strata as representatives for Songosongo (n = 86) and Somanga Fungu (n = 287). Six villages were purposely selected, one from Songosongo and five from Somanga Fungu. Respondents from six villages were randomly selected using village registers to avoid bias.

Quantitative data were collected using a structured questionnaire which was administered to the 373 respondents. The measurement of the attitude used in this paper applied a Likert scale as it was a reliable and effective method of scaling attitude (Likert, 1932; Tittle and Hill, 1967). This measurement comprised 12 statements that tested various benefits from natural gas extraction. Six of the statements in the scale had positive connotations, while the other six statements had negative connotations. The scale included five alternative responses on the attitude of host community benefits from extractive companies: strongly disagree (1 point), disagree (2 points), undecided (3 points), agree (4 points) and strongly agree (5 points).

A checklist was used to collect information from key informants and focus group discussants. Fifteen key informants were interviewed based on their positions and information they held. Eight Focus Group Discussions (FGD) sessions were conducted whereby four FGDs were for women and four for men. FGDs involved 6 participants in each discussion session. Participants of FGDs were purposeful selected based on their location of residence and experience about natural gas.

Test for reliability Cronbach's alpha coefficient for internal consistency reliability was calculated (Warmbrod, 2001). Table 6.1 shows that the Cronbach's alpha for attitude scale was 0.714. Lance *et al.*, (2006) recommends the accepted value for Cronbach alpha to be 0.70 for social science research, 0.80 for basic research and 0.90 for applied scenarios such as health. This indicates that the questionnaire for this study was reliable. The internal consistency reliability coefficient for the 12 statements ranged from 0.68 to 0.75 (Table 4.1).

Table 5.1: Descriptive statistic and reliability analysis for attitudinal scale

| | Mean | Std. Deviation | Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|----------|----------------|------------------------|----------------------------------|
| Attitudinal Statements | | | | |
| Equal opportunities between men and women would influence women to access benefits | 2.505376 | 1.159735 | 0.314459 | 0.715087 |
| Extractive companies have created work opportunities that improve women's wellbeing | 2.459677 | 1.168309 | 0.32797 | 0.713591 |
| Friendly work environment with attractive payment could influence youth to work in extractive companies | 2.604839 | 1.166596 | 0.315502 | 0.714971 |
| Health services have improved after coming of natural gas extraction. | 2.41129 | 1.271789 | 0.339128 | 0.712266 |
| Education opportunities have improved after coming natural gas extraction. | 2.663978 | 1.312389 | 0.515891 | 0.689539 |
| Opportunities created by extractive companies have enabled local to access and own properties | 2.728495 | 1.234694 | 0.417199 | 0.702961 |
| Extractive companies have not created enough indirect opportunities from development projects that could benefit host communities | 2.63172 | 1.173087 | 0.356062 | 0.710445 |
| Extractive companies have not opened different work opportunities to the community | 2.991935 | 1.304126 | 0.268537 | 0.720993 |
| Education opportunities have improved but, teachers and facilities were not enough | 3.201613 | 1.423597 | 0.447438 | 0.697721 |
| Health services have improved through construction of hospitals but staffs and medicines are not been enough | 3.196237 | 1.485487 | 0.519687 | 0.686651 |
| Lack of education and skills required by extractive companies causes women to lose jobs opportunities | 3.376344 | 1.333087 | 0.403416 | 0.704099 |
| Natural gas industry is dangerous, risky and hazardous hence should be done by men | 2.728495 | 1.262755 | -0.01566 | 0.752708 |

The overall Cronbach's alpha = 0.714. Calculated from scores on a five point scale: 1= strongly disagree, 2 = Disagree, 3= Undecided, 4 = Agree, 5 = Strongly Agree.

5.5.3 Data analysis

Qualitative data from key informants and FGDs were analysed using content analysis whereby the information was categorized into themes and sub-themes, reflecting the specific objectives. Quantitative data were analysed using the Statistical Package for

Social Sciences (SPSS) version 16 whereby descriptive and inferential statistics were employed. The questionnaire comprised 12 statements which were used to assess attitude towards benefits sharing. Six statements in the scale had negative connotations while other six statements had positive connotations. The minimum of 12 scores would be extremely negative, obtained if one selected strongly disagree for all the 12 statements. A maximum of 60 points would indicate extremely positive attitudes obtained if one selected strongly agree for all the 12 statements. A score of 36 would present neutral attitude. In this study $12 < 36$, 36 and $36 <$ points represented negative, neutral and positive attitudes respectively towards benefits sharing

An Ordinal Logistic Regression model (OLR) was used to determine the factors influencing community's attitudes towards benefit sharing. The ordinal regression model was used because the dependent variable was measured at three categories which were in a logical order namely: positive, neutral and negative attitudes (Field, 2009; Wesbard and Britt, 2014). The model analysis involved Z-statistics and significant level of p value at 5%. The coefficient Z value bears a negative or positive sign implying that negative or positive impact on the chances of the higher category in shaping attitude (Field, 2009). The Z-statistics was used to assess the contribution of the predictors to the outcome. If the variable is significant at a p value less or equal to 5%, then the predictor is making significant contribution to the prediction of the dependent variable (Weisburd and Britt, 2014).

The Ordinal Logistic Regression (OLR) model as adopted from Agresti and Finlay (2009) is presented in Equation: $P(Y) = \frac{e^{\alpha + \beta_1 X_1 + \dots + \beta_k X_k}}{1 + e^{\alpha + \beta_1 X_1 + \dots + \beta_k X_k}}$ Equation (i)

$$1 + e^{\alpha + \beta_1 X_1 + \dots + \beta_k X_k}$$

Where:

$P(Y)$ = the probability of the success alternative occurring, e = the natural log, α = the intercept of the equation, β_1 to β_k = coefficients of the predictor variables, X_1 to X_k = predictor variables entered in the ordinal regression model, and Y = outcome (dependent variable).

Table 5.2: The variables used in the ordinal logistic regression question

| Variables Symbol | Variables Name | Explanation |
|------------------|---|---|
| P(Y) | Ordinal | The probability of respondents being grouped in the positive attitude category. |
| X ₁ | Sex of the household head | 1 = Male, 0 = Female |
| X ₂ | Age | The age of respondent (in years) |
| X ₃ | Marital status | 1 = Married, 0 = Otherwise |
| X ₄ | Ethnic | 1 = Matumbi, 0 = Otherwise |
| X ₅ | Distance | 1 = Living 1 km from natural gas activities, 0 = Otherwise |
| X ₆ | Access to information about natural gas benefits | 1 Access, 0 = No access |
| X ₇ | Participation in decision making at community level | 1 = Yes , 0 = Otherwise |
| X ₈ | Perceived relationship between extractive companies and communities | 1 = Good relationship, 0 = Otherwise |
| X ₉ | Access to electricity | 1 = Access to electricity, 0 = No access to electricity |

5.6 Results and Discussion

5.6.1 Respondents' attitude towards benefit sharing

The results in Table 5.3 show that out of the 12 statements of the Likert scale, the respondents rated nine statements as mostly negative. The majority (69.1%) of the respondents had negative attitude towards health services improvement, while 65.6% indicated negative attitude towards employment opportunities and equal opportunity between men and women influencing women to access benefits (60.8%). These findings imply that the majority of the respondents living close to extraction sites were not satisfied with benefits shared from EC as far as health services provision was concerned, job

opportunities and gender equality in access to benefits hence had negative attitude. These results are not in line with the work done by Moffat and Zhang (2014) who assessed community attitude toward benefit sharing extraction and found that benefits sharing from the extraction sites were positively rated by the host communities as they benefited from employment and training opportunities and improvement in health services.

Table 5.3: Respondents' perception towards benefits sharing

| Attitudinal Statements | Negative (%) | Neutral (%) | Positive (%) |
|---|--------------|-------------|--------------|
| Equal opportunities between men and women would influence women to access benefits | 60.8 | 13.9 | 25.2 |
| Extractive companies have created job opportunities that improve women's wellbeing | 65.6 | 9.7 | 24.7 |
| Friendly work environment with attractive payment could influence youth to work in extractive companies | 58.8 | 11.5 | 29.8 |
| Health services have improved after coming of natural gas extraction Education opportunities improved after coming of natural gas extraction | 69.1 | 7.2 | 36.7 |
| Opportunities created by extractive companies have enabled locals to access and own property of various kinds | 56.6 | 18 | 33.6 |
| Extractive companies have not created enough indirect opportunities from development projects that could benefit host communities | 49.1 | 18 | 32.9 |
| Extractive companies have not opened different work opportunities that host communities could benefit | 52.6 | 20.9 | 26.5 |
| Extractive companies have not opened different work opportunities that host communities could benefit | 45.3 | 32.4 | 42.9 |
| Education opportunities have improved but teachers and facilities are not enough | 31.3 | 17.7 | 51.1 |
| Health services have improved through construction of hospitals but staffs and medicine are not enough | 40.5 | 6.7 | 52.8 |
| Lack of education and skills required by extractive companies could cause women to lose job opportunities | 33.8 | 8.6 | 57.6 |
| Natural gas activities are dangerous, risky and hazardous hence should be done by men | 40.5 | 20.6 | 38.9 |

It was observed that 52.8% of the respondents agreed that lack of education and skills required by the EC caused women to miss job opportunities (Table 4.3). This implies that women from communities close to gas extraction sites were excluded from accessing different job opportunities due to low level of education. As a result, the number of women employed as engineers, technicians or geologists. This was supported by one key informant from PanAfrica Energy Tanzania who said that:

“Only 6% of the women were employed at Songosongo camp and most of them were doing teaching, social work, washing and cleaning activities. There were no women doing technical and maintenance roles. Likewise, the majority (94%) of the men were employed in technical works, rigs engineering, and maintenance and as security guards”.

In response to the above situation, a key informant from Engineering department at University of Dar es Salaam said that:

“In adequate number of female lecturers to act as role models to inspire female students to pursue science subjects in physical, and engineering, sciences, and in technological fields contributes to few women aspiring for working in extractive industry”.

This concurs with arguments by Bengu *et al.* (2011) who affirmed that extraction constitutes the most masculine of all industries, where women benefit the least in the development of this sector due to low level of education. This maintains labour segregation, producing genuine occupational stereotypes.

Table 5.3 further shows that 52.8% of the respondents showed favourable response towards the statement that, through ECs, construction of dispensaries and health services were improved. However, there had not been enough staff and other equipment including drugs. This implies that host communities had dispensaries but in most cases, there were not enough staff and drugs. Different FGD participants expected that these companies would further support the health services in terms of health staff and drugs. Observation showed that both Somanga Fungu dispensary and Songosongo hospitals were not fully operating. During data collection the Songosongo hospital was operating with only one auxiliary nurse.

About a half (51.1%) of the respondents agreed that education opportunities had been improved. However, teachers and facilities were not enough. In responding to this challenge, one key informant from Kilwa District Council said that:

“We employed different staff including nurses, doctors and teachers to support Songosongo community. However, most of them resigned due to poor transport system from Songosongo to Kilwa Kivinje and lack of other social services such as bank services.”

This implies that local authority has not prepared conducive environment for health staff and teachers to serve communities in government hospitals and schools. This is according to directives and principles on the right to education enshrined in Article 11 of the Constitution (1977) of Tanzania and the right to health services as indicated in the Public Health Act of 2009 and the National Health Policy of 2007.

5.6.2 Community attitude towards benefit sharing from extractive companies

Findings show that more than a half (60%) of the respondents had an overall negative attitude towards benefits sharing (Fig 5.1). This implies that the majority of the community members living close to the extraction sites did not appreciate the initiatives of ECs in distribution of benefits from natural gas. Kessy *et al.*, (2017) insisted that despite extractive companies having invested in different social services, but they failed to establish social licenses to operate in the mining sites hence influence host community to have negative attitude. The results by Plank *et al.* (2016) in Australia are similar to the findings of this paper, despite the neighbouring communities recognizing economic contribution of extraction activities; they still had low trust with companies, accompanied by negative attitudes due to low access to benefits. It was also suggested that negative attitudes were due to unmet host communities' expectations. This further implies that men had inadequate alternative livelihood strategies after which they lacked other sources of income such as fishing activities. On this, discussants from Somanga Fungu agreed that:

“With respect to fishing activities, some areas that were rich in fishing resources have been prohibited against fishing activities due to natural gas extractions”

Figure 5.1 further reveals that a quarter (25%) of the women had positive attitude towards benefits sharing from natural gas extraction while men who had such attitude were only 12%. This implies that women appreciated reduction of work load as they then had access to water, electricity and health facilities, construction of hospitals and schools that influenced more positive attitude compared to men. The results are in line with an argument by Rolfe *et al.* (2007) that local communities had positive attitude towards benefit sharing from companies because communities perceived benefits in the form of improved infrastructure and social services.

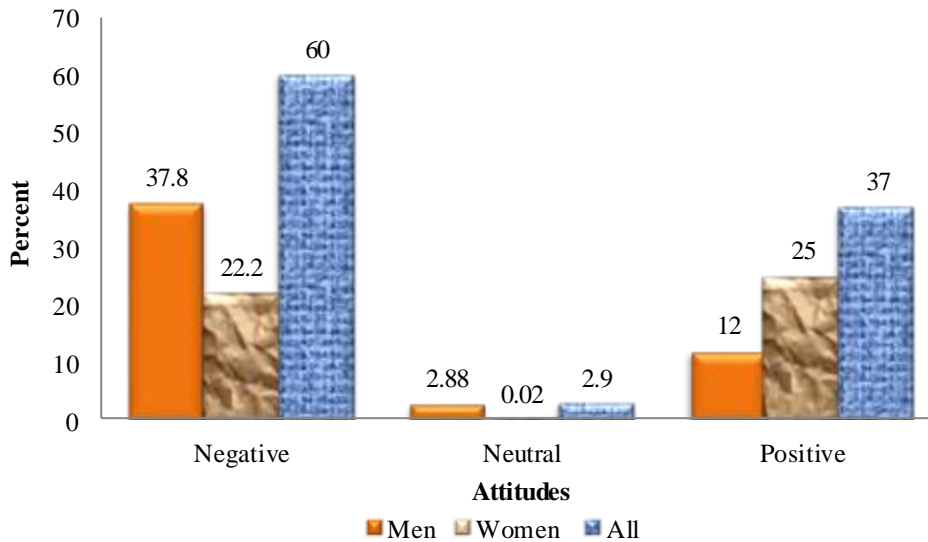


Figure 5.2: Overall host community members' attitudes towards benefit sharing

5.6.3 Determinants of host community members attitude towards benefit sharing

The Ordinal Regression model was used to predict factors shaping attitude towards benefit sharing. The overall model p-value of chi-squared score test was significant (LR χ^2 (12) = 83.84, $p \leq 0.000$). Indicating that the model performed well in prediction of nine variables as factors influencing attitude. The likelihood ratio of $R^2L = 0.2454$, which is the Pseudo R^2 , and also called McFadden's R^2 , suggests that the model fitted the data well (Table 5.4). According to McFadden (1974) a value from 0.2 - 0.4 indicates excellent model fit.

Table 5.4: Factors influencing respondents' attitude towards benefit sharing(n = 373)

| Variables | Regression Coef. (β) | Standard. Error | Z | p Value |
|--|---------------------------------|--------------------|-------|---------|
| Sex | -0.482 | 0.242 | -1.99 | 0.047 |
| Age | -0.261 | 0.137 | -1.90 | 0.058 |
| Marital status | -0.706 | 0.268 | -2.63 | 0.009 |
| Ethnic | 0.093 | 0.027 | 3.44 | 0.006 |
| Distance | -1.096 | 0.325 | -3.36 | 0.001 |
| Access to information | -0.454 | 0.249 | -1.82 | 0.069 |
| Participation in decision making at community level | 0.044 | 0.119 | 0.37 | 0.712 |
| Relationship between extractive company and community | -0.723 | 0.285 | -2.49 | 0.011 |
| Access to electricity | 0.778 | 0.277 | 2.80 | 0.005 |
| Model evaluation | | | | |
| Number of obs | 373 | | | |
| Log Likelihood | -246.28525 | | | |
| Prob >Chi ² | 0.000 | | | |
| LR chi2(11) | 83.84 | | | |
| Pseudo R ² | 0.2454 | | | |

The findings indicate that six out of the nine independent variables including distance, relationship between community and extractive companies, sex of respondent, access to electricity, marital status and ethnic group were significant predictors influencing attitude towards benefits sharing from natural gas ($p \leq 0.05$). (Table 5.4)

The findings show that distance ($\beta = -1.096$, $Z = -3.36$, $p > 0.05$) had a significant negative effect on shaping respondents' attitudes (Table 5.4). These results suggest that respondents who were residing more than 1 km from extraction sites had negative attitude towards benefits sharing compared to respondents who were residing within 1 km from the mining sites. This implies that extractive companies supported various social services in areas located within 1 km from extraction areas compared to those which were located more than 1km away. These results compare well with Songas (2001) declaration that residents who were living in extraction boundaries were provided with free drinking water as well as electricity by Songas Company. On the other hand, the findings contradict findings by Plank *et al.* (2016) that there was no direct link between extraction sites location and

positive host communities' attitude towards benefits sharing. However, several studies have shown that communities living closer to mining sites (less than 50 km) were more likely to have positive attitudes towards benefit sharing because they had access to various services (Lange and Kolstad, 2012). With respect to distance, Devine–Wright (2005) noted that distance from mining activities influences positively communities' attitude towards sharing of benefits.

The results, further, point out that access to electricity services ($\beta = 0.778$, $Z = -2.49$, $p = 0.005$) had a significant positive effect on shaping respondents' attitudes towards benefit sharing from natural gas (Table 5.4). This implies that respondents who accessed electricity services generated from natural gas free of charge or with low tariffs had positive attitudes towards benefits sharing compared to those who had no access to electricity services.

It can also be observed that the relationship between extractive companies and communities ($\beta = -0.723$, $Z = -3.45$, $p = 0.011$) had negative effect in influencing host communities' attitudes. This result suggests that bad relationship between ECs and host communities' influences negative attitude towards benefits sharing compared to good relationships (Table 5.4). This means that failure of ECs to provide services required by communities residing close to mining areas creates poor relationship. This finding concurs with those of Ventura and Jauregui (2017) that trustful relationships supported by a beneficiary-society approach builds good relationships with host communities that influence positive attitude.

On the other hand, results showed that sex of respondents ($\beta = -.482$, $Z = -2.52$, $p = 0.012$) had negative significant effect on shaping respondents' attitude towards benefit sharing from natural gas (Table 5.4). This result suggests that men had more negative attitude towards benefits sharing than women. This implies that inadequate access to alternative livelihoods sources influenced men to have negative attitude compared to women as they failed to support their families. During the survey and FGDs, different male participants expressed their concerns about loss of income due to unemployment in the ECs and lack of alternative activities after some fish catchment areas were being protected for natural gas activities. According to the coastal culture, men were perceived as breadwinners and most of them were doing fishing related activities while women worked in the domestic domain. Any obstruction of fishing activities through fencing of fish catchment areas influences men to have negative attitude because they lose employment and income. The findings are similar to findings by Peprah (2011) who conducted a study in Ghana on women livelihood from oil and gas discovery, and found that daily economic activities were affected by oil and gas activities because they perceived a decrease in fish catch, culture change, and loss of jobs for husbands and reduction in income levels.

5.7 Conclusions and Recommendations

It is concluded that the majority of community members in Kilwa District had negative attitude towards benefits sharing from extractive companies, especially in the health sector, employment opportunities and lacked equal opportunities in access to benefits. It is recommended that the local Government should prepare conducive environment for public servants to settle and work in the study area.

It is also concluded that areas which need intervention in sharing benefits are: access to health services, job opportunities and gender equality in access to benefits. It is further recommended that Policy maker and planner should formulate strategies in the health sector, employment and equality between men and women in access benefits were communities had negative attitudes towards sharing benefits in order to minimize possibility of resource curse in Tanzania.

It is further concluded that the main factors that enhanced community attitude towards benefits sharing were distance from extraction activities to the host community, access to electricity generated from natural gas and good relationship between extractive companies and community as well as sex of respondents. It is recommended that the Government in collaboration with ECs should conduct awareness campaigns to provide information to increase efforts, and progress has to be made by the extractive sector to support host communities' livelihoods.

REFERENCES

Ajzen, I. (2005). *Attitude, Personality and Behavior*. NY: open University press. 23pp

ALsamydai M. J., Yousif R. O. and Al-Qirem I. A. (2013). Measuring individual attitude towards Arabic- speaking TV channels and the impact of these channels on current events. *International Journal of Business and Management* 8(1): 73-89.

Amponsah-Tawiah, K. and Dartey-Baah, K. (2011). The mining industry in Ghana: A blessing or a curse. *International Journal of Business and Social Science* 2(12): 62 - 69.

- Bailey, D. K. (1994). *Method of Social Science Research* (4th Ed.). The Free Press Collier Macmillan Publishers, London. 70pp.
- Bengu, C. K. A. and Hülya, F. (2011). Attitudes towards women's work roles and women managers in a sports organization: The case of Turkey, gender. *Work and Organization Journal* 18(6): 592 – 612.
- Cochran, W. G. (1977). *Sampling Techniques*. (3rdEd.), John Wiley and Sons, New York. 6pp.
- Dare, M. L., Schirmer, J. and Vanclay, F. (2014). Community engagement and social license to operate: Impact Assess. *Project Appraisal* 32(3): 188 – 197.
- Devine-Wright, P. (2005). Beyond nimbyism: Towards an integrated framework for understanding public perception of wind energy. *Wind Energy* 8(2): 125 – 139.
- Devine-Wright, P. (2007). *Reconsidering Public Attitudes and Acceptance of Renewable Energy Technologies; A critical Review*. Working Paper No. 4 School of Environment development, Univeristy of Manchester. Working Paper 1.4. A working paper of the research project “Beyond Nimbyism: a Multidisciplinary Investigation of Public Engagement with Renewable Energy Technologies. [http://geography.exeter.ac.uk/beyond_nimbyism/deliverables/bn_wp1_4.pdf] site visited on 15/5/2017.
- Field, A. (2009). *Discovering Statistics Using SPSS*. (3rd Edition). SAGE Publications Pvt Ltd, New Delhi, India. 871pp.

- Fishbein, M. and Ajzen, I. (1975). *Belief, Attitude, Intention and Behaviour: An Introduction to Theory and Research*. Addison Wesley Publishing Company Inc., Philippines. 584pp.
- Hogg, M., and Vaughan, G. (2005). *Social Psychology* (4th Ed.). London: Prentice-Hall. 34pp.
- Humphreys, D. (2002). From economic to sustainable development: *Establishing a New Framework for Mineral Extraction, Minerals and Energy* 17(4): 3 – 9.
- Kessy, F, Melyoki, L. and Nyamrunda, D. (2017). *The Social License to Operate in Tanzania: Case Studies of the Petroleum and Mining Sectors*. The Institute of African Leadership for Sustainable Development (UONGOZI Institute). Dar es Salaam. Tanzania. 13pp.
- Kitula A.G.N. (2006). The environmental and socio-economic impacts of mining on local livelihoods in Tanzania: A case study of Geita District. *Journal of Cleaner Production* 14: 405 – 414.
- Lance, C. E., Butts, M. A. and Michel, L. C. (2006). The source of four common report cutoff criteria what did they really say. *Organization Research Methods* 9(2): 202 – 220.
- Lange, S. and Kolstad, I. (2012). Corporate community involvement and local institutions: Two case Studies from the mining industry in Tanzania. *Journal of African Business* 13(2): 134 – 144.

- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology* 22(140): 1 – 55.
- McFadden, D. (1973). *Conditional Logit Analysis of Qualitative Choice Behavior*. In *Frontiers in Econometrics* (Edited by P. Zarembka). Academic Press, New York. 42pp.
- Moffat, K., and Zhang, A. (2014). The paths to social license to operate: An integrative model explaining community acceptance of mining. *Resources Policy* 39: 61 – 70
- Moshi, H. P. B. (2013). *Opportunities and Challenges for the Extraction of Natural Gas in Tanzania: The Imperative of Adequate Preparedness*. Discussion Paper No. 49. The Economic and Social Research Foundation (ESRF) Dar es Salaam. Tanzania. 4pp.
- Nathan, M. and Eleanor, E. M. (2011). Encyclopedia of consumer culture. *Attitude Theory* 1(4): 16 – 64.
- Ndimbwa, M. R. (2014). *Natural Gas Conflict in Tanzania and the Impacts to the Population in Mtwara Municipality*. Norwegian University of Life Sciences, Faculty of Social Sciences, Department of International Environment and Development Studies. Norwegian. 43pp.
- Peprah, J. A. (2011). Women, livelihood and oil and gas discovery in Ghana: An exploratory study of cape three points and surrounding communities. *Journal of Sustainable Development* 4(3): 185 – 195.

- Petty, R. E. and Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion: advances in experimental social psychology. *Academic press, Inc.* 19: 123 – 192.
- Plank, S., Walsh, B. and Behrens, P. (2016). The expected impacts of extraction: Stakeholder perceptions of a proposed mineral sands mine in rural Australia. *Resources Policy* 48: 129 – 136.
- Rolfe, J., Gregg, D., Ivanova, G., Lawrence, R. and Rynne, D. (2010). The economic contribution of the resources sector by regional areas in Queensland, *Economic Analysis and Policy (EAP)* 41(1): 15 – 36.
- Ross, M. L. (2008). Oil, Islam and Women. *American Political Science Review* 102 (1): 107 – 123.
- Shanghvi, I. and Jingu, J. A.K (2013). *Tanzania and the Quest for sustainable Utilization of Oil and Natural Gas*. Discussion Paper No. 49. The Economic and Social Research Foundation (ESRF), Dar as Salaam, Tanzania. 2pp.
- Simbakalia, J. L. (2011). *Challenges Ahead for Tanzanian to Build New Capacities for gas Industry Development*. Discussion Paper No. 51. The Economic and Social Research Foundation, Dar as Salaam, Tanzania. 16pp.
- Songas (2001). *Environmental and Social Assessment and Management Plan. A Summary of Environmental and Social Impact Studies and Detailed Management Plan*. Songas Publishers, Dar es Salaam. 10pp.

Tittle, C. and Hill, R. (1967). Attitude measurement and prediction of behaviour: An evaluation of conditions and measurement techniques. *Stoichiometry* 30 (2): 199 - 213.

URT (1977). *The Constitution of the United Republic of Tanzania of 1977*. Government Press. Dar es Salaam, Tanzania. 12pp.

URT (2013). Population and housing census 2012. Population distribution by administrative areas. [www.nbs.go.tz/takwimu/census2012/Census_General_Report.zip] Site visited on 20/4/ 2017.

URT (2016). *Tanzania Review*, (7th Ed), Ministry of Industry and Trade, Dar es Salaam. 39- 56pp.

URT (2007). *Health Policy*. Government Press, Dar es Salaam, Tanzania.

URT (2009). *Public Health Act*. Government Press, Dar es Salaam, Tanzania.

Ventura, J. and Jauregui, K. (2017). Business community relationships for extractive industries: A Case Study in Peru. *Brazilian Administrative Review* 14 (2): 1 – 24.

Warmbrod, J. R. (2001). *Conducting, Interpreting, and Reporting Quantitative Research*. Pre-Session, New Orleans, Louisiana. 12pp.

Weisburd, D. and Britt, C. (2014). *Statistics in Criminal Justice, Fourth Edition*. Springer Science Business Media, New York. 783pp.

World Bank (2016). Accelerating poverty reduction in Mozambique: Challenges and opportunities.[<http://www.worldbank.org/en/country/mozambique/publication/accelerating-poverty-reduction-in-mozambique-challenges-and-opportunities>] site visited on 20/3/2017.

Wüstenhagen, R., Wolsink, M. and Bürer, M. J. (2007). Social acceptance of renewable energy innovation: an introduction to the concept. *Energy Policy* 35 (5): 2683 – 2691.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Findings and Conclusions of the Study

This chapter presents a summary of the major findings of the study, the overall conclusions, theoretical implications and recommendations. The chapter further highlights the contribution of the thesis to the body of existing knowledge. Finally, the chapter outlines the areas suggested for further studies.

The first specific objective of this study was to analyse social services provided by extractive companies which in turn change gender roles in the surrounding mining areas, hence natural gas extraction benefits accessed by both gender in the communities. In so doing, division of triple gender roles, difference between men and women in time spent on various gender roles, community opinion on whether there any changes in gender roles due to extractive companies was examined. Based on the findings, the majority of men's and women's roles did not decrease in the study area. The study revealed that there is slight impact of extractive companies on gender roles observed in some areas as there is gradual shift of women's and men's roles. Some of women's workload decreased in fetching water and hygiene improved at home as well as water borne diseases decreased due to availability of water. Some women changed their roles as they engaged in fish business, fish storage and ice blocks making business due to availability of electrical power. Other women are engaged in paid work in extractive companies hence they access benefits in line with the social learning theory. The study further revealed that men and women experienced increase of workload after introduction of natural gas extraction because there are restrictions in getting access to firewood, fetching water and fish catching areas. It is concluded that extractive activities had little impact on changing

gender roles; hence communities living close to mining sites have not benefited much from natural gas extraction.

The second specific objective of the study was to determine factors influencing benefits sharing from mining companies to the host communities in Kilwa District. The paper discusses communities' expectations from natural gas extraction and community perception towards benefits sharing. In general, the findings presented in the paper show that host communities had high expectations of benefit sharing on improving health services, access to electricity, and access to employment and education opportunities. The study also confirmed that the majority of community members perceived a low level of benefit sharing after commencement of extraction activities due to mismatch between communities' expectations and the actual support of extractive companies on social services. It was also found that distance/proximity, education and legitimacy had statistically significant ($p \leq 0.05$) influence on ECs sharing benefits with communities. It is concluded that stakeholders identified by possession of one to three of the attributes, with kind of sight, Kilwa District Council was among ECs stakeholders, hence entitled to get benefits.

The third specific objective of this study aimed to examine gendered access to direct and indirect benefits from natural gas extraction in Kilwa District and gendered expectations from natural gas extraction. The findings show that men and women had low levels of access to direct benefits from natural gas extractions. This was due to low employment level among women and men living close to mining sites, inadequate payment of service levy to the respective wards as well as limited chances to sell goods and services to the mining companies. The study also found that the majority of host communities benefited

from indirect benefits. This was contributed by extractive companies' initiatives to support education programmes, construction and renovation of schools and provision of learning materials as well as availability of electricity which attracted business including ice processing and fish storage as alternative livelihood strategies in line with the ecofeminism theory. It is concluded that host communities benefited more from indirect benefits generated by natural gas extraction.

The fourth specific objective was to evaluate the host communities' attitudes towards benefits sharing from mining activities. In this objective the study sought to evaluate factors that shape attitudes of communities towards benefit sharing. According to the findings of the evaluation in relation to this objective, communities living close to mining sites had negative attitude towards benefit sharing, hence they were not comfortable with initiatives of ECs in distribution of natural gas benefits in Kilwa District. Ordinal logistic regression analysis revealed that there was a significant relationship between distance from extraction sites to the community, access to electricity services, relationships between extractive companies with communities and sex in host communities' attitude towards benefit sharing ($P \leq 0.05$). It is concluded that the majority of respondents had unfavourable attitude towards benefit sharing.

6.2 Recommendations

Based on the major findings of the four papers as presented in this thesis, the following are recommendations geared towards improving host communities' access to benefits from natural gas extraction.

The majority of men and women's roles did not change as a result of extraction activities due to extraction companies investments. It is recommended that extractive companies and Kilwa District Authority can reduce workload if they recognise essential roles that women and men play in the maintenance of the economic and social wellbeing and empower them through community development projects. It is also recommend that local communities should change their perception through awareness creation so that women can take up opportunities created by extraction activities. Continuous efforts are needed by extractive companies and Kilwa District Authority to introduce labour saving equipment which aim at reducing workload in different activities, supply enough water and establish factories for fish processing. It is worth for communities living close to mining sites to support girl child education by preparing strategies to overcome girl child drop out from schools so that opportunities given to girls through scholarships and skills training can benefit targeted groups.

The study found that three attributes namely distance/proximity from community to extraction sites, education and legitimacy factors influence extractive industries to share benefits with coast community. Therefore, it is recommended that Kilwa District Authority and ECs should take into consideration other two attributes: expectation and information attributes in their plans. Deliberate efforts should be made by Kilwa District Authority and ECs to make sure that community expectations are used as a point of intervention for benefit sharing, and to create an effective communication strategy with communities around mining sites to provide accurate and timely information about opportunities emerging from natural gas activities.

The majority of host community members did not access direct benefits compared to indirect benefits. It is therefore recommended that there is a need for government to manage expectations from natural gas extraction through strengthening communication strategies with host communities on programmes and activities aimed to benefit communities. It is also recommended that communities, in collaboration with Kilwa District Authority, should form co-operative societies in fishing and agriculture to produce goods and services of the quality required by extractive companies. Government and extractive companies should make deliberate efforts to establish foundations or trust funds that will ensure sustainable development and flow of service levy from extractive companies to host communities.

The study findings showed that men and women living close to mining sites had negative attitude towards benefit sharing. This suggests that there is a need for policy makers and EC to prepare intervention strategies in areas including health sector, employment and adhere to the equality between men and women which had more negative attitude and minimize risks of resource curse.

6.3 Study Contributions

6.3.1 Knowledge contribution

The thesis has made a number of contributions including being among the few studies done on status of gendered access to benefits from natural gas extraction in Tanzania. It has generated information that can be used as reference by later studies in the oil and gas sector. The study highlighted that in order for extractive companies to have a meaningful implementation of CRS that will aim at changing gender roles and improve access to benefits, companies should analyse gender roles performed by men and women in the host

communities. This study has, in detail, analysed areas for achieving gender equality in access to benefits including adherence to the principle of gender equality in access to benefits, employment and health services, establish primary co-operatives that would enable them to sell goods and services to the extractive industries, establishment of a service levy fund as well as to take into serious consideration communities expectations in the laws.

It has also generated necessary information that is aimed at minimizing the worries of resource curse happening in Tanzania which gives an opportunity for planners, policy makers and extractive companies to prepare strategies for better access to benefits and remove negative attitude that would lead to resource curse.

6.3.2 Theoretical contribution

The theory of ecofeminism was used to explain correlation between oppression of women and oppression of nature caused by extraction activities. Extractive companies are responsible to restore back destructed environment which affected more women's roles than men's roles, through developing external structures such as drilling of oil wells, construction of oil refineries, oil spillage, construction of ports and laying of oil pipeline. The theory contends that extractive companies have potential to contribute to the host communities in terms of benefits, the despite the academic challenges that the ecofeminism theory lacks clarity.

The findings of this study offer empirical explanation that the ecofeminism theory can be applied in practice in the natural gas extraction and making ideas of women and nature oppression tangible. The theory provides an opportunity for close community's access to

different benefits from ECs as an alternative livelihood support after destruction of environment through direct and indirect benefits. The findings of this study agree with international recognition that ecofeminism is a social theory and a movement.

In this study, the social learning theory is premised on the idea that gender roles change overtime. The presence of natural gas extraction contributes to the learning new roles and subsequently both gender access benefits. The findings confirmed that gender roles changed over time. However, this is not always a situation in mining activities as workload increased in some roles. The findings of this study offer theoretical value that there is a strong relationship found between the social learning theory and changing of gender roles in mining sites. It has been suggested that presence of natural gas extraction has created groups of men and women whose gender roles burden increased due to the destruction of livelihood areas hence they did not access benefits. In this regard, they develop negative attitude towards benefit sharing.

On the other hand, either men or women with high self-esteem tend to make good attempt in changing gender roles and take opportunities created by extraction activities hence they access benefits. The research also found that women who managed to access opportunities from natural gas companies as workers or business women, multiple benefits seen in the community as they improved livelihood through opening other economic activities. It is worth noting that the relationships between the social learning theory and presence of natural gas in the study area have generally been shown both positive and negative effects on gender roles. Generally, there has very little positive evidence in changing of men's and women's roles compared to negative changes.

The stakeholder theory is found to be a particularly useful perspective for addressing some of the important variables in benefit sharing from mining companies. The theory gives an opportunity to identify stakeholders who are entitled to get benefits from extractive companies. This theory offers an opportunity also to reinterpret a variety of variables which influence benefit sharing including distance from community to the extraction sites, legal frame work and education of community members. It is also interesting that stakeholder theory created standards in benefit sharing. If a country lacks mining regulations and laws which influence benefit flow from ECs to community it actually limits host communities from benefits from multinational investors because it gives companies power to decide when and how to distribute benefits and sometimes the distributed benefits do not meet risks created by extraction companies. Therefore, the variables explored in this thesis may be applied in different mining environments either domestically or internationally and give positive results.

The theory of attitude in this study explains a predisposition to behaviour of community members living close to mining sites tendency to evaluate benefits shared from natural gas in positive, neutral or negative ways. Assessments of community attitude highlighted areas where women and men had negative attitude or positive attitude towards benefit sharing. The findings of the study through the attitude theory provide several contributions including consideration of weak areas which allow extractive companies and government to better understand how best to remove challenges of people residing close to mining sites and provide insights into how to manage host communities expectations and acquire a social license to operate. In this way, demonstration of attitude is sufficient evidence for community members to show acceptance level of benefit sharing from ECs, while negative attitude gives responsibilities companies and local authority to change behaviour

of host communities so that close communities can share benefit from natural gas extraction. In the same vein, evaluation of attitude contributes to explain specific gender groups; actions needed and targeted areas for improvement in sharing benefits.

6.4 Suggested Areas for Further Research

Apart from this study, there are remaining areas which need to be further researched, including:

1. Based on information collected on gender distribution of the benefits from natural gas extraction, a study is needed to examine how risks from natural gas extraction are distributed between men and women living close to extraction areas.
2. It was observed that community leaders failed to raise their voices to ask for service levy from District authority. A feasibility study in other countries which has this kind of foundation is needed to examine whether Tanzania should establish a foundation or a trust fund that will support to achieve different goals in sharing benefits
3. The study found that men and women from host communities were not able to sell goods and services to the extractive companies. There is a need to investigate factors limiting men and women living close to extraction sites to access and utilize market of extractive companies.

APPENDICES

Appendix 1: A household questionnaire

Preamble:

My name is, a PhD student from Sokoine University of Agriculture. I am here to conduct a study on the **NATURAL GAS EXTRACTION AND GENDERED BENEFITS SHARING AMONG HOST COMMUNITIES IN KILWA DISTRICT, TANZANIA**. I would like to invite you to participate in a survey. You have been randomly selected to participate in this study which is intending to collect information on how women and men are benefiting from natural gas industry. There is no correct or wrong answer on this study and your participation is voluntary. The collected information will be used for the purpose of this study only. To start our discussion, I would like now to ask you some questions:

SECTION A: Questionnaire identification

Questionnaire Number.....Date.....

Ward..... Hamlet/Sub village

Start time..... End time

Name of enumerator.....

SECTION B: Respondents general information; *(Circle the correct answer)*

1. Sex of respondent

0. Female

1. Male

2. What is your age

3. What is your relationship with the household head (HH)?
 1. Head of HH
 2. Wife of HH
 3. Child of HH
 4. Relative of HH
 5. Others (*please specify*).....

4. What is your marital status?
 1. Married
 2. Widowed
 3. Divorced
 4. Single

5. What is the number of members of the household?

6. Kindly indicate your Ethnic group.....

7. Kindly state your religion?
 - 1) Muslim
 - 2) Christian
 - 3) Others (*please specify*).....

8. How many years did spend on school?
 - 1) None
 - 2) Seven years
 - 3) Eleven years
 - 4) Fourteen years
 - 5) Others (*please specify*).....

9. What are reasons hindering you from going for further education?
 - a). Lack of money 1 (___) 2. (___)
 - b). Divorce 1 (___) 2. (___)
 - c). Removed from school 1 (___) 2. (___)
 - d). Long distance to school 1 (___) 2. (___)
 - e). Others (*please specify*).....

SECTION C: General household information (*Circle the correct answer*)

10. Kindly explain your household closeness to :

1. Gas well
2. Gas station
3. Along gas pipe line
4. Power plant

11. Kindly state the distance from the project point to your home.....

12. What is your main activity?

1. Farming
2. Entrepreneurship
3. Employed by extraction company
4. Fishing
5. Government employment
6. Painting
7. Being an electrician
8. Mechanics
9. Others (*please specify*).....

13. What is the main source of energy in the home?

1. Electricity
2. Firewood
3. Charcoal
4. Solar power
5. Gas
6. Others (*please specify*).....

14 What is the main source of energy for lighting in your house? (Multiple response allowed)

1. Electricity
2. Kerosene
3. Torch

- 4. Solar Power
- 5. Local
- 6. Others (*please specify*).....

15. What is the source of electricity in your house?

- 1. National grid
- 2. Natural gas
- 3. Solar power
- 4. Generator
- 5. Others (*please specify*).....

16. What are othe uses of electricty at your home?

- 1. Lighting
- 2. Cooking
- 3. Television and radio
- 4. Freezing fish
- 5. Cooling drinks
- 6. Others (*please specify*).....

17. What are your xpectations from natural gas extraction?

- 1. Work opportunity
- 2. Education opportunity
- 3. Improvement of sea transport
- 4. Improvement of health services
- 5. Access to electricity
- 6. Payment of service levy
- 7. Land compensation
- 8. Market of local goods and services
- 9. Others (*please specify*).....

SECTION D: Distribution of gender roles**18. Activity profile (who is doing what?) *Select the appropriate gender***

| Roles | Activity | Ditributi on of work load | Time spend/ activit y locus | Relation to natural gas activities |
|-----------------------------|---------------------------------|--|--|---|
| Production | Land clearing | | | |
| | Planting and Weeding | | | |
| | Selling of agri.product | | | |
| Physcal Reproducti ve | Fishing | | | |
| | Fish frying | | | |
| | Fish vendor | | | |
| | Seaweed farming | | | |
| | Animal keeping | | | |
| | Shopping/ kiosk bussines | | | |
| Domestic | Fetching water for domestic use | | | |
| | Food preparation | | | |
| | Home cleaning | | | |
| Community | Participation in wedding | | | |
| | Participation in meetings | | | |
| | Participation in community work | | | |
| | | Men Woman Both | | <ol style="list-style-type: none"> 1. No relationship 2. Market for agricultural products/ other products 3. Fishing technology 4. Income 5. Water services 6. Quality education 7. Transport 8. Provision of different experts |

19. CHALLENGES IN PERFORMING GENDER ROLES

Select the correct answer: Multiple response

| Please explain c Challenges in performing gender roles. | Please explain the situation of community services before coming of natural gas extraction | Please explain the situation of community services after coming of natural gas extraction | Suggestions on how to improve community challenges |
|--|---|--|--|
| Shortage of clean and safe water 0 () 1. () | Shortage of clean water 0 () 1. () | Water services improved 0 () 1. () | Investment in water sector 0 () 1. () |
| Shortage of food supply 0 () 1. () | Shortage of schools and school facilities 0 () 1. () | Schools have been improved 0 () 1. () | Investment in agriculture and fishing activities 0 () 1. () |
| Lack of education and skills 0 () 1. () | Poor health services in the ward. () 1. () | Health services have improved 0 () 1. () | Investment in education 0 () 1. () |
| Shortage of firewood and charcoal 0. () 1. () | There was shortage of financial resources 0. () 1. () | Banks and SACCOS have been established 0 () 1. () | Restriction against environmental destruction 0 () 1. () |
| Poor health services 0. () 1. () | Poor sea transport services from Songosongo to Kilwa Kivinje 0. () 1. () | Sea transport services have been improved 0 () 1. () | Investment in the health sector 0 () 1. () |
| Shortage of financial resources 0. () 1. () | | | Investment in Bank and SACCOS 0 () 1. () |
| Others (Please specify)..... | Other (Please specify)..... | Others (Please specify)..... | Others (Please specify)..... |

SECTION E: ACCESS AND CONTROL**20: GENDER ACCESS AND CONTROL OF ASSETS** (*Select appropriate person*)

| Explain assets ownership before coming of natural gas extraction | | | Gender Control of Benefits? | | | Gender access and control of resource after natural gas exploration | |
|--|--------------|------------|--|--------------|------------|--|---------------|
| <i>Asset</i> | <i>Women</i> | <i>Men</i> | <i>Benefits</i> | <i>Women</i> | <i>Men</i> | <i>Asset</i> | <i>Gender</i> |
| Land | | | Credits | | | Land | |
| House | | | Introduction to new technology (new stove) | | | House | |
| Fishing boat | | | Leadership positions | | | Fishing boat | |
| Bicycle | | | Education and skills | | | Bicycle | |
| Motorcycle | | | Profit from business | | | Motorcycle | |
| Animals | | | Control electricity | | | Animals | |
| Sea weed farm | | | Basic needs (Clothing, food and house) | | | Seaweed farm | |
| Television | | | Fishing training | | | Television | |
| Bed | | | | | | Bed | |
| Kitchen tools | | | | | | Kitchen tool | |
| 0.Access 1.Control 2.Both | | | 1.Control 0.Access | | | 1.Only women have access = 2.More men have access 3.Men and women have access 4.More women have access | |

SECTION F: EDUCATION OPPORTUNITIES (*Circle the correct answers*)

21. Your level of education has enabled you to get employment in extractive industry?

1. No
2. Yes

22. Your education level has enabled you to open a business? 1= No, 2 = Yes

23. Kindly evaluate conditions of education at village level

1. Bad
2. Good
3. Moderate

24. If the answer in question 17. Is “YES” then give reasons:

1. Schools have enough facilities: (classes, books and latrine holes)
2. There are enough schools
3. There are enough teachers
4. Others (*Please specify*).....

25. If the answer in question 18 is “BAD” then give reasons:

1. Schools do not have enough facilities (classrooms, desks, latrine, holes and houses)
2. There is not enough teachers
3. Long distances from home to school
4. There is no provision of food to students
5. Low parents’ awareness of the importance of education
6. Others (*please specify*).....

26. Which gender is given priority to access to education at household level?

1. Male
2. Female

27. What kinds of challenges do girl child are experiencing in getting education?

1. Pregnancy
2. Early marriage
3. Lows of parents’ support in education
4. Long distances from school to home
5. Religion rates
6. Truancy
7. Others (*please specify*).....

28. Have extractive companies invested in education in this village?

1. No
2. Yes

29. Kindly indicate the level of education which extractive company have invested in your ward (Multiple responses)

1. Kindergarten
2. Primary education
3. Secondary education
4. Technical education
5. University education
6. No investment
8. Others (*please specify*).....

30. Have extractive companies conducted any short course to empower women in this viilage? 0 = No, 1= Yes

31. If answer in 30 is “YES”, then what kind of courses have been offored to women?

1. Awareness on HIV/AIDS
2. House keeping
3. Savings and credit
4. Entrepreneurship
5. Mechanics
6. Electrician course
7. Agriculture
8. Security and safety training
9. Other (*Please specify*).....

32. How many household members have attended workshops or training decison on women empowenment?

1. None
2. Two persons
3. Three persons

33. Training/workshop enabled you to get employment? 1 = No, 2 = Yes

34. Are you employed by an extraction company? 1 = No. 2= Yes

SECTION G: EMPLOYMENT OPPORTUNITIES

Direct Job Opportunities (*Circle the correct answer*)

35. If other members of household are employed by exploration companies? Tick them below

- 1. Household head
- 2. Mother of the family
- 3. Relative
- 4. Child
- 5. None
- 6. Others (*please specify*).....

36. What is the sex of person employed?

- 1. Female
- 2. Male

37. Where did you get information on availability of employment?

- 1. Company website
- 2. Village office
- 3. Village employment committee
- 4. Through friends and relatives
- 5. News paper
- 6. Others (*please specify*).....

38. What is the name of the company where your household members is employed?

- 1. SONGAS

2. PANAFRICA
3. TPDC
4. AGIP
5. C.R.J.E
6. S.B.S
7. KNIGHT Support
8. SUMA JKT
7. Others (*please specify*).....

39. What kind of employment are you/ is, he/she employed for ?

1. Constructions activities
2. Machine Operation
3. Security guard
4. Mechanical
5. Cleaning
6. House keeping
7. Cooking
8. Dish washing
9. Boat driving
10. Others (*please specify*).....

40. What is the nature of work? 1= Temporary, 2 = Permanent

41. What kind of challenges one experiences in getting jobs in extractive companies ?

- 1) Lack of appropriate education and skills
- 2) Lack of information
- 3) Language problem
- 4) Corruption (money/sexual)
- 5) Men jealous
- 6) Men favouritism
- 7) Nepotism
- 8) Others (*please specify*).....

SECTION H: WOMEN AND EMPLOYMENT

42. What kinds of jobs are mostly women hired to do in the extractive companies?

1. Engineering
2. Geology
3. Machine operation
4. Casual Labour
5. Clerical support
6. Security guard
7. Others (*please specify*)

42. How do communities feel about women to be part of work force in the mining industry?

1. They have been given equal opportunity
2. Discriminated
3. They are not given equal opportunity with men
4. Mining work is meant for men

43. Has your wellbeing improved after being employed by extraction companies?

1. No
2. Yes

44. What kinds of positive changes have you acquired from extraction activities?

1. Income increased
2. Access to food increased
3. Connected to electricity power
4. Home has been improved
5. Ownership of motorcycle
6. Others (*please specify*)

45. How did you spend Income from natural gas activities?

1. Savings
2. Invested in business

3. Construction of houses
4. Consumption of food ,
5. Medicals and Clothes
6. Invested in Education
7. Others (*please specify*).....

46. There are any positive changes as outcome of natural gas extraction at community level?

1. Availability of infrastructure (road, schools and hospitals)
2. Electricity connection at household level
3. Education opportunities
4. Job opportunities
5. Others (*please specify*).....

SECTION I: INDIRECT AND INDUCED OPPORTUNITIES FROM EXTRACTION ACTIVITIES

(Circle the correct answer)

47. Whether availability of natural gas has created other opportunities?

1. No
2. Yes

48. What kind of opportunities have emerged after coming of natural gas extraction in the village? (Multiple responses)

1. None
2. Supplies of food stuffs to the extractive companies
3. Fish business (Storage of fish and transport to other towns business)
4. Motorcycle transport
5. Local restaurant
6. Guest house
7. Shops/Kiosks
8. Others (*please specify*).....

49. Do women work in those areas than men? 1= No, 2 = Yes

50. Kindly give your opinion on why women work in those functions?

1. It is within women's roles
2. Doesn't need masculinity to perform those duties
3. Those duties gives women ample time to do domestic activities
4. Others (*please specify*).....

51. Do extractive companies pay service levy fund in your village?

1. No
2. Yes

52. Kindly mention the types of projects funded by extractive companies

1. No project
2. Women empowerment projects
3. Construction of hospitals
4. Construction of schools
5. Investment in marine transport
6. Scholarship to students
7. Others (*please specify*).....

53. GENDER DISTRIBUTION OF OPPORTUNITIES: Tick correct answers

| Kind of opportunities | Gender |
|--|----------------------|
| 1. Food store business | |
| 2. Fish storage and transport business | |
| 3. Local restaurant | |
| 4. Guest house business | |
| 5. Motorcycle transport (<i>Bodaboda</i>) | |
| 6. Saloon | |
| 7. Others (Mention) | Female = 0, Male = 1 |

SECTION J: ATTITUDE TOWARDS BENEFIT SHARING FROM EXTRACTION COMPANIES 54. Kindly indicate whether you- Strongly disagree (1), Disagree (2), Are undecided (3), Agree (4), Strongly Agree (5) with on each of the following statements:

| Attitudinal Statements | Conn otatio n | 1 | 2 | 3 | 4 | 5 |
|---|---------------------|---|---|---|---|---|
| Equal opportunities between men and women would influence women to access benefits. | + | | | | | |
| Extractive companies have created job opportunities that improve women's wellbeing | + | | | | | |
| Friendly work environment with attractive payment could influence youth to work in extractive companies | + | | | | | |
| Health services have improved after coming of natural gas extraction | + | | | | | |
| Education opportunities have improved after coming of natural gas extraction. | + | | | | | |
| Opportunities created by extractive companies have enabled locals to access and own properties | + | | | | | |
| Extractive companies have not created enough indirect opportunities from development projects that could benefit host communities | - | | | | | |
| Extractive companies have not opened different work opportunities that host communities could benefit | - | | | | | |
| Education opportunities have improved but teachers and facilities are not enough | - | | | | | |
| Health services have improved through construction of hospitals but staffs and medicine are been not enough | - | | | | | |
| Lack of education and skills required by extractive companies could causes women to lose job opportunities | - | | | | | |
| Natural gas activities are dangerous, risky and hazardous hence should be done by men | - | | | | | |

SECTION K: WOMEN EMPLOYMENT AND WORKING ENVORNMENT:

(Circle the correct answer)

55. Whether there are traditions and customs which hinder women to work in natural gas industry? 1= No, 2 = Yes

56. What kind of taboos which hindered women to work in natural gas industry

1. Menstruation and cultural restriction
2. Myth about presence of women will cause mines to collapse
3. Others (*please specify*).....

57. Does a woman face discrimination at workplace?

1. Male hegemony
2. Sexual discrimination
3. Unfriendly work environment
4. Salary discrimination between men and women
5. Women body and health
6. Others (*please specify*).....

58. Explain factors which enabled household to access benefits from natural gas activities?

1. Education
2. Access to information
3. Equal opportunity
4. Place of residence
5. Network with workers
6. Others (*please specify*).....

59. Do extractive companies have special rooms for women to exchange clothes and toilets?

1= No , 2 = Yes

60. Do extractive companies have provision for children care? 1= No, 2 = Yes

61. Do extractive companies grant maternity leave? 1= No, 2 = Yes

62. Do extractive companies provide dressing code for their workers? 1= No, 2 = Yes

63. What kinds of environmental challenges hinder women to work in extractive industry?

1. Mining environment is male chauvinist
2. Unfriendly environment for women and is found far from home

3. Lack of women services at extraction sites
4. Male chauvinist and threats to sexual violence
5. Sexual discrimination in roles distribution
6. Long working hours which interfere with domestic roles
7. Others (*please specify*).....

64. Do women discriminate themselves to work in extractive industry?

1. Women lack confidence
2. Women are stigmatized because mining job is meant for men
3. Mining work is contrary to women body and health
4. Fear of male chauvinism
5. Women possess low education and skills
6. Lack of equal employment opportunities
7. Others (*please specify*).....

65. Do family responsibilities hinder women to take opportunities from natural gas?

0. No..... 1. Yes.....

66. Do women participate in decision making at household level? 1 = No, 2 = Yes

67. What kinds of decision do women participate at household level?

1. Family planning
2. Family development
3. Children affairs and wellbeing
4. Assets and equipment acquisition
5. Marriage arrangement of children
6. Participation in politics
7. Others (*please specify*).....

68. What are the reasons for women exclusion in decision making? (Multiple responses is allowed)

1. Tradition and customs
2. Women lack confidence
3. Religion rites don't allow women to participate in decision making
4. Lack of proper information about gas activities
5. Women are not excluded from decision making
6. Others (*please specify*).....

69. Do you participate in community development meetings? 1= No, 2 = Yes

70. Do extractive companies invite community members in decision making about natural gas? 1.No.....2. Yes.....

71. What were your views during natural gas extraction consultation?

1. Provision of employment opportunities
2. Provision of education opportunities
3. Construction of health centers
4. Provision of safe sea transport
5. Utilization of local products and goods
6. Utilization of local products and services
7. Others (*please specify*).....

72. What kinds of decision did household head participating? (Multiple responses is allowed)

1. None
2. Gas exploration and protection of rig
3. Land utilization process
4. Natural gas waste disposal management
5. How to utilize benefits from natural gas
6. Others (*please specify*).....

73. What kinds of decision are households capable of intervene in natural gas decisions?

1. None
2. Land alienation for gas projects
3. Utilization of service levy
4. Employment opportunities
5. Others (*please specify*).....

74. What kinds of challenge do communities experience in participation in decision making?

1. None
2. Exclusion of community in decision making
3. Inadequate knowledge about oil and gas
4. Only ward leaders are participated in decision making
5. Others (*please specify*).....

75. What are levels of women participation in decision making?

1. None
2. Village
3. Management
4. Others (*please specify*).....

76. What are community constrains in participation in decision making?

1. No
2. Inadequate consultation
3. intimidation in participation process
4. Lack of platform to voice out intended opinion
5. Others (*please specify*).....

77. Whether extraction companies created complaining procedures? 1 = No, 2 = Yes

78. Kindly evaluate the relationship between extractive companies and Community

1. Bad relationship
2. Good relationship

Appendix 2: A checklist used for key informant interviews in extractive company

SECTION A: Identification

1. Date.....Sex.....
2. Name of Company:Department.....
3. Position.....

SECTION B: Questions

- 1) How would you describe the relationship between your company with nearby communities like Kilwa Masoko, Kilwa Kivinje and Songosongo community?
- 2) Can you mention kinds of benefits that men and women get from natural gas extraction?
- 3) A: How many members of community do you employ in your company in terms of gender?
B: What is your recruitment procedure?
- 4) Are you satisfied with the number of women you have employed? Why?
- 5) Are there particular kinds of work (job) which are seen to be ‘women’s work only or ‘men’s work only in natural gas extraction? Which areas are these?
- 6) What kind of strategies put forward by companies to make sure that more men and women are part of workforce in natural gas activities?
- 7) What challenges hinder men and women from enjoying benefits from natural gas?
- 8) How many local services providers have been contracted with your company? Can you give rough estimates of goods supplies per year?
- 9) A. Does your company invest in education/ training?
B. Does your company have strategies for training women/men/youth in gas and oil sector?
10. Are women represented in decision-making levels?

INFORMATION REQUESTS MADE TO THE EXTRACTIVE COMPANIES

The following text reproduces the requests made to oil and gas company, after face-to-face meetings with company representatives in 2015.

Documents requested:

1. A copy of the initial Environmental Impact Assessments (EIA) of Songosongo natural gas mining project. It is understood that the EIAs will normally include (a) some form of stakeholder mapping, (b) a social baseline survey of impacted communities and (c) an impact assessment for those communities. This type of information will be invaluable in creating an initial basis for the socioeconomic description of the communities.

2. Stakeholder Engagement Plan (SEPs) – where available, i.e. documents describing the principles, plans and practices for linking the mining with community and other local representatives for the purposes of communicating company plans e.g. for new productive activities and new buildings.

3. Reports or similar recent documents that provide reasonable descriptive details on the specific programmes that the company is providing support to the local communities through:
 - (a) improved educational and health services;
 - (b) enhanced income-generating opportunities; and
 - (c) new infrastructure that can be utilised, partly at least, by the local communities as well as by the mines.

Data requested:

Additionally, the researcher requests data on the following: If possible this should be provided for a time period of (up to) the previous 5 years:

1. Employment – gender disaggregate data on local and expatriate direct employed, plus contract and casual workers working for the mine/ other fields.
2. The organization structure of the company (names and their gender)

Appendix 3: A checklist used for female workers in extractive companies

SECTION A: Identification

1. Sex..... Date.....
2. Name of the Company: Department.....
3. Position.....
4. Educational Qualification.....Number of year in service.....

SECTION B: Questions

1. What motivated you to work in this industry?
2. What recruitment steps did you undergo in order to be employed here?
3. What is your responsibility in this company?
4. Do you enjoy working in this company? What do you enjoy?
5. What do you dislike, as a female employee in this company?
6. What kind of event either good or bad is memorable in your working life so far?
7. What has been your experience working with male employees in this natural gas company?
8. Does the company treat men and women employees equally? On what aspects?
9. What kinds of support do the companies provide to address gender issues?
10. Do your working hours affect domestic roles?
11. In your opinion, what should the government do to increase the number of women experts in natural gas mining?

Appendix 4: A checklist used for key informants from higher learning institutions/Ministry of Education

SECTION A: Identification

1. Name of Institution: Date.....Sex.....
2. Department..... 3.Position.....
4. Educational Qualification.....

SECTION B: Questions

1. What kinds of training are important to acquire necessary skills to work in oil and gas?
2. How many female students have opted for oil and gas related courses for the past five years from 2010 to 2014/2015 in terms of gender?
3. What kinds of strategies has your institution done to improve educational opportunities for female students in science subjects, especially in gas and oil?
4. What kind of strategies has your institution to make sure that the employment gap from oil and gas resource is covered by Tanzanians?
5. What are the problems or barriers that hinder female students from studying subjects related to oil and gas?
6. What are the strategies to provide on job training to women in the gas and oil sector?

Appendix 5: A checklist used for TPDC key informant

SECTION A: Identification

1. Date.....Sex.....
2. Department.....
3. Position.....

SECTION B: Questions

1. What is the role of the Ministry in relation to oil and gas exploration in Tanzania?
2. How many workers in terms of gender are working in the oil and gas sector in Tanzania?
3. Does MEM have women at the management level?
4. Are there any policy provisions to ensure that host communities get benefits from the ongoing exploitation of gas?
5. What kind of employment opportunities do communities around natural gas exploration get from exploration activities?
6. Since Tanzania started to explore gas and oil has there been any (Ministry) improvement in education opportunities for Tanzanians?
7. What kinds of challenges do communities experience in picking up employment opportunities from natural gas exploration activities?
8. How does Tanzania implement National Gas Policy of 2013, especially on the issue of gender parity in education, employment and access to electricity at household level?

Information requests made to the TPDC on behalf of Ministry of Energy and Minerals

The following requests were made to TPDC, after face-to-face meetings with Ministry representatives in 2015.

Documents requested:

1. Cooperate Social responsibilities Policy, 2015 (CSR)
2. Reports on Stakeholder Engagement Plan (SEPs) – where available, i.e. documents describing the principles, plans and practices for linking the mine with community
3. Documents/ reports on education programmes offered for oil and gas in Tanzania

Data requested: Additionally, the researcher requested data on the following: If possible this should be provided for a time period up to the previous 5 years:

1. Employment – gender disaggregated data on direct local and expatriate employees, plus contract and casual workers working in oil and gas mining.
2. The organization structure of the Ministry (names and their gender)
3. Gender disaggregated data of students who benefited from oil and gas scholarships.

Appendix 6: A checklist used for Ward Executive Officers (WEOs) and Village

Executive Officers (VEOs)

SECTION A: Identification

1. **Date**.....**Sex**.....
2. **Ward** **Village**
3. **Position**.....

SECTION B: Questions

1. Were leaders consulted before natural gas exploration activities started in your area?
What were your views?
2. How are women represented in ward/village decision-making structures, and what measures are in place to ensure that the women who participating are representatives of women in the community?
3. What kinds of opportunities do Natural Gas Companies offer to men, women and youth?
4. What are the challenges that men, women and youth experience to access work opportunities in natural gas exploration firms?
5. Do the communities receive any funds from oil and gas companies for community development projects? How much per year on average?
6. Do you see women taking advantage of the flow of money from oil and gas?
7. How do women entrepreneur's access financial resource in order to fill gaps of employment?
8. Have the numbers of shops and businesses in your area increased since the arrival of the oil/gas project? How many women and youth are in these types of business?
9. What should the government do to increase men and women and around exploration areas to access work opportunities created by natural gas development?

Appendix 7: An interview guide for men

SECTION A: Identification

1. Ward Village..... Date.....
2. FGD no.....Location.....
3. Number of participants..... Youngest age..... Oldest age.....
4. Time started: Time ended:.....

SECTION B: Questions

1. What are your aspirations from natural gas exploration activities in this area?
2. Were men/women consulted before oil and gas exploration activities started in your area? What about issues which were discussed? What were your views?
3. What kind of employment opportunity did men/women expect to get after natural gas exploration in this area? Are they getting them?
4. What kinds of challenged men/women experience in accessing opportunities (employment) created by natural gas exploration?
5. Do men/women have opportunities to get education and training so that they can work in oil and gas companies?
6. What should the government do to increase the number of men in extraction activities?
7. Is there any difference in access to and control over resources before and after coming of mining industry? (between men and women or men and youth or women and youth)
Describe the differences.
8. Are there any non-employment benefits that women obtain by virtue that they are in oil and gas exploration areas?

Appendix 8: A Check-list for NGOs and CBOs

SECTION A: Identification

- 1) Name of organization:.....Date:.....Sex.....
- 2) Ward:..... Village.....
- 3) Position;.....

SECTION B: Identification

1. When did the organization start operating in natural gas resource issues?
2. Was your organization consulted before natural gas exploration activities started?
3. What were your views?
4. Which projects/ programmes do you support in natural gas exploration?
5. What roles are played by your organization in helping communities to take up work opportunities created by natural gas companies?
6. What kinds of strategies does your NGO have in collaboration with other stakeholders in natural gas to ensure that communities access opportunities created by the natural gas industry?
7. In your opinion, what should the government do to increase opportunities around exploration areas?
8. Are women and men equally represented in your empowerment strategy?